

Exhibit 1

DATE 08-06-2007

Comments (cont)

with the amount of rubble in the entries
5-70-6-ft deep. Could any one
manage to survive. the initial
release of Energy —

INSP. INITIAL JK SUPV. D&I NYS 9/5/07 PAGE NO. 10

Exhibit 2



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Crandall

- Crandall, in spite of some roof problems, continues to operate well. Month to date we are [redacted] tons ahead of budget. *Noted*
- We are now approaching 2,000 feet of cover. MSHA has never allowed pillar recovery at this depth. The mine is experiencing heavy bouncing and rib sloughage. We moved the section back two crosscuts to provide a barrier. *Noted*
- Pillaring should be completed by the 28th of the month. Thereafter, we will move to the south side of the mains and begin advancement. *Noted. Because needed it.*
- The belt conditions at the mine are improving. We conducted training for all belt personnel last week regarding belt maintenance and proper installation of splices. *Noted*

Exhibit 3

-----Original Message-----

From: Cornett, Bob E - MSHA

Sent: Tuesday, October 24, 2006 10:28 AM

To: Denning, William G - MSHA

Subject: Durrant

Sometime in August, Al asked me to be involved in a conference call with Bob Murray and his staff along with our field supervisors from Price. Mr. Murray was supposed to be wanting just to discuss issues at the mine and what they planned to accomplish there. In this call, Mr. Murray went over issues with the mines, Aberdeen in particular prior to his purchasing the mines, also what his plans were to improve the mines. There were only two times during this call where Mr. Murray got passionate with raised voice and those areas were discussing Donnie Durrant and Tim Thompson

Mr. Murray also got vocal on the issue of Tim Thompson having inspectors put a closure order on his longwall and that he complained to someone in Congress about it and that Mr. Thompson resultantly lost his job. Mr. Murray did state that he did not have Thompson fired, but that he would not stand by to be treated wrongly and would complain.

I met with the Murray Staff, along with Ted Farmer and Jim Martin (acting supervisor for Bill Taylor) around September 19 at the office complex near West Ridge. Bruce Hill hosted the meeting and the company went over an agenda. I have a list of those attendees which was 3 persons from MSHA and 13 representatives from the mines. The agenda was three pages broken down into 1. Changes to date, 2. Future plans, and 3. Opportunities for improved relations with MSHA. Under the third category was 1. Change in ventilation requirements in Tower (Aberdeen Mines) bleeder recognizing the improvements since increased restrictions were placed on the mine. 2. Elimination of D sequence as a result of ownership change. 3. More consistent mine inspections. 4. Need to assure that all violations written are issued the day the condition was identified. 5. Elimination of writing S&S violations for conditions that are not significant and substantial. During the entire meeting, many times it was brought up about improving communication and working together with MSHA. During the final part of the discussion concerning the improved relations with MSHA, it seemed to center around what MSHA should do to improve relations with the mine rather than any efforts by the company or collaborative efforts to improve. When Mr. Hill concluded and asked me for any comments, I brought up issues of improving a relationship and working together. I asked questions about concerns we have heard the Murray group has referred to inspectors as "enemies" and not people. Also we have heard comments allegedly that this company has gotten rid of one inspector and can get rid of more if they need to. Then into a lengthy discussion about any attempts to have an inspector arrested. It was pointed out that if this company has said these things or believes them, it would be difficult to improve relations. Mr. Hill was offended and stated my comments had no place in the context of the meeting they wanted to hold with MSHA. I pointed out that many times in the discussion it was brought out to improve relations with MSHA and all the things I mentioned were valid points that would hinder any improved relations if they are true.

[REST OF EMAIL REDACTED]

Exhibit 4



Internal Correspondence

Date: November 1, 2006

Subject: Meeting with Al Davis and Bob Cornett in Denver

From: Jim Poulson

To: Mr. Murray

At 10am Oct 31, 2006 a meeting was held in Denver with MSHA to discuss issues involving UtahAmerican and the agency. In attendance were Al Davis and Bob Cornett from MSHA and Jerry Taylor and Jim Poulson UtahAmerican. The follow are the items discussed my notes and comments.

- Change in enforcement standards from previously accepted standards. This includes the increased issuance of D2 orders recently received with the arrival of Mr. Ramey. We presented to Mr. Davis and Mr. Cornett a listing of 15 orders which had been issued in the past month. It is clearly evident that the presence of Mr. Ramey, is overriding the change in enforcement standards, while acting as the field supervisor in the absence of Mr. Taylor. We discussed with Mr. Davis that the change in enforcement, without giving the operator time to comply with what was previously accepted standards was unjust and warranted relief on behalf of the operator. Mr. Davis committed to investigating and pulling back enforcement to allow the operator time to comply. Mr. Davis requested a time frame for complying with the cleanup of accumulations along the roadways. I told Mr. Davis that in my estimation that 2 to 4 weeks would be required and would provide him with updates as the project progressed. He emphasized that reports back from the field office involving the clean up would be reviewed by his office. It is important to note that I also told Mr. Davis, UEI had an underground road grader coming to Utah from one of the Eastern operations to help in this cleanup. During staff meeting today I inquired about the where abouts of this grader, and Mr. Hill told me that no grader is coming from back east.
- We discussed with Mr. Davis and Mr. Cornett our concern about the over zealous efforts of Mr. Ramey and the impact this could have on UEI and the possibility of Flagrant Violations for reaped failure. Mr. Davis again commented he would look into this issue and pull back enforcement.
- We inquired about the status of removing UEI from the D2 sequence. Mr. Davis said that his office was acting on the direction of council involving that matter and nothing has changed. We made it clear that on Nov. 3, 2006 Mr. Murray would be meeting with Mr. Stricklin and that Mr. Murray would be discussing this issue. Mr. Davis said that he understood this and would act as directed.

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- We notified Mr. Davis and Mr. Cornett that a alternate seal approval request for the Crandall operation would be forth coming and approval of those seals would be urgent. Mr. Davis said he would be looking for the request and would assist.
- We discussed with Mr. Davis and Mr. Cornett the restructuring of the Safety department, Diesel maintenance, Fire fighting, New mine manager and his directs and the increased level of accountability that is now being put into place. Mr. Davis commented highly about the reports, he has received about the increased efforts, and level of safety concern, that has taken place since the acquisition by Mr. Murray.
- We discussed the urgent need and request his personal involvement concerning the approval of the Alternate seals for sealing the right side of the mine. **I feel that we still need Mr. Murray to address the seal approval issue/process with Mr. Stricklin.**
- We addressed the current wooden squeeze seals/stoppings that are being used at West Ridge in the active mining panel. These alternate seals were submitted for approval when submittal was made for the seals for the right side of the mine. **I feel that we still need Mr. Murray to address the seal approval issue/process with Mr. Stricklin.**
- We discussed the 3% bleeder draft that since has been rescinded and its effect on the Western mines. Mr. Davis commented even though this has been rescinded it is still an issue which will be coming back in the future. He urged Mr. Taylor and myself to participate and comment in all upcoming meetings. It will be up to the operators to get any type of relief or help involving this issue. Mr. Davis and his directs have no influence in the wording in these PIL or PIB's. I personally believe this should go through the rule making process and MEI must pursue that avenue.
- Emergency Response Plans we discussed and Mr. Davis commented that the agency is only about half done in the approval process. Mr. Davis commented that they are awaiting or in belief that the ERP and the ETS will be combined or married together in some form.

Exhibit 5

EVALUATION AND CONTROL OF COAL BUMPS

Office of Mine Safety and Health Research
National Institute for Occupational Safety and Health
Centers for Disease Control and Prevention
U.S. Department of Health and Human Services

September 28, 2007

INTRODUCTION

There is general agreement that the immediate cause of the Crandall Canyon mine disaster was a large coal bump that occurred on the morning of August 6, 2007. Coal bumps, which are sudden, violent failures of highly stressed coal, have been a longstanding safety hazard in some mines in the Southern Appalachian, Colorado and Utah coalfields. Typically, bumps can occur when the roof and floor strata are strong and the mines are under deep cover. Bumps have caused many fatalities in past decades, and were the subject of intensive research by NIOSH and its predecessor agencies. The results of this research were transferred to the mining community, and much of it can be found at the NIOSH mining website. A landmark document describing the results of the research effort is Special Publication 1995-01, which is still considered the fundamental resource on the evaluation and control of bumps.

One thing that the research clearly showed was that the most effective way to prevent bumps is through proper pillar design. Pillars are the blocks of coal that carry the great weight of the overburden above the mine workings (figure 1). Most pillars can be classified as either “production pillars” that are within the mining panel, or as “barrier pillars” that isolate individual panels from adjacent mined out areas. When properly sized, pillars provide “Global Stability” that is a necessary, but not sufficient, condition for creating a safe area for miners to work in. Once global stability is obtained, then artificial supports (like roof bolts) can be installed to provide “Local Stability” and keep the mine roof safely above the miner’s heads.

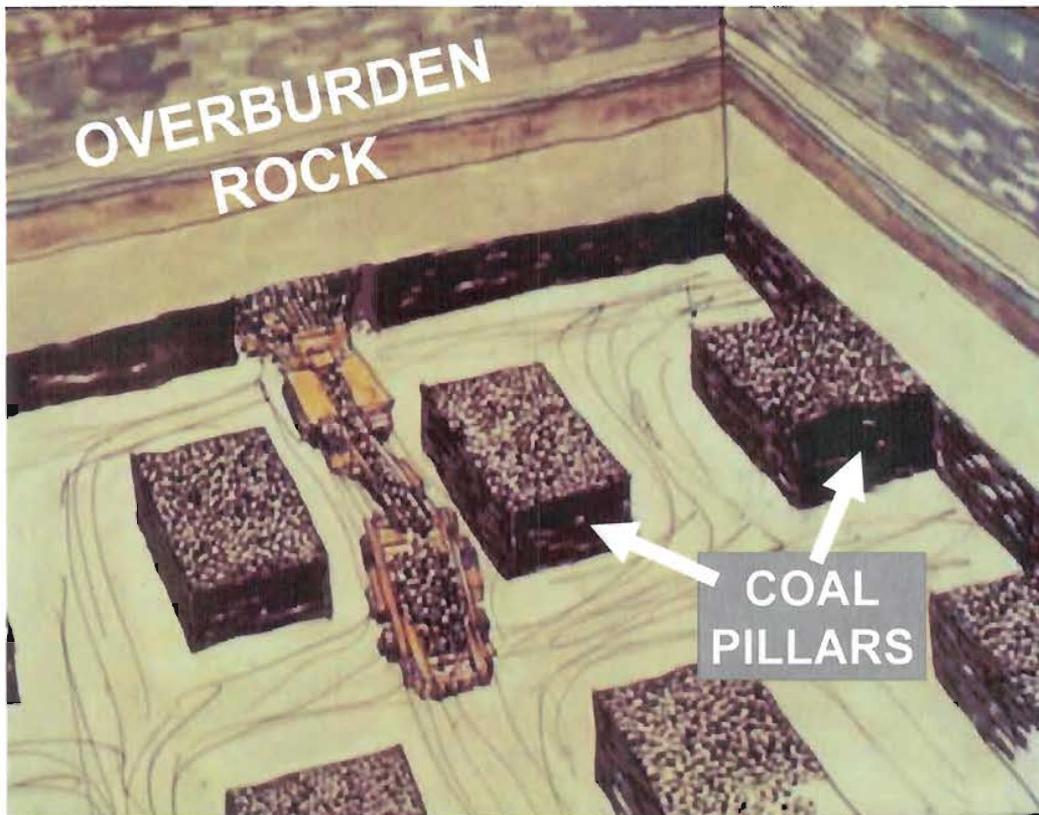


Figure 1. Coal pillars support the great weight of the overburden and provide “Global Stability.”

NIOSH has developed several computer programs to help mine planners design coal pillars. For longwall mining, there is the Analysis of Longwall Pillar Stability, or ALPS. For room-and-pillar and retreat mines, there is the Analysis of Retreat Mining Pillar Stability, or ARMPS. Both of the programs are widely used throughout the U.S. The LaModel program was also developed at NIOSH. Its originator, Dr. Keith Heasley, is now Associate Professor of Mining Engineering at West Virginia University.

Both ALPS and ARMPS are considered “empirical” models, because they are based on case histories of full-scale pillar performance in coal mines. Since they are derived directly from real-world data, empirical models do not require a full understanding of the mechanics of pillar

behavior. This is a big advantage in the field of rock engineering, because it is usually impossible to obtain reliable field measurements of the strength of the rock, or of the loads that develop during the mining process. Another big advantage is that the output from empirical models is a direct prediction of the likelihood of success or failure, based on actual experience. The disadvantages of empirical models are that they can be unreliable when extrapolated beyond their original data base, and they are usually only appropriate for fairly simple mining geometries.

LaModel, in contrast, is a numerical model that is derived from the fundamental laws of physics. Accordingly, it requires a number of material properties for the coal, rock, and gob that are difficult to obtain. In addition, the output from the model is in terms of stress and rock movement (“convergence”). Therefore, it is usually necessary to employ past experience both in the selection of material properties and the interpretation of the results.

BACKGROUND TO THE ARMPS PROGRAM¹

ARMPS was first released in 1995, and it made three improvements on earlier pillar design methods. First, it can evaluate a much broader range of the mining geometries and pillar shapes used in room-and-pillar and retreat mining. Second, it can estimate the “abutment loads” that are transferred to the pillars from the “gob areas” that have been mined-out and fully extracted by previous longwall or retreat mining (figure 2). Third, and most significant, ARMPS has been verified with an extremely large data base actual mining case histories. To build the data base,

¹ Several relevant papers and much additional information are packaged with the ARMPS program, which can be downloaded from the NIOSH website:

<http://www.cdc.gov/niosh/mining/products/product6.htm>

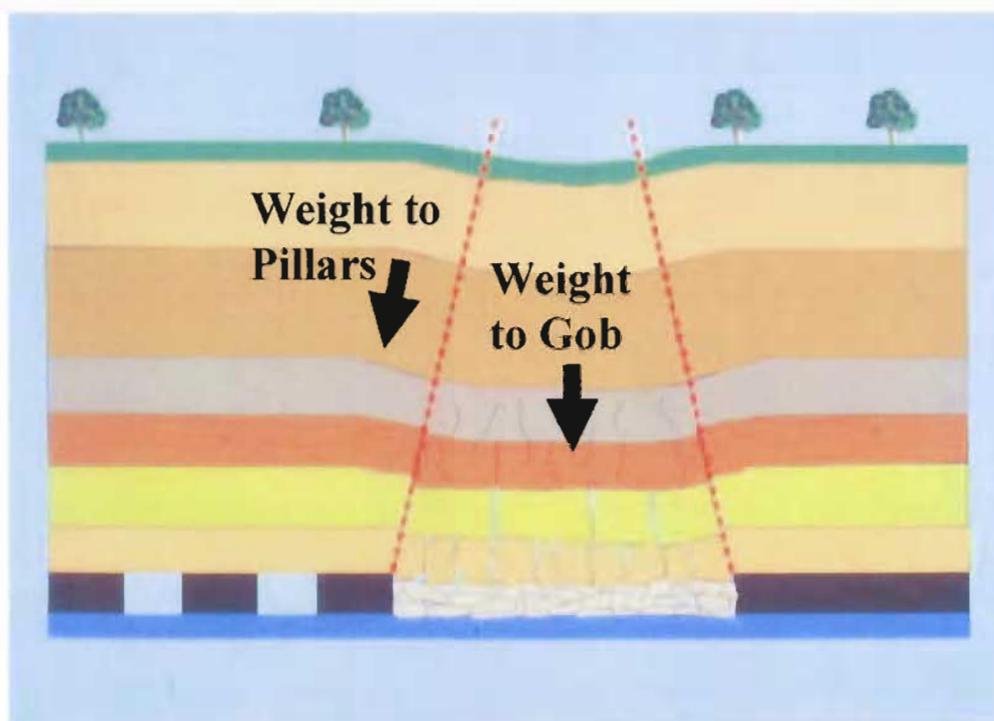


Figure 2. Full extraction mining creates “gob areas” and causes additional “abutment loads” to be transferred to the pillars.

NIOSH researchers visited 68 mines in 10 states, and collected hundreds of examples of successful and unsuccessful pillar designs. In each case, the ARMPS “Stability Factor” (SF) was determined by comparing the estimated pillar loads to the pillars’ load-bearing capacity. NIOSH then conducted statistical analysis of the data, and based on the results suggested appropriate SFs to minimize the likelihood of pillar failure in future designs. In essence, these ARMPS SF guidelines make the past experience of a broad cross-section of the industry available to mine planners in a practical form.

The case histories included in the original ARMPS data base were primarily from mines with relatively shallow cover in the eastern U.S. However, because mines under deep cover often have ground control problems that are different and more severe, NIOSH undertook a special research project which focused on refining ARMPS for them. The results were published in

2002. During this investigation, 97 panel design case histories were gathered at 29 mines located in 7 states. In every case the depth of cover exceeded 750 ft. Thirty of the case histories were classified as unsuccessful, in 16 of these cases the failure was due to bumps. More than 40% of the case histories, including half of the bumps, were from coal mines in UT and CO.

The study's conclusions are worth quoting in some detail:

“Only one failure (out of 12 cases) occurred when the ARMPS SF was greater than 0.8 and the barrier pillar SF (BPSF) was greater than 2.0. Conversely, 30 case histories had an ARMPS SF less than 0.8 and a BPSF less than 2.0, and 60% of these cases were failed designs. Of these 18 failed designs, 13 were bump events. In addition, every bump case history collected had a BPSF of less than 1.9.

Based on these analyses, conservative design guidelines are proposed as follows:

- When the depth of cover exceeds 1,250 ft, the ARMPS SF of the pillars within the panel should exceed 0.8.
- When the depth of cover exceeds 1,000 ft, and the area is bump-prone, barrier pillars should be employed that maintain an BPSF of 2.0.”

Table 1, which was published with the 2002 paper and subsequently included in the ARMPS help file the complete suggested SF guidelines. In addition, figure 3 illustrates the pillar SF values observed in the data base, while figure 4 shows the importance of the BPSF.

Table 1. NIOSH suggested ARMPS pillar and barrier pillar SFs

Immediate roof rock quality	Weak and intermediate roof strength	Strong roof
ARMPS SF		
650 ft < H < 1,250 ft	$1.5 - \left(\frac{H - 650}{1000} \right)$	$1.4 - \left(\frac{H - 650}{1000} \right)$
1,250 < H < 2,000 ft	0.9	0.8
Barrier pillar SF		
H > 1,000 ft	>2.0	>1.5 ¹ >2.0 ²

¹Nonbump prone ground

²Bump prone ground

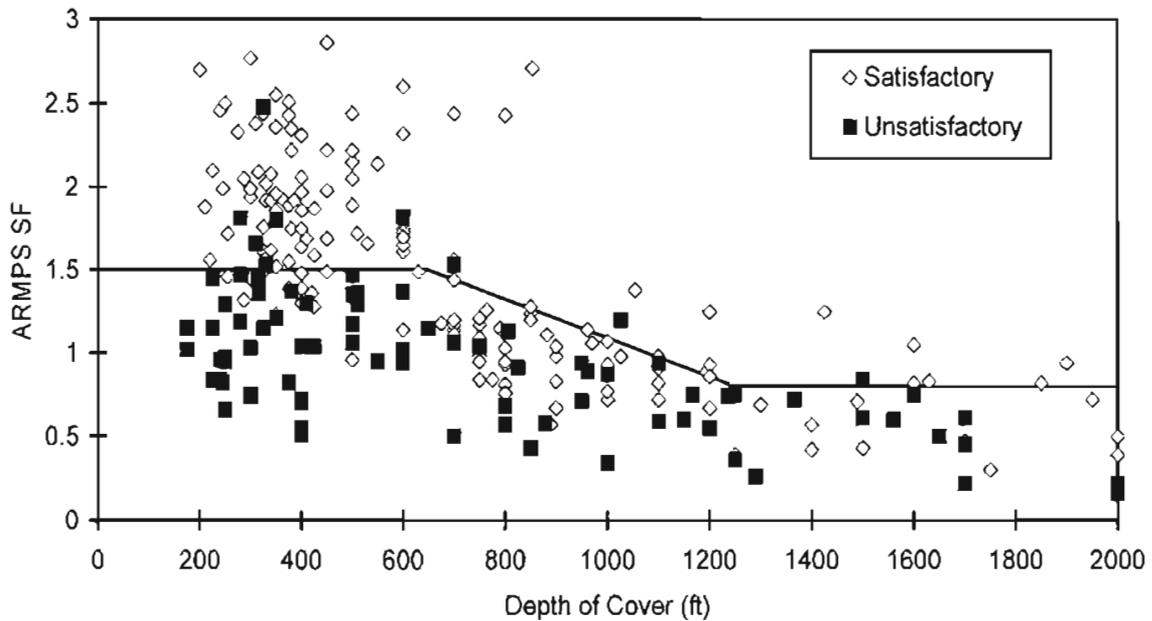


Figure 3. The ARMPS case history data base, including deep cover cases, and showing the suggested pillar SF.

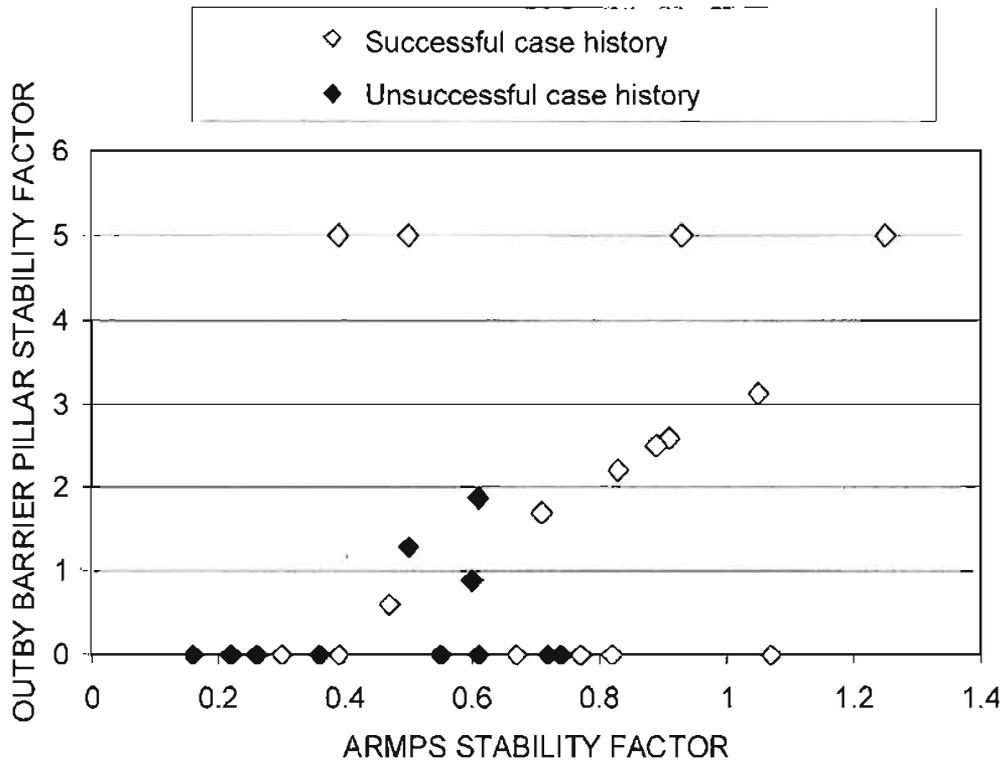


Figure 4. The ARMPS deep-cover, strong roof data base, showing the importance of using barrier pillars for stability. Most of the unsuccessful cases are bumps.

Using ARMPS is fairly straight-forward. On the first interactive screen, the user enters factors including the pillar sizes, the depth of cover, the number of entries, and the entry width are all entered in the one interactive screen (figure 5). In a second screen, factors pertaining to retreat mining are entered. These factors include the dimensions of the gob areas, the width of barrier pillars, and the depth of any “slab cuts” into the barrier. Once the data is entered, the pillar SFs are returned instantaneously. To obtain the BPSFs, the user must page down to the “Barrier Pillar Parameters” output screen.

Figure 5. ARMPS input data screens.

The strength of ARMPS is not the sophistication of the calculations; rather it is in the size and comprehensiveness of the case history data base. By using ARMPS, a mine planner can quickly compare a proposed design to what has worked in the past at mines in similar circumstances. However, close study of the data in figure 3 shows that there are many successes with SF less than the recommended values, just as there are some failures with SF that exceed the recommendations. Therefore, the same 2002 paper quoted earlier stated that “the recommendations in Table 1 should be considered as first-approximation guidelines which should be tempered with other site specific variables deemed relevant based on past experience and sound engineering judgment.”

Crandall Canyon ARMPS Analysis Conducted by Agapito Associates²

The ARMPS analysis conducted by Agapito Associates, Inc. (AAI) is described in the email from Gilbride to Adair dated 8/9/06. The email addresses the initial pillar recovery in the North Barrier only.

With the information provided in the email, NIOSH was able to match AAI's ARMPS results exactly. The NIOSH evaluation identified two issues with AAI's analysis:

Dimensions of the Barrier Pillar: The four-entry development in the North Barrier had created three rows of pillars, leaving a 130 ft solid barrier between those pillars and the longwall gobs to the north. Only two of the pillar rows were to be extracted on retreat, with the third row left to protect the bleeder entry. Since ARMPS does not include bleeder pillars among the mining geometries it evaluates, some engineering judgment is required to consider the bleeder pillars' effect on the overall stability. In AAI's analysis, the bleeder pillars are simply added to the barrier pillar, making the total width of the barrier pillar 210 ft. This results in a very un-conservative analysis, because a solid 210 ft barrier has far more load-bearing capacity than a 130 ft solid pillar plus a row of 60 by 60 ft square pillars. Two more realistic alternatives might have been to:

² The NIOSH analysis relied on two Agapito Associates Inc reports and an email. These are publicly available on MSHA's website, as part of Crandall Canyon's roof control plan, and can be viewed at the following website: <http://www.msha.gov/Genweb/CrandallCanyonRoofControlPlan.pdf>

- Add the equivalent load-bearing capacity of the bleeder pillars to the barrier, which would result in an “effective barrier pillar width” of approximately 160 ft, or;
- Assume that the bleeder pillars would yield during retreat mining, so that the panel would behave as if all three rows of pillars were extracted.

The effect of modeling a solid 210 ft barrier is to substantially overstate both the BPSF and the pillar SF.

AAI also used 20 ft wide entries in their ARMPS models, rather than the 17 or 18 ft wide entries that were actually planned. This conservative assumption would tend to reduce the calculated pillar SF, but it would not affect the BPSF.

Interpretation of the Results: AAI’s discussion of the results of the ARMPS analysis indicates that they focused on the pillar SF as the significant output parameter. They found that their predicted SF for the North Barrier pillar recovery was 0.53, which was less than the 0.9 recommended by ARMPS (actually, the ARMPS recommendation is 0.8 for mines with strong roof). However, they correctly pointed out that “the ARMPS database shows that industry experience is mixed for mines reporting similar SFs at comparable depths.” Since historical pillar recovery at Crandall Canyon mine had been successful with pillar SFs as low as 0.37, AAI concluded that “an SF of 0.40 is a reasonable lower limit for retreat mining” at Crandall Canyon. According to the information available to NIOSH, AAI did not consider the importance of the remnant barrier pillar to the overall likelihood of the success of the mining in the North Barrier. The NIOSH interpretation of the case history database made clear that those successful designs

with pillar SFs that were less than 0.90 also employed substantial barrier pillars. The AAI ARMPS results would have included a BPSF of 1.50 for the 210 ft barrier pillar they modeled, but this finding is not discussed in their email.

AAI does discuss, in this email and in their other reports, the “need for increased reliance on ground support,” including adding extra roof bolts, wire mesh, and Mobile Roof Supports. In addition, the design called for mining narrower entries than in the past, and mining the top coal to eliminate the risk of top coal falls. These precautions indicate that Crandall Canyon did take a number of valuable steps to improve “local stability” during the mining in the North and South Barriers. Unfortunately, such precautions do not reduce the “global stability” risk of pillar failure.

NIOSH ARMPS Analysis

NIOSH has used ARMPS to evaluate, retrospectively, the complete sequence of events leading up to the bump on August 6. It must be noted, however, that the official investigation of the disaster at the Crandall Canyon mine has not yet been completed, so the data currently available for analysis is incomplete and potentially inaccurate. Therefore, the specific quantitative findings presented below should be considered approximate and may be subject to revision.

Figure 6 shows the initial situation before any mining in the North Barrier. The 70 by 70 ft pillars in the mains have an SF of 0.93, which the NIOSH guidelines suggest should be adequate

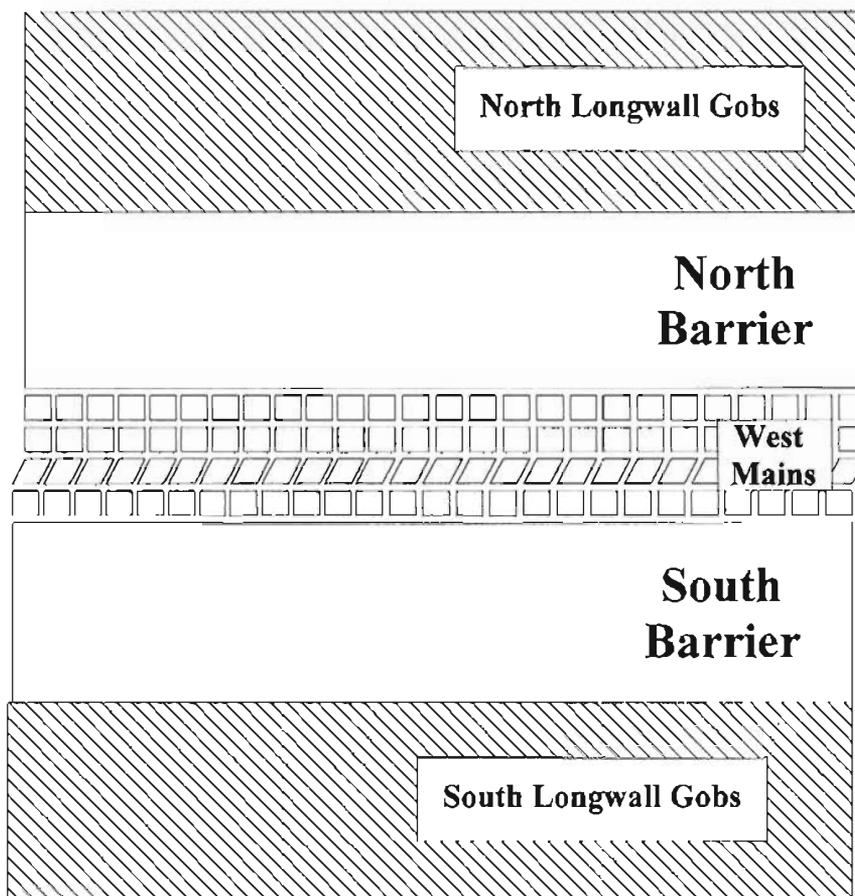


Figure 6. West Mains development as modeled in the NIOSH ARMPS analysis.

for the 2,000 ft maximum sustained depth of cover. The pillars are shielded from the extensive longwall gobs to the north and south by 450 ft barrier pillars whose BPSFs are approximately 4.4.

In figure 7, development has been completed in the North Barrier. The analysis assumes that the pillars in the mains are carrying their full load and are not transferring any to the pillars in the North Barrier development. However, significant abutment load from the north longwall gobs is being transferred across the Remnant North Barrier, resulting in an ARMPS SF 0.46 for the 63 by 73 ft pillars. Most important, the BPSF for the 130 ft wide remnant barrier pillar is just 0.95.

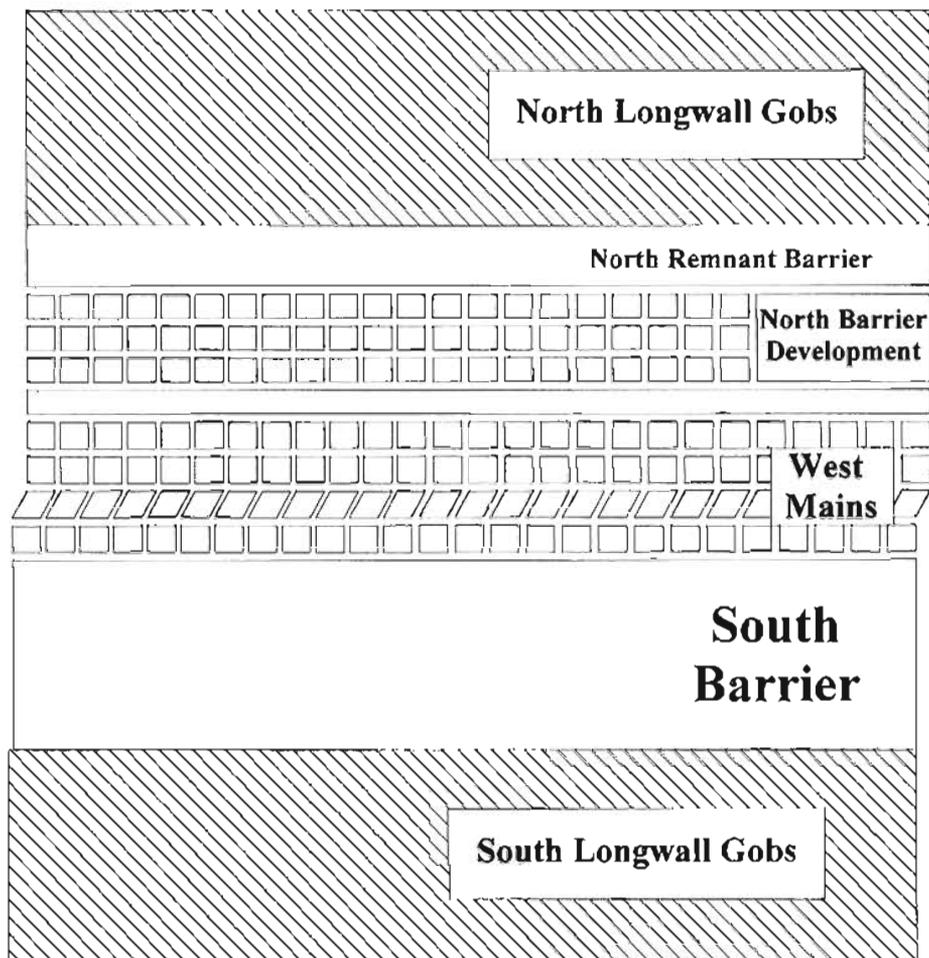


Figure 7. North Barrier development as modeled in the NIOSH ARMPS analysis.

Retreat mining in the North Barrier does not affect the BPSF, but it further reduces the SF of the pillars to 0.32.³ This was the situation when the bump occurred in early March of 2006 that resulted in the abandonment of the North Barrier pillars (figure 8).

³ The NIOSH analysis presented in the text treats the row of bleeder pillar as if it was extracted with the other two pillar rows. An alternative analysis, using an “effective barrier pillar width” of 160 ft with two rows of extracted pillars, has little effect on the pillar SF but increases the BPSF to 1.17.

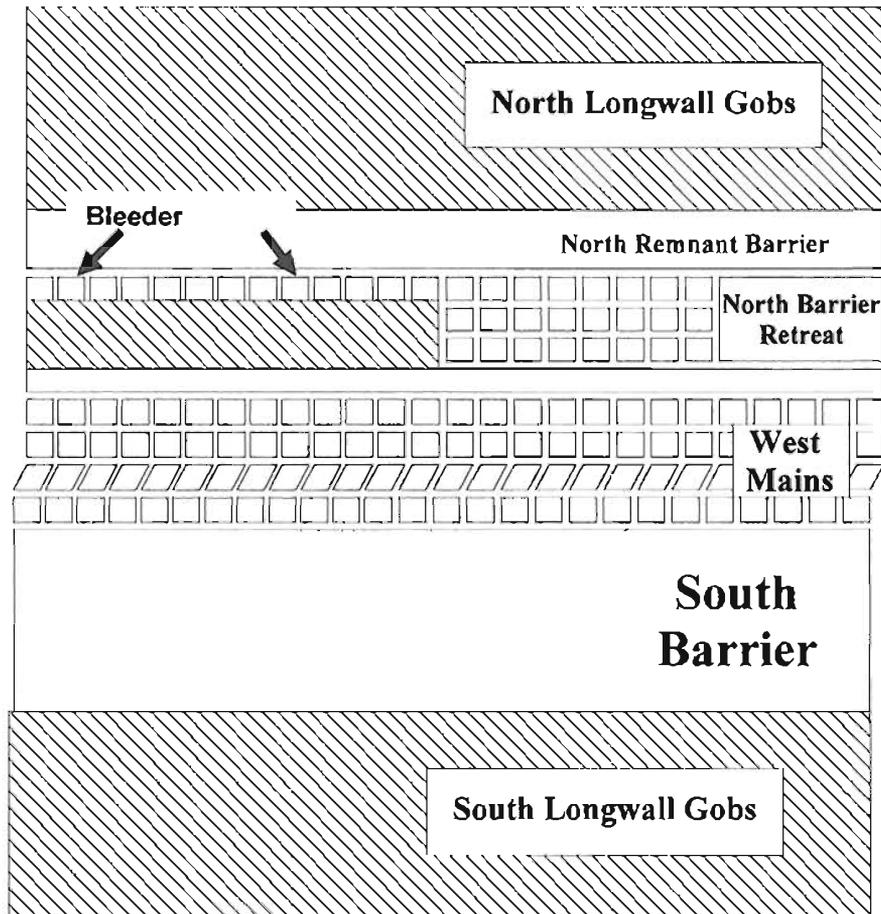


Figure 8. North Barrier retreat mining as modeled in the NIOSH ARMPs analysis. (the model assumes that the row of bleeder pillars has yielded and shed its load).

The development in the South Barrier created pillars that were about 50 ft longer than the ones that had been used in the North Barrier (figure 9). The change increases the pillar SF by only about 15%, to 0.52, because the strength of a coal pillar is largely determined by its least dimension. The remnant south barrier pillar is 10 ft narrower than the one in the north, however, so its BPSF is estimated at 0.91. Pillar recovery, which in the South Barrier involved a slab cut into the remnant barrier, would have further reduced both the pillar SF and the BPSF. Pillar recovery never progressed into the deepest cover portion of the panel, however.

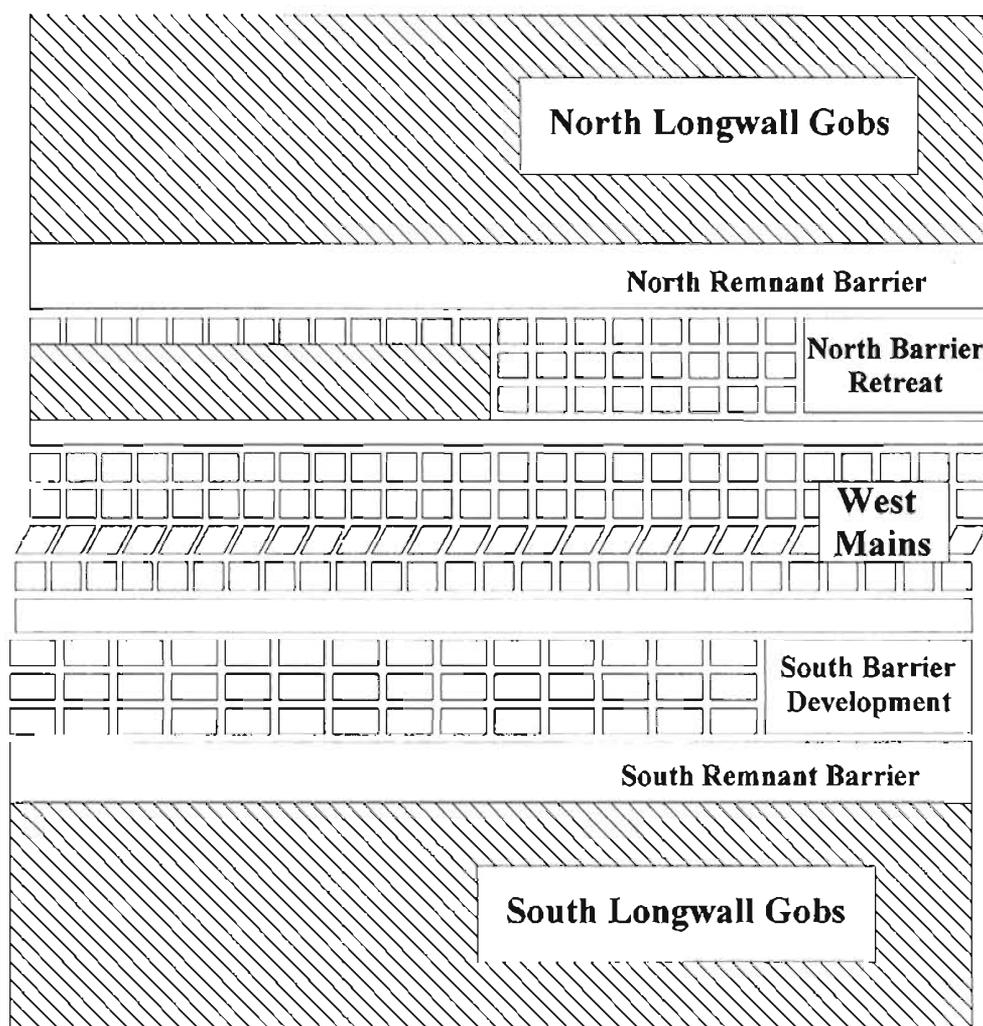


Figure 9. South Barrier development as modeled in the NIOSH ARMPS analysis.

One other consideration in evaluating the South Barrier is the potential for load transfer resulting from failure of pillars in the original West Mains. Once the pillars in the North Barrier have been extracted or failed, an abutment load can be transferred across the slim 50 ft pillar that separates the North Barrier Development from the West Mains. Under these circumstances, the SF for the mains pillars is reduced to 0.71, while the BPSF for the 50 ft barrier is just 0.74. Failure of the pillars in the mains could ensue, and it would result in a second side abutment being applied to the pillars in the South Barrier, further reducing the pillar SF there to 0.35.

In summary, the NIOSH ARMPS analyses indicate that the two remnant barrier pillars were probably the key elements in the Crandall Canyon pillar design. The BPSFs for these structures were about 1.0, significantly lower than the 2.0 guideline that was based on the deep cover case histories collected by NIOSH. A BPSF of 2.0 would have required barrier pillars that were approximately 250 ft wide. Without such substantial barriers, the pillars developed within the original barriers are subjected to substantial abutment loads, which likely exceed their load-bearing capacity.

Crandall Canyon LaModel Analysis Conducted by Agapito Associates

While LaModel is relatively simple compared with some other numerical models (a three-dimensional finite-element program, for example), it is considerably more complex than ARMPS. Unfortunately, because of the time required, NIOSH has not yet completed a LaModel analysis of Crandall Canyon mine, though some preliminary results are attached. NIOSH has, however, conducted a thorough evaluation of the AAI LaModel results, it is possible to identify several reasons why those results proved to be so misleading.

The AAI analysis was conducted in three stages. The initial report, dated July 20, 2006, addresses the development of the initial four entries in the North Barrier. This report contains the most details about the modeling technique. The email of 8/9/2006, in addition to containing the discussion of ARMPS, also shows LaModel results for the planned retreat mining in the North Barrier. The final report, dated April 18, 2007, describes LaModel results for retreat mining in the South Barrier.

The NIOSH evaluation focused on two main areas:

- Values of input parameters used in the models, and;
- Interpretation of the results

As a numerical model, LaModel requires many more input parameters than does ARMPS. These include:

- The stiffness and lamination thickness of the overburden;
- The stiffness of the gob, and;
- The strength and post-yield properties of the coal.

The first two of these affect how the abutment loads are distributed, while the third controls the ability of the coal to carry those loads.

Prof. Heasley, the developer of LaModel, has included default values for these parameters in the “Coal Wizard” and “Gob Wizard” that are incorporated into the program. The coal properties in particular are linked to the coal strength parameters used in ARMPS. These include an “in situ coal strength” of 900 psi, which is the value that was assumed for all the case histories within the NIOSH case history data base. Coal strength has been the subject of controversy for many years, but a comprehensive NIOSH study completed in 1996 showed that ARMPS was much more reliable when a uniform coal strength was used for all seams than it was when seam-specific coal strength values were obtained from laboratory tests.

In their LaModel analyses, AAI employed an in-situ coal strength of 1,640 psi, a value almost twice as great as the LaModel default of 900 psi. It is not clear from the AAI reports how this value was determined. AAI has conducted at least four prior modeling studies at Crandall Canyon mine going back to 1996 (see the footnotes to page 3 of the July 20, 2006 AAI report), and those studies may be the source of the strength value. Since the pillar strength in LaModel is directly proportional to the in situ coal strength, using the 1,640 psi value greatly increases the pillars' load bearing capacity in the model compared to the default coal strength of 900 psi.

AAI used elastic elements when modeling the remnant barrier pillars, according to information available to NIOSH. Elastic elements do not yield at any load, and the model results show unrealistically high stresses in excess of 30,000 psi developing near the edges of the remnant barrier pillars (figure 10, July 20 2006 AAI report).

The high strength of the coal elements employed in the AAI models means that very little load transfer takes place within the models. The same figure 10 cited above shows that the abutment load from the longwall gobs is almost entirely dissipated within 100 ft of the gob edge, leading AAI to conclude that "stress conditions are expected to be controlled by the depth of cover and not by the abutment loads." Within the panels, the AAI models indicate that even yielded pillars carry very high loads. For example, on page 6 of the April 18, 2007 report, a half-extracted pillar within the North Barrier is shown as almost entirely "yielded." Yet the figure on page 5 (reproduced here as figure 10) seems to show that the same remnant is carrying stresses approaching 10,000 psi!

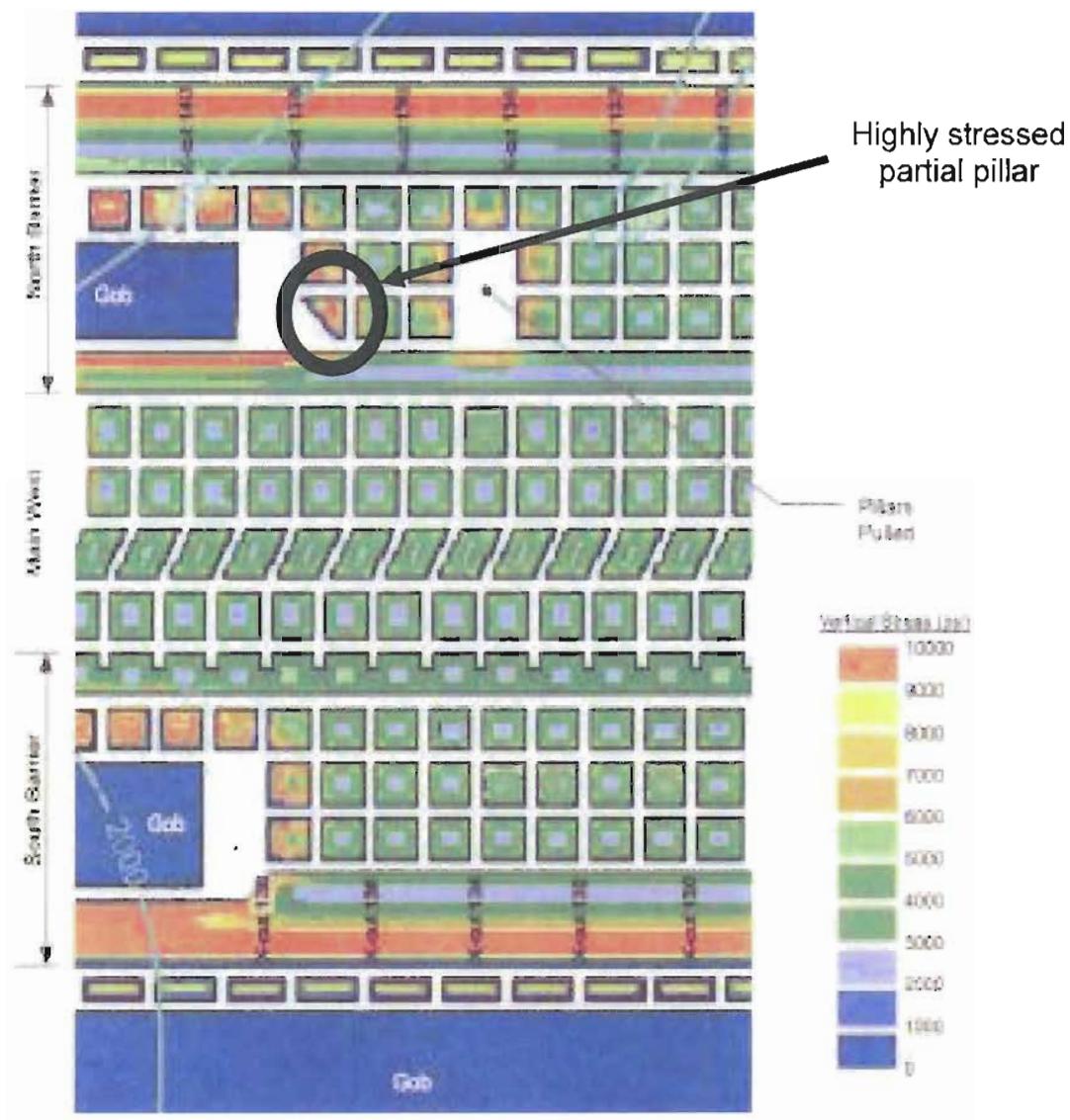


Figure 10. LaModel result shown on page 5 of the AAI report dated April 18, 2007, showing a very highly stressed, partially extracted pillar.

These model results are certainly very different from the empirical rules-of-thumb that have been derived from numerous studies and observations. For example, the standard empirical abutment load distribution formula indicates that more than 400 ft of coal would be required to fully dissipate an abutment load under 2,000 ft of cover.

In the initial report, AAI focused on the “convergence” observed in the model to predict whether mining conditions would be acceptable. Based on analysis of a nearby, historical pillaring area, they concluded that “2.0 inches of convergence is considered an indicator of potential roof and rib instability in the model.” It appears that, prior to the bump in March 2007, AAI was using the model mainly to predict areas of “local stability” rather than pillar failure.

The final, 2007 report, does not mention convergence, however. Instead, it correlates “significant yielding,” “high stress conditions,” and “overloading” observed in the model with potential bump conditions. Longer pillars are judged to reduce risk because they will “help isolate bumps to the face.” There is a conspicuous lack of a specific, quantitative design criterion, however.

The AAI LaModel analysis suffered from two limitations. First, without conducting extensive in mine stress measurements or stress mapping, there was no way to confirm whether the distribution of stresses within the model accurately reflected the true situation underground. Second, even if the model’s predicted stress and convergence were known to be correct, it might still be difficult to correlate either of them with the potential for success or failure of a particular design. The uncertainties associated with rock mass properties and failure mechanics mean that numerical models must be firmly tethered to past experience if they are to be used to design mine layouts.

NIOSH Preliminary LaModel Analyses of Crandall Canyon

NIOSH has prepared a LaModel grid based on the geometry shown in figure 9. Models have been run to illustrate the effect of changing the coal strength on the results. LaModel provides cross-section plots of the “pillar strain SF,” which is a measure of pillar stability but is not directly comparable to the ARMPS SF. Figure 11 shows that when 1,640 psi is used for the in situ coal strength, none of the pillars in the South Barrier have yielded, and in fact they seem to be maintaining pillar strain SFs that are above 1.5. Reducing the in situ coal strength to 1,250 psi reduces the pillar strain SFs to approximately 1.0, which might be considered marginally stable. When the default value of 900 psi is used, all the pillars in the West Mains fail, and a portion of their load is transferred to the South Barrier development pillars. The calculated pillar strain SFs for the pillars in the South Barrier are all below 0.5, and are indicative of significant distress. Clearly the value selected for the in situ coal strength has a very large effect on the model results.

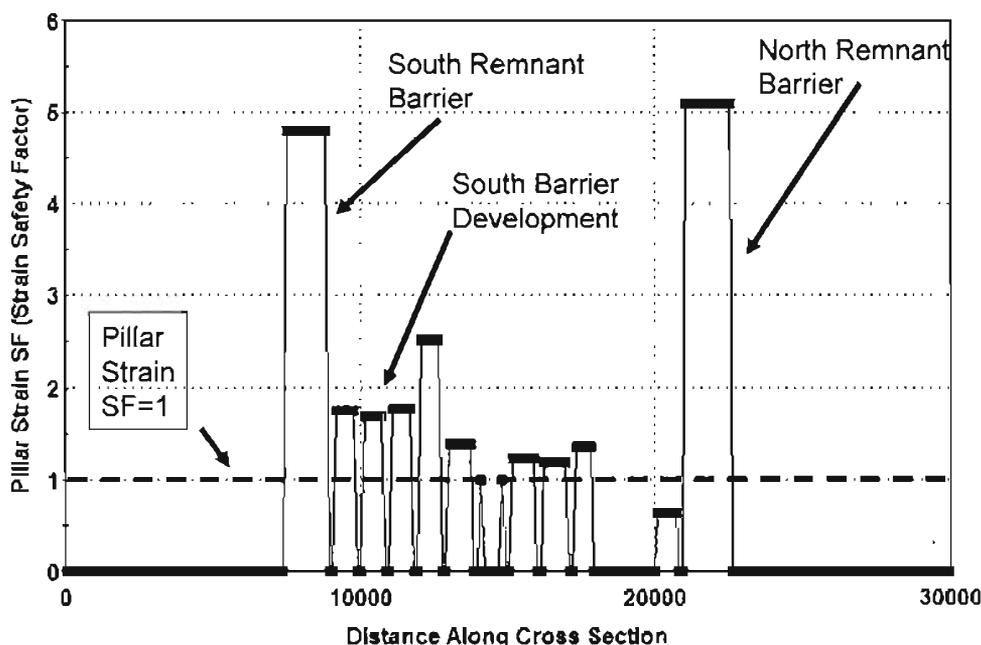


Figure 11. LaModel results with an in situ coal strength of 1,640 psi. Only one pillar has a LaModel pillar strain SF less than 1.0.

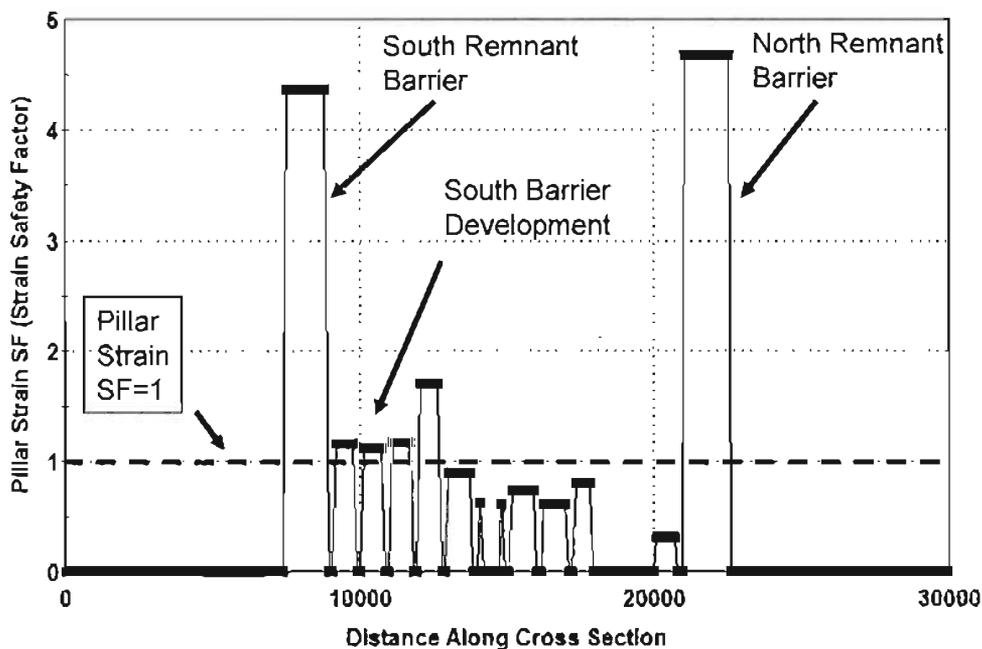


Figure 12. LaModel results with an in situ coal strength of 1,250 psi. Most pillars have LaModel pillar strain SFs of approximately 1.0.

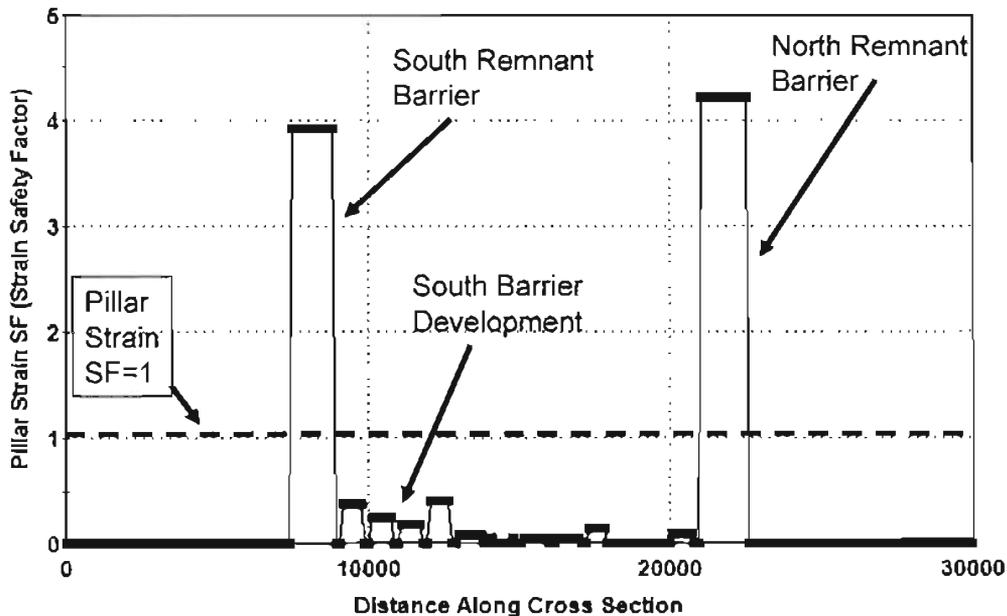


Figure 13. LaModel results using the default in situ coal strength of 900 psi. Most pillars have LaModel pillar strain SFs that are well below 1.0.

Summary

The NIOSH analysis using the ARMPS program indicates that an elevated risk of bumps was present in the Crandall Canyon West Mains area, due to the deep cover and the low barrier pillar stability factors (BPSF) of the remnant barrier pillars. Table 2 shows that the (BPSF) and the pillar stability factors (SF) at Crandall Canyon were significantly lower than the values that NIOSH has published⁴. The NIOSH findings and suggested stability factors are based on its study of retreat mining experience at nearly 30 deep-cover room-and-pillar coal mines.

Table 2. Summary of stability factors

Pillars Evaluated	Figure	Crandall Canyon ARMPS Pillar SF	NIOSH Suggested Minimum SF	Crandall Canyon Barrier Pillar SF	NIOSH Suggested Minimum SF
West Mains	6	0.93	0.8	4.40	2.0
North Barrier Development	7	0.46	0.8	0.95	2.0
North Barrier Retreat	8	0.32	0.8	0.95	2.0
South Barrier Development	9	0.52	0.8	0.91	2.0
South Barrier Development*	9	0.35	0.8	0.91**	2.0

*Assumes failure of Main West pillars

**For the 50 ft barrier between the West Mains and the South Barrier Development

The consultants employed to evaluate the pillar designs at Crandall Canyon placed their primary reliance on the numerical model LaModel, according to the information available to NIOSH. LaModel's results can be highly sensitive to changes in the material properties, particularly the coal strength. In addition, there are no universal guidelines for relating the output from LaModel to predicted mining conditions underground. For a numerical model to be useful for engineering

⁴ Chase FE, Mark C, Heasley KA [2002]. Deep Cover Pillar Extraction in the US. Proc. 21st Intl. Conf on Ground Control in Mining, Morgantown, WV, pp. 68-80.

design, it must provide a reasonably accurate representation of the stress distribution in the mine. Moreover, the ability to rely solely on the results of numerical modeling in mining applications can depend upon the accurate selection of material properties and the interpretation of the model's results. The uncertainties associated with rock mass properties and failure mechanics underscore the value of incorporating case histories and other past experience into the numerical modeling process, and into the design of mine layouts.

Exhibit 6

February 7th 2007

UNSAFE BEHAVIOR:

With the current unpredictable rolling out rib conditions we are experiencing in Main West, an unsafe behavior observed at times of servicing or performing mechanical repairs on face equipment near the face or in past the last open cross cut area.

This is where most of these large roll outs occur. Servicing equipment in these areas should take a little more precautions. With having ventilation curtains covering possible hazardous rib conditions and causing blind spots, along with exposure on the off operator side of the C/M to a possible hazardous struck by, or possible pinch point condition.

WHY WAS IT DONE THIS WAY?:

Most all mechanics are carrying a Ped light only. This makes having the option of moving the C/M manually back to the last open cross cut or back to an area where the rib conditions are safer. The time of removing covers and hooking up to umbilical or manually takes a little extra time and our time is very limited to complete section servicing, therefore unnecessary risks have sometimes been taken.

SUGGESTED CORRECTIONS:

The option my partner and I have taken on, is I found and rebuilt a spare pto light that was not in use and on day shift when the known task of servicing all section equipment in the allocated two hour window is to bring in two lights, the ped and the pto. This makes it very quick to set up back in the last open or back near the last open where the rib conditions are much safer at the present mining conditions.

The only problem with having two lights now is that a lot of times the pto light will be taken by other shifts or operators, and therefore is not always available. When this occurs the time to connect to umbilical or manually should be taken to ensure working back in the last open or back around safer rib conditions. It would also save a little time and would be helpful if the night shift C/M operator took this into consideration when parking the equipment, because the operator's know better than anyone of the present and current conditions.

Respectfully your,
Mechanics

2MSHA14011

UEICONG000021325

Exhibit 7

3-6-07 DAYS

* MAIN WEST - STARTED DAY WITH A MEETING WITH BRUCE HILL, SLOW START MINING, HAD TO DO A SPLICE ON #3 - BELT, CHECKED SPLICES ON #4 - BELT, RAN ABOUT 20 CARS, THEN #5 BELT WENT DOWN, TORE A STRIP OUT 12" WIDE BY 150' LONG PLUGGED UP TAILPIECE, REPLACED THE BELT, SHOVELLED AT DRIVE & TAILPIECE, TOOK OUT RETURN STOPPING AND SET A BUNCH OF TIMBER FOR BREAKER ROWS, DRAG BELT FROM LAST MOVE OUT OF #1 - ROADWAY DOWN TO WINDER

* OUTBY - CLEARED BOOKS, SHOVELLED ON #5 - BELT, LOADED TITANIC ON TRUCK & SHIPPED OFF

3 7 07 Graveyard

Kerry Allred - Vac.

Main West Slow start. Finished with timbers-breaker rows in return. Rebuilt stoppage. Brought pod duster up & set up at return stopping & got it dusting. Finished pulling belt entry pillar and moved everything over to #1 entry. Bouncing real hard on occasion. Smacked little Carlos up aside of the head with a pretty good chunk. Had a pretty good run for such a slow start. Had cable splice on 12-11 S.C. at end of shift.

Gen Mine Pre-shifted twice. Tended silo belt. Gathered a trailer load of loose timber & hauled into Main West. Ran 1" water hose from where tailpiece will be on upcoming move up to where it is now. Water shut off valve for this time is at 121.

Exhibit 8

Inspection Report - IE/PV

Printed On: 3/5/2007

Period 2007-Q1

Inspection Number: SWF121406

Mine Name: Genwal
Mine Owner: Andalex/IPA
Inspector: Steve Falk SWF
Operator: Genwal
Operator Rep:

Fiscal Year: 2007
Period Type: Quarterly
Period End Date: ~~3/31/2007~~ 12/31/06
Active Faces: 1
Accompanied By:
Finalize Date: 3/5/2007

Remarks: On Thursday, December 14, 2006, I (Stephen Falk) inspected the Crandall Canyon Mine. The owner/lessee is 50/50 percent Andalex Resources and Intermountain Power Agency. Tom Hurst, Mining Engineer for Andalex was my company rep.

The sale of Andalex is complete to Bob Murray's Utah American. They are going to keep the Andalex, Genwal and West Ridge names and companies, who will be subsidiaries of Utah American. A lot of changes have happened. The longwall in South Crandall was halted in mid-August and haul over to West Ridge. The machine will be used on the first panel on the north-west side. This longwall machine has the ability to mine 5.5 feet of coal and the start up face at West Ridge is quite low. The development section was also removed and sent to various other Utah American mines. Mine plan change was submitted to us and we oked the withdraw of the longwall but asked Andalex to update the R2P2 with timing or give more information to justify deletion of all recoverable reserves. Genwal will come in with a new plan for mining much further down the road. So right now Genwal is down to one section. This section finished pulling the South Mains pillars and is now mining out west parallel to Main West in the north barrier. All the other crews have been moved to other operations. South Crandall Mine is idled but is ventilated and maintained.

The one mining section was visited. Conditions were noted and spot measurements were taken of the section workings. These measurements will be compared with the submitted monthly production maps to verify volumes for monthly production verification. These spot measurements are shown on the attached maps to this report and will be transferred to the monthly production maps. Genwal is mining according to the approved mine plan and no incidents of non-compliance were noted. The section visited follows below:

Main West North Barrier, Hiawatha Seam, Crandall Canyon Mine, Federal Coal Lease UTU-68082

Genwal finished up the pillars in South Mains in October. The crew went right to work setting up the section to drive entries in the north barrier of Main West. The crew notched off 3 crosscuts north off of Main West at crosscuts 108, 109 and 110. The first crosscut north is 80 feet center to center. From there, they have mined 3 entries west on 92 entry centers and 80 foot crosscut centers. The original barrier north from Main West up to old longwall panel #12 (1st West headgate) was 450 feet. The new 3 entries in the barrier now would leave a 130 foot barrier to the north gob. They connected up with Main West in each crosscut from 108 through 118. Beyond 118, Genwal just drove the three entries out west without connecting up with the crosscuts to Main West. This was due to the seals erected just inby crosscut 118. If they connected up with Main West inby the seals, they would have to reestablish ventilation through all of Main West. They are now out to crosscut 129. The top or north entry (#4) is the return, # 3 the belt and 2 and 1 the intakes. Coal height is running 9 to 10 feet with the floor in coal of a foot and in pretty good shape. The roof has some laminated top in some areas. Mining height is running about 8 feet. Production is coming from two shifts a day but is running all seven days a week. Tonnages are getting close to 50,000 tons a month. Genwal is going to try and mine all the way out to the fault and then try and get approval to pull back some if not all three pillars. Measurements are shown on the attached map.

Leases

Lease Number	Lessee	Assignee	Status
ROW-UTU-6683			Terminated
ROW-UTU-7797			Producing
SL-062648	Intermountain Power Agency &	Genwal	Active Mine Works
State ML-21568			Producing

Monday, March 05, 2007

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State ML-21569

Active Mine Works

U-54762

Andalex

Genwal

Active Mine Works

UTU-68082

Andalex

Genwal

Producing

UTU-78953

Andalex

Genwal

Producing

Was approved plan reviewed?

Yes

Was I&E plan reviewed?

Was PV plan reviewed?

Was previous inspection reviewed?

Yes

Was mine status reviewed with MSHA?

No

Was approved plan followed?

Yes

Was a noncompliance encountered?

No

Was an undesirable event encountered?

No

Was the reported production acceptable?

Yes

Close Out Discussion:

This section is mining coal that was not considered minable in the previous plan as Main West was taking weight from both side gobs and Andalex prior to Utah American sealed up Main West at crosscut 118 back in late 2004. Told Tom Hurst that BLM is pleased to have them try for coal that was thought unminable but I warned them to beware of the depth above the ridge and mining a barrier pillar that has been sitting for a number of years. Pulling pillars will be interesting if even MSHA will ok a ventilation and roof control plan for the section.

subrptImages

Inspection Report - IE/PV

Printed On: 7/12/2007
Period: 2007-Q2
Period End Date: ~~6/30/2007~~ 3/31/07

Inspection Number: SWF022707

Mine Name: Genwal
Mine Owner: Andalex/IPA
Inspector: Steve Falk *SWF*
Operator: Genwal
Operator Rep:
Fiscal Year: 2007
Period Type: Quarterly
Active Faces: 1
Accompanied By:
Finalize Date: 7/12/2007

Remarks: On Tuesday, February 27, 2007, I (Stephen Falk) inspected the Crandall Canyon Mine, operated by Genwal Coal Company, a subsidiary of UtahAmerican Energy, Inc.. UtahAmerican is a 50 % owner along with Intermountain Power Agency, of the property and lessee of record. Tom Hurst, Senior Mine Engineer, was my company rep.

Just one section is at this mine and personnel are being transferred to other UtahAmerican mines. The section is in the north barrier to Main West. Very little of the coal remains. This section is trying to pull all the remnant coal in the Main West area. Besides the west main pillars and barriers, the only other coal blocks remaining is in the 2nd North area and only if they can mine 5 to 6 feet of clean coal and keep production rates up with one miner section. South Crandall Mine is idled but is ventilated and inspected. Total personnel is down to about 60. The one section is run on a 4 day 10 hour shift with 2 shifts going and a overlapping maintenance shift. Then they have one super weekend shift of 3 day 12 hours. But it seems that Genwal will just finish out with this one section until Lila Canyon comes on line.

The one mining section was visited. Conditions were noted and spot measurements were taken of the section working faces. These measurements will be compared with the submitted monthly production maps to verify volumes from monthly production verification. These spot measurements are shown on the attached maps to this report and will be transferred to the monthly production maps. Genwal is mining according to the approved mine plan and no incidents of non-compliance were noted. The section visited follows below:

North Barrier Section, West Mains, Hiawatha Seam, Federal Lease UTU-68082

This section finished driving 4 entries on 92 foot entry centers and 80 foot crosscut centers. These were driven in the north barrier pillar between Main West and mined out longwall panel # 12. The barrier pillar is 450 foot wide which accommodates the 4 entries. This leaves only 130 foot barrier to the north longwall panel. This section started out back at Main West crosscuts 108 - 110 and drove out to crosscut 158. Here the section starts to dip down to the west before the Joe's Valley Fault. At this place, the section experienced large inflows of water. They could not control it enough with pumps. We think this is water flowing through fractures close to the fault, draining the gob to the north. Crosscut 158 is about 400 feet short of the bleeder entries along the fault. With the water coming in too fast, the company stopped advance at this point and began pulling pillars back. **They got a special pillar plan approved by MSHA to pull the south two of three pillars and have the return out the north most entry.** So far, the crews have pulled 18 pillars or 9 rows. Currently they are pulling the pillars between crosscut 149 and 150. **I have been concerned about pulling pillars in this environment with mining a narrow block with little coal barriers to mined out blocks on both sides.** Fortunately, the beginning depth on the west end toward the Joe's Valley Fault is somewhat shallow starting at 1300 feet. So far no inordinate pillar stresses have been noted, **though thing should get interesting soon.** The face is under 1600 feet of cover now and will increase to over 2000 feet by crosscut 139. The working face looks ok and coal is good. There is some cap rock in the roof that is not holding up during mining. Coal height is running about 9 feet. The rate of retreat mining is well ahead of water build up as the seam has a incline down to the west fault starting with pillar row 144, so the water is running down to the end of the entries. Measurements are noted on the attached map.

Leases

Lease Number	Lessee	Assignee	Status
ROW-UTU-6683			Terminated
ROW-UTU-7797			Terminated
SL-062648	Intermountain Power Agency &	Genwal	Active Mine Works
State ML-21568			Producing

Thursday, July 12, 2007

Page 1 of 2

U-54762	Andalex	Genwal	Active Mine Works
UTU-68082	Andalex	Genwal	Producing
UTU-78953	Andalex	Genwal	Producing

Was approved plan reviewed? Yes
Was I&E plan reviewed?
Was PV plan reviewed?
Was previous inspection reviewed? Yes
Was mine status reviewed with MSHA? No
Was approved plan followed? Yes
Was a noncompliance encountered? No
Was an undesirable event encountered? No
Was the reported production acceptable? Yes

subrptImages

Exhibit 9

Crandall Canyon (6-5-07)

In an ongoing effort to improve the production at the Crandall Mine while maintaining a compliant and safe operation, there are several problems and possible solutions that need to be looked at. Our biggest limiting factor is manpower. It is very well understood that a single unit mine is very difficult to stay competitive. While at first glance, the amount of manpower already here at Crandall may seem excessive for a single unit mine, and the possibility of additional people even more so. We need to look at the unique situation Crandall is operating under and some of the trends we are seeing due to manpower issues.

We have recently had 3 time studies that have been a good tool to identify some obvious problems. We need some additional time studies (which are already requested) to get a better “overall” look at what is happening. While all of the time studies show a significant amount of time waiting on shuttle cars. What they do not show is that much of the time they were cutting the only face that was bolted. So if two cars were utilized the delay is now shown on the bolter. With the staffing right now, the supervisors are constantly balancing where the people are placed to best maximize the situation.

Crandall is a very old mine with extensive old works and areas that need regular attention. This is far from a punch mine with limited reserves and workings. We are currently developing in a longwall barrier with cover in excess of 2,000'. The daily routine of mining coal consists of more clean-up and dusting than usual, due to the constant bumping and sloughing of the ribs along with additional bolting. We would like to take care of this without taking away from the actual production. Unfortunately, this is not possible because everyone that is in the section is already running a piece of equipment related to mining in the face. It is becoming more and more common to have to shut down production to take care of compliance issues. Most of these issues are in the face area or the immediate outby area. We are seeing on an average of 8 hours a week directly linked to cleaning and dusting and another 8 hours where we run one car while we take care of this. This is on top of the 2 hours a day the mechanic is not in the section when they are mining coal. The mechanics start two hours early to service equipment and do small repairs during the short window of down time. Shutting down the production is a problem, allowing things to get to the point that it constitutes shutting down to be in compliance is a bigger problem. This is a direct result of not having the people to take care of it while we are producing coal. The addition of one faceman on each shift, (highlighted in purple on the proposed manpower sheet) would virtually eliminate this. As the latest time study on the 17th showed we lose about 20% of our loading time when the miner operator and car drivers have to set up their own face. When the 3 time study's have shown that an average of only 15.5% of the time is spent loading, a possibility of increasing even a portion of the 20% lost on mining time, it would greatly increase our tonnage.

If everyone is in their respective position we have 2 bolter operators, 2 shuttle car operators, a miner operator and a mechanic. When the mechanic is not available we are forced to either run one car or run 2 cars and have the mining crew set up their own faces. Either scenario costs us tonnage.

In reality the mechanic is only available to be the faceman about 40% of the time. During the 60% of the time the faceman job is not being taken care of by the mechanic,

the options are to run one car or have the miner and shuttle car operators set up faces. Neither is a productive alternative. I have shown what the time study shows on setting up the faces. The running of one car is even worse. Between the 2 time studies we lost an average of 32.5% of the time waiting on a shuttle car. Again, we averaged 15.5% of the time actually loading, so adding even part of this time is a substantial gain in production. We averaged [redacted] tons of coal per minute of run time, by gaining even 20 minutes a shift of load time we could increase the tonnage by [redacted] tons a shift. With an average income of [redacted] a ton that is [redacted] a shift or [redacted] a day.

We currently have 2 outby mechanics. This is total, one mechanic on 2 of the 4 shifts/rotations. So there are 2 shifts/rotations that do not have an outby mechanic. This leaves the mechanic in the section on his own for most breakdowns along with his faceman duties. There are 422 different items throughout the mine that need either a weekly, monthly or both check done on them. The maintenance department is simply spread too thin to take care of the permissibility that and take care of the faceman job as well. Our equipment is showing the signs of the lack of attention, the section is also showing the signs of the lack of attention. Consequently our production is suffering because of it.

The people assigned to the outby are being used in the section when possible, at least one person 20% of the time. We have a big infrastructure that takes time and manpower to maintain. The pre-shifting alone takes 3 people 3 hours on day shift and 3 people 6 hours on the night shift to complete. It is a constant juggle of people to fill priorities. Due to the people off on short or long term and normal personal time we have been forced to run at times by using the maintenance foreman and shift foreman to either preshift or operate equipment in order to run at all. This obviously affects the way the mine is maintained. The shift foreman and maintenance foreman are critical positions that cannot be substituted for hourly labor. In fact these two are making [redacted] an hour and are doing a job that could be done by a person making [redacted] an hour. The [redacted] per hour difference in pay is a big difference, yet it is only a fraction of the problem it creates by these men not doing their own job all the time.

As I mentioned above, "if" everyone is in their designated area. The hard truth is that we do not have everyone at work that is scheduled to be there. There are 616 man shifts of vacation and personal time that have not yet been used. With 204 days left in the year, this equates to an average 1.4 people off on each rotation for the remainder of the year in vacation and sick leave. This is not only hurting the production, but the compliance is not being kept at a standard that we should be comfortable with. We also have 4 people on STD or WC. This puts us over 2 people off every shift every day for the rest of the year.

We are keeping 2 bolting machines in the section that could be a big benefit if we had people to run them or maintain them. As it is we have a significant amount of down time waiting on the bolter. If we were staffed different it could give us some options of running either 2 bolters or 2 cars, all of the time. An additional option could even be to utilize a third car in some areas. This is also enabling the mechanic to do pre-maintenance work and keep the equipment in good working order. These options, as well as keeping up on the ever growing compliance issues make it critical for additional people.

A short time ago, we had some serious belt issues. We were able to add 2 belt mechanic people. These 2 people have made a huge difference in our belt availability, directly impacting the amount of coal mined. Unfortunately we waited too long to put them on and it took several weeks of catch up before we were able to see the positive results. We do not want to repeat this mistake.

I am also leery of putting on just a portion of these people. We need enough people to make both an immediate difference, as well as, a long term difference.

Our current manpower is 67 people with 63 of them being active and 4 being on STD or WC. These 4 people are shown in yellow on both the proposal sheet and the current sheet. [REDACTED] is a section foreman who hurt his back. He has made no recovery progress in the 5 weeks he has been off. His return to date, if ever, is months away. [REDACTED] is another back injury. He indicated that his Doctor does not see him ever getting a full release. [REDACTED] went on STD this week for a chronic hand injury. This is the third time he has been off for this. He is pursuing a lawsuit against his Doctor and I do not think he will return this year, if he ever does return. [REDACTED] has been off for two months and is planning to return within 2 weeks.

My proposal would be to increase the manpower to 71 active people at Crandall. This is adding 4 faceman, one per shift. It also has an additional person on one of the 4 shifts on the outby, this makes all the crews equal and is a void that has left us unable to maintain the same tonnage from this crew that the other 3 crews have achieved. The new positions are shown in purple on the proposed sheet.

I reviewed the production and cost numbers for the month of April. In addition, I had accounting help with some scenarios if we were to add 5 people. We produced [REDACTED] tons in the month of April, the total cost per ton was [REDACTED]. Using the same fixed and supply costs plus adding 5 people at a [REDACTED] an hour average rate plus all the benefit factors. We would have to mine an additional [REDACTED] to realize the same cost per ton. My expectation would be to gain [REDACTED] tons, thus putting the possible cost per ton down to [REDACTED] per ton. The spread sheet accounting prepared is attached.

Exhibit 10

Exhibit 11

Longwall mine information:

Mine name	Crandall Canyon
Location	Huntington, Utah.
Owner	Murray Energy
Geology overview	Depth of cover 800' – 2,500' Recoverable reserves ...Mt
Seam	Seam height –Varies from [REDACTED]. Cutting height
Latest production figures	Budget for year (fiscal or calendar) Year to date [REDACTED] tons a year
Date longwall mining started	
Longwall block dimensions	Panel Width: Length:
Shearer	Model Drum diameter: M/G..., T/G ... Installed power:
Roof supports	?-leg chock shield, number: Yield load Working range: ... Control: ...
Face conveyor	Model Width/chain size: Chain speed and manufacturer: Motors
BSL and crusher	Model Crusher: Clearance: conveyor?
Strata Control	Number/type of roof bolts: Spacing:#6 rebar 5' resin grouted bolts. 6 bolts per row.
Development equipment	
Shifts	Daily hours worked: ...24 hours 7 days a week. 12 hour shifts number of employees: ...67

Exhibit 12

REDUCING THE RISK OF GROUND FALLS DURING PILLAR RECOVERY

C. Mark
F. Chase
D. Pappas

Natl. Inst. for Occupatnl. Sfty. & Health
Pittsburgh, PA

ABSTRACT

Pillar recovery has been associated with nearly onethird of roof fall fatalities in underground coal mines during the past decade. Safe pillar recovery requires **global stability** and **local stability**. Global stability is addressed primarily through pillar design. The local stability risk factors include cut sequence, the final pillar stump, supplemental supports (timbers vs. Mobile Roof Supports (MRS)), roof bolting, and many others. The National Institute for Occupational Safety and Health (NIOSH) has evaluated each of these factors through field research and analysis of accident statistics. The paper discusses design methods and technologies that have been transferred to the mining community and implemented.

ACKNOWLEDGMENTS

The authors would like to thank all the Roof Control Specialists and Supervisors from every Mine Safety and Health Administration (MSHA) District for providing information on the current status of pillar recovery in the U.S., and George Karabin and Joe Zelanko of MSHA Technical Support for the BESOL modeling and assistance with fatality report analysis.

INTRODUCTION

During the year 2001, nine roof fall fatalities occurred in the U.S. Of the nine, three occurred during pillar recovery operations.

Unfortunately, 2001 was not an unusual year. A NIOSH report (Mark et al., 1997) found that in 1993 pillar recovery accounted for about 10% of all U.S. underground coal production, but was associated with about 25% of the roof and rib fatalities between 1989-96. During the decade 1992-2001, there were a total of 100 groundfall fatalities (roof and rib) in U.S. coal mines. Of these, 27 occurred during pillar recovery operations.¹ Six of the incidents resulted in

double fatalities.

Pillar recovery creates an inherently unstable situation. Man-made supports cannot carry the full weight of the overburden. The roof at the pillar line is subjected to severe stresses and deformations. The ground will cave in, the only question is when. Safety requires that the roof be kept up until the miners have completed their work and left the area.

A wide variety of mining techniques are used to accomplish pillar recovery. It seems evident that certain pillar recovery techniques, or certain aspects of the pillar recovery process, may be riskier than others. The goal of this paper is to isolate the most significant hazards, or "risk factors," associated with pillar recovery, so that the overall level of risk can be minimized. Risk factors are divided in two main groups:

1. *Global Stability: Prevention of section-wide pillar failure.*
2. *Local Stability: Prevention of roof falls in the working area.*

During the past several years, the regulatory agencies and many mine operators have been very pro-active in implementing new safety technologies to reduce the groundfall risk during pillar recovery. For example, the use of Mobile Roof Supports in the U.S. has increased substantially. However, the purpose of this paper is not to highlight any specific innovation or regulatory action, or to make comparisons between mining regions. Rather, it focuses on the technical ground control aspects of pillar recovery.

PILLAR RECOVERY DEMOGRAPHICS AND ACCIDENT RATES

As part of this study, MSHA Roof Control Specialists and Supervisors from every MSHA District were asked to provide information on pillar recovery practices in each of the mines they inspected. The data included whether the mine extracted pillars, what pillar recovery method they most commonly employed, whether the pushout was recovered, and whether the mine used Mobile Roof Supports.

The information was then linked with the MSHA accident and employment database (MSHA, 2002) for the year 2001 (table 1). In all, retreat information was available on mines that produced 380 million tons underground in the U.S. during 2001. There were 674 room-and-pillar mines (both retreat and non-retreat) in the data base, and they produced 49.6% of the underground tonnage. The Roof

¹These statistics actually underestimate the number of deaths associated with pillar recovery. In two instances, one in Utah and one in West Virginia, miners were killed by shuttle cars as they attempted to flee premature roof collapses. Both fatalities were classified as "machinery" accidents.

Table 1. Demographics of pillar recovery in the US in 2001

Mine Grouping	Summed hours (millions)	Summed tons (millions)	Ground fall	
			Tons/hr	injuries/200 Khrs
Longwall Mines	30.33	191.2	6.31	0.81
Room-and-Pillar, Non-Retreat	12.42	56.1	4.52	1.79
Room-and-Pillar, Retreat	25.99	108.0	4.16	1.60
ALL MINES	74.36 ¹	379.6 ¹	5.10	1.35
Type of Retreat Mining				
Full Pillar Recovery	15.14	68.39	4.52	1.85
Partial Pillar Recovery	6.35	22.15	3.49	1.29
Both Full and Partial	4.49	17.47	3.89	1.20
Cut Sequence				
Left-Right	8.77	41.18	4.70	2.14
Outside Lift	4.90	20.65	4.21	1.10
Other Known	0.84	3.24	3.85	2.61
Pushout Recovery				
Recover Pushout	7.25	33.97	4.69	2.07
Do Not Recover Pushout	14.66	56.14	3.83	1.35
Mobile Roof Supports				
R&P Retreat, With MRS	8.96	42.16	4.71	1.67
R&P Retreat, Without MRS	12.28	46.07	3.75	1.53

¹Totals include contributions from room-and-pillar mines whose retreat status is unknown.

Control Specialists provided data on 524 mines that produced 87% of the room-and-pillar tonnage. Mines that were known to practice pillar recovery accounted for about 108 million tons, or 58% of the total non-longwall production.² Assuming that pillar recovery typically accounts for about one-third of the production at these oom-and-pillar mines, then about 10% of all underground production, or about 20% of all non-longwall production, comes from pillar recovery. It seems that the proportion of pillar recovery production has remained essentially constant over the past decade.

The data also confirm that pillar recovery is most prevalent in the central Appalachian coalfields of southern West Virginia, Virginia, and eastern Kentucky. More than 90% of the coal produced by pillar recovery mines was from this area, with 8% coming from the northern Appalachian coalfields (Pennsylvania, northern West Virginia, and Ohio) and 1% from western mines. Currently, there is essentially no pillar recovery taking place in Indiana, Illinois, western Kentucky, or Alabama.

Between 1992 and 2001, 27% of all groundfall fatalities were associated with about 10% of the underground production. Mathematically, a coal miner on a pillar recovery section was more than 3 times as likely to be fatally injured in a groundfall than a miner on an advancing section.

The 1997 NIOSH report found that the roof/rib nonfatal injury rate was generally lower in pillar recovery mines than in other room-and-pillar mines. In 2001, the retreat mine roof/rib injury rate was 1.60 per 200,000 hours, slightly less than at other room-and-pillar mines where rate was 1.79.

FATALITY REPORTS

Whenever a fatality occurs in a US coal mine, MSHA prepares a detailed report. These reports are an invaluable resource in evaluating the importance of the factors associated with pillar

²Three longwall mines, all located in Southern West Virginia, also engage in pillar recovery using Mobile Roof Supports. Because retreat mining constitutes a relatively small percentage of their total production, they were not included in the analysis.

recovery fatalities. This study began with 21 groundfall fatality reports (20 roof falls and one coal bump) for the 1992-2001 period. Two roof falls were eliminated, both double fatalities, because they involved drill-and-blast mining with an open-ended cut sequence, a technique that is now apparently extinct. The final group therefore included 19 incidents with 23 fatalities.

Figure 1 shows the location and the year each fatality occurred. All but one incident (a double fatality) were in the central Appalachian coalfields, where most retreat mining takes place.

One significant finding was that in nearly half of the pillar recovery incidents, no citations were issued. In another 5 cases, the mine was apparently following the minimum standards set forth in its approved Roof Control Plan, but was cited under 30 CFR 75.202(a) for failing to recognize and control hazardous conditions. Multiple violations, including not following the approved Roof Control Plan, were given in just 5 of the incidents. It seems, therefore, that the large majority of pillar recovery fatalities cannot simply be attributed to egregious violations of the law.

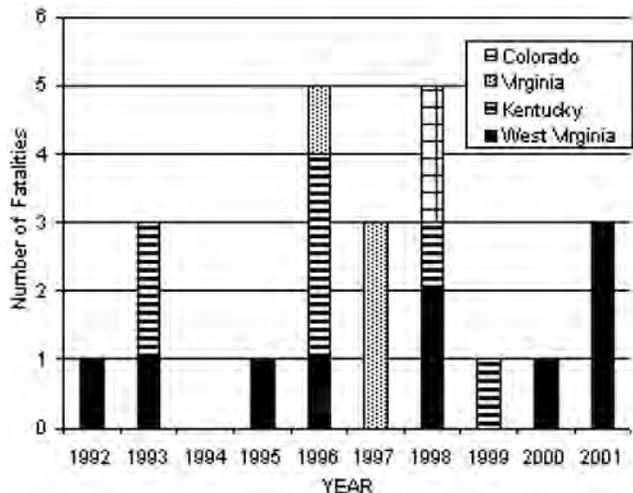


Figure 1. Pillar recovery fatalities, 1992-2001.

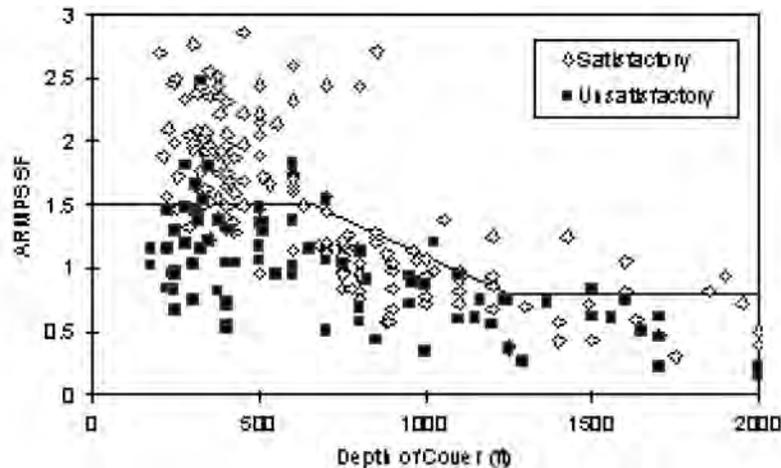


Figure 2. Suggested ARMPF Stability Factors, based on an expanded case history data base.

GLOBAL STABILITY RISK FACTORS

Proper pillar design is the key to ensuring global stability. There are three main types of pillar failure, each of which requires its own approach.

Pillar Squeezes

Squeezes occur when the pillars are too small to carry the loads applied to them. As the loads are gradually transferred, the adjacent pillars in turn fail. The results can include closure of the entries, severe rib spalling, floor heave, and roof failure. The process may take hours or days, and can cause an entire panel to be abandoned.

The Analysis of Retreat Mining Pillar Stability (ARMPF) program can be used to help size pillars to carry both development and abutment loads (Mark and Chase, 1997). ARMPF has been calibrated by back-analysis of hundreds of pillar recovery case histories. The database has recently been expanded to include more deep-cover cases, and new design guidelines have been proposed (figure 2 (Chase et al., 2002)).

Massive Collapses

Massive collapses are pillar failures that take place rapidly and involve large areas. One effect can be a powerful, destructive airblast. Of fourteen massive collapses that have been documented since 1980, all but two have occurred in southern West Virginia. They have caused several injuries but, miraculously, no fatalities.

Data collected at the failure sites indicate that all the massive collapses have occurred where the pillar width-to-height (w/h) ratio was 3.0 or less, and the ARMPF SF was less than 1.5. Such conditions occur most often in workedout areas where pillars have been split. Guidelines for preventing or containing massive collapses have been published (Mark et al., 1997). These guidelines have been largely implemented in southern West Virginia since 1998, and no documented massive collapses have occurred since then.

Pillar Bumps

Bumps occur when highly stressed coal pillars suddenly rupture without warning, sending coal and rock flying with explosive force. A total of 172 incidents are included in the NIOSH coal bump database

that extends back to 1950. The most recent was a double fatality during pillar recovery operations in an eastern Kentucky mine in 1996. Pillar recovery or barrier mining was associated with 50% of the bumps in the nationwide database. Nearly 95% of the bumps occurred at depths greater than 1,000 ft (Iannacchione and Zelanko, 1995).

Research has shown that bumps are much less likely when barrier pillars isolate each new panel from the abutment loads transferred from nearby gob areas. At depths of greater than 1,000 ft, Chase et al. (2002) suggest that properly designed barriers can enhance pillar line stability. Special extraction techniques, such as the thin pillar method, can also be helpful.

LOCAL STABILITY: PRIMARY RISK FACTORS

Global stability is a necessary, but not sufficient, condition for creating a safe working area. Local stability depends on a number of risk factors, of which the following four are most critical.

Cut Sequence

By far the most popular methods of pillar recovery used today are those that require no additional roof bolting during retreat. There are a wide variety of cut sequences employed, under an even wider variety of names. Most can be classified as either "*left-right*," (also called Christmas tree mining or twinning) in which cuts are taken on both sides of the entry, or "*outside lift*," in which cuts are taken on just one side (see figure 3). Plans that require roof bolting are usually used when the pillars are so large that they must be split before they are fully recovered.

The information provided by the MSHA Roof Control Specialists shown in Table 1 indicates that almost two-thirds of the full pillar recovery tonnage is obtained using some type of left-right sequence. Outside lift plans are used for most of the remaining production. Only handful of mines employ split-and-fender or other plans.

From a rock mechanics standpoint, it makes sense to compare the left-right to the outside lift method. Comparing just these two methods, the left-right plan would be expected to be more risky than outside lifts because:

- Wider unsupported spans are mined;
- More time is spent at the same location (to complete both the left and right lifts), and;

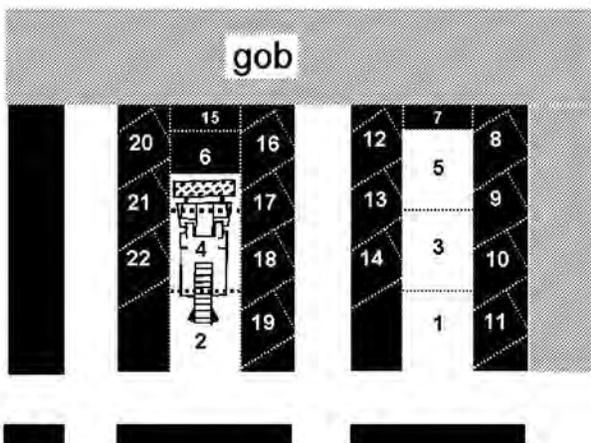
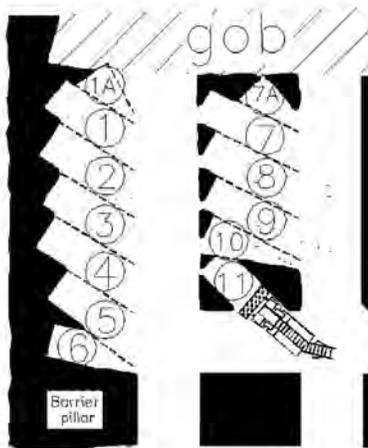
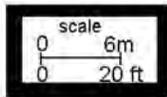
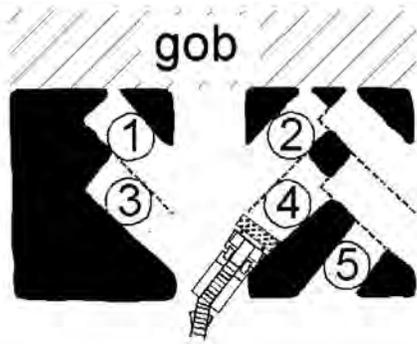


Figure 3. Common cut sequences used in the eastern U.S. Top: Christmas tree. Middle: Outside lift. Bottom: Split-and-Fender.

- The operator of the remote controlled continuous miner (CM) may stand in a non-optimum location for either the left or the right lifts (see section below on “Operator Positioning”).

The basic advantage of the outside lift plan is that the operators always have a solid pillar at their back. It also has some disadvantages, however:

- It can't be used to recover wide pillars without leaving large remnant fenders of coal (and wide pillars may be required to meet global stability requirements in thick seams and/or under deep cover), and;
- It usually employs deeper cuts, making the CM more difficult to extract if it is trapped while extracting a lift by a roof fall or rib roll.

Analysis of the fatality reports seems to indicate that left-right sequences may be slightly more risky than outside lifts. In seven of the fatal incidents, left- and right-hand cuts had been taken. However, in all but two of those incidents, the roof fall occurred during the extraction of the pushout or last lift (see next section). An outside lift sequence was involved in just one incident, also during a last lift. In five other incidents, the fatality occurred during the extraction of the first lift, and might have occurred regardless of the cut sequence. Similarly, two incidents occurred during mining in a barrier pillar, and four involved miners outby the face area.

To provide some further insight into the influence of the cut sequence on ground stability, the boundary element numerical model (BESOL) was used to compare four common pillar recovery plans in an identical mining environment (a 400-ft depth of cover and a 5-ft seam height). The mining methods evaluated were the left-right, split and wing, pocket and fender and outside lift. The particular pillar/opening geometries, cut sequences and timber supports (placed during each cut) used in each model were based on actual plans used by mines in southern West Virginia. More details on the general model geometry and the cut sequences used to simulate each of the pillaring plans can be found in Mark, et al. (2002).

Figure 4 shows convergence contours for each of the four mining methods after roughly one-third of the coal has been extracted. The 0.1-ft convergence level has been highlighted for reference purposes. The convergence data generated represents gross movement of the main roof/floor and higher levels would be indicative of an increased potential for a roof fall.

- *Left-Right (Christmas Tree)* – The 0.1-ft convergence contour extends outby the last cut into the work area of the next cut.
- *Split & Wing* – Because of the substantial yielding of the narrow fenders, the 0.1-ft convergence contour engulfs the entire split and extends well into the intersection outby where the lifts are being taken.
- *Pocket & Fender* – The 0.1-ft contour level engulfs the entire work area and extends down the entry to a point just short of the intersection.
- *Outside Lift* – The 0.1-ft level remains within the last cut taken.

In this particular scenario, the outside lift method appeared most likely to result in stable ground conditions. In general, the models indicate that high stress develops in the fender(s) being mined, that properly sized fenders withstand the stresses developed, and that undersized fenders yield prematurely - allowing gob pressures to override them and cause elevated convergence in the work area.

Final Stump or Pushout

The final pillar stump is a critical element in roof control during pillar recovery. While in place, it helps support the active intersection, which is generally the weakest link because of its wide span. Once the stump is removed, or is made too small to provide support, the

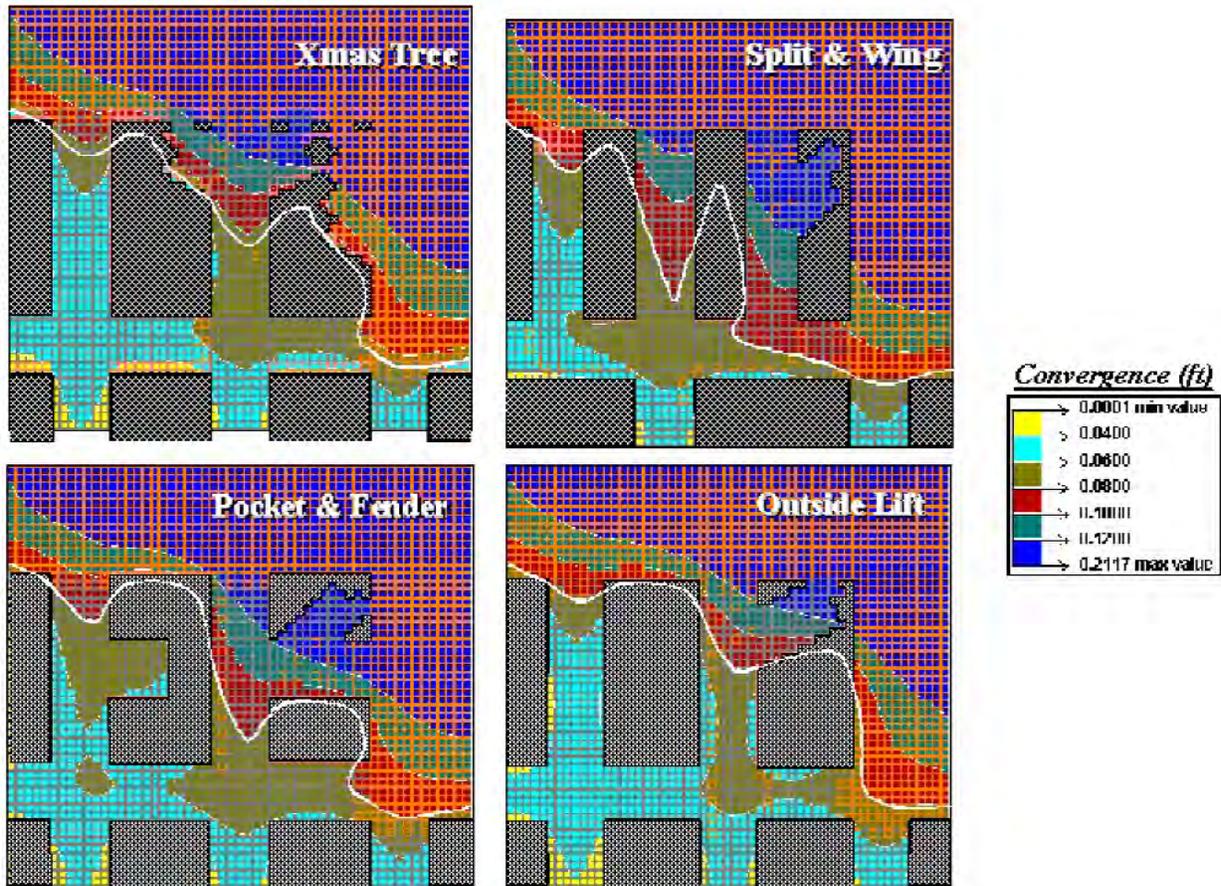


Figure 4. Roof convergence contours after several cuts. The 0.1 ft convergence contour is highlighted in white.

intersection may become unstable, like a chair with one leg removed. The data in Table 1 indicate that today only about one-third of full recovery production comes from mines that attempt to recover the final stump.

Nevertheless, between 1992 and 2001, 6 of the 21 nationwide pillar recovery fatalities, or 28%, occurred during extraction of the final stump or last lift. Since the final lift accounts for less than 28% of the total time required to recover a pillar, even at those operations that mine the pushout, this is clearly a very high-risk activity.

Traditionally, miners have been reluctant to leave the final stump because they were concerned that stumps in the gob would inhibit caving and cause a squeeze. Recent experience seems to indicate that fears about leaving stumps might have been exaggerated. While fewer and fewer mines attempt to recover the pushout, the incidence of squeezes does not seem to have noticeably increased.

In most cases, it appears that the optimum pillar extraction plan may be one that purposely leaves a final stump sized to provide roof

support without inhibiting caving. Guidelines for sizing the final stump were recently published (Mark and Zelanko, 2001), and are summarized in table 2.

In addition to the six fatal incidents that occurred during recovery of the pushout or last lift, in two more cases mining had already come closer to the intersection than recommended by Table 2. In one, a lift had been extracted from the bottom end near the corner, and in the other, the first lift of a 3-cut plan started very near the outby corner of the pillar.

For a stump to perform its function, it must not be cut any smaller than specified. Plans that indicate a set number of lifts can result in undersized stumps if the lift angles or actual pillar dimensions are different than expected. A better practice is to specify the cut-to-corner distance (figure 5). Foremen can use spray paint to mark the stump dimensions on the rib as a guide to the CM operator.

Mobile Roof Supports vs. Timbers

Traditionally, timber posts provided supplemental support for pillar recovery. More than 100 roadway, turn, and breaker posts can be required to extract a single pillar. As supports, timber posts have a number of disadvantages:

Setting posts exposes miners to groundfalls. During the past decade, four miners have been killed while setting posts;

- Posts have a limited load-bearing capacity. A typical 6-in diameter hardwood post can carry about 50 tons, but most actual

Seam Height (ft)	Stump size (ft)*
4	8.5
6	9.5
8	10
12	10.5

*Cut-to-corner distance (see figure 5).

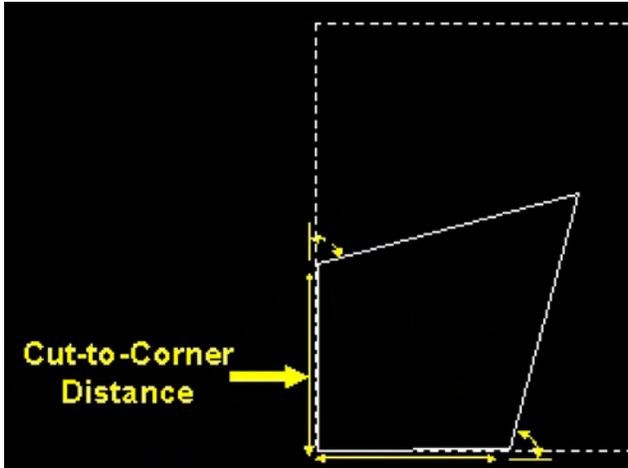


Figure 5. Cut-to-corner distances for the final stump.

posts have flaws and are even weaker;

- They have limited convergence range. Wood posts can break after only 1 or 2 in of roof-to-floor convergence, and their post-failure strength is almost nil, and;
- Their weight and bulk result in material handling injuries, particularly in high coal.

For all of these reasons, both MSHA and NIOSH have advocated the use of Mobile Roof Supports (MRS) for pillar recovery. MRS are shield-type support units mounted on crawler tracks (figure 7). They were first employed in West Virginia in 1988, and more than 100 units were in use in the U.S. by 1997 (Chase et al, 1997). The advantages of MRS are that they:

- Are operated remotely, at some distance from the pillar line;
- Have a support capacity of 600 or 800 tons per unit, and are employed in pairs or sets of four;
- Can maintain their load even if the roof moves downward more than a ft, and;
- Eliminate most material handling.

Two disadvantages are their cost and the resulting necessity to recover them if they are trapped by a rock fall.

The statistics now seem to justify the enthusiasm for MRS. In the past 10 years, only three of the 23 pillar recovery fatalities occurred where MRS were being used³. Table 1 indicates that in 2001, MRS mines accounted for about 40% of all the worker hours in full-recovery room-and-pillar mines. Extrapolating backward, a conservative assumption is that perhaps 25% of the pillar recovery worker hours between 1992-2001 were on MRS sections.

Using these data, it appears that a miner on a timber section has been about twice as likely to be fatally injured than a miner protected by MRS. Using MRS can be a highly effective means of reducing the risk of pillar recovery. However, they must be employed properly (Chase et al., 1997). The pillaring plan should show the proper location for every MRS during each lift, and the plan should be

³The MRS were only implicated in the fatality in one of these instances. In the other two cases, broken roof bolts were considered the primary cause.



Figure 6. A Mobile Roof Support.

followed carefully. If the pushout is recovered, four MRS should be used, and at least two of them should be located directly in the intersection. MRS should always be moved in pairs, one canopy length at a time, so that they can support each other.

One disadvantage of MRS is that their operating range is usually limited to seams thicker than approximately 42 in. Figure 7 shows that in southern West Virginia, the vast majority of mines in seams thicker than 52 in already use MRS. But of the 54 mines who reported a seam height of 52 in or less, only 7 were using MRS. In these thin seam mines, a timber plan that requires an adequate number of posts installed at the proper times and in the proper locations is essential.

Roof Bolting

The failure of roof bolt systems has been a major factor in nearly a third of recent pillaring roof fall fatalities, including:

- Broken roof bolts, sheared by roof movement, were found in

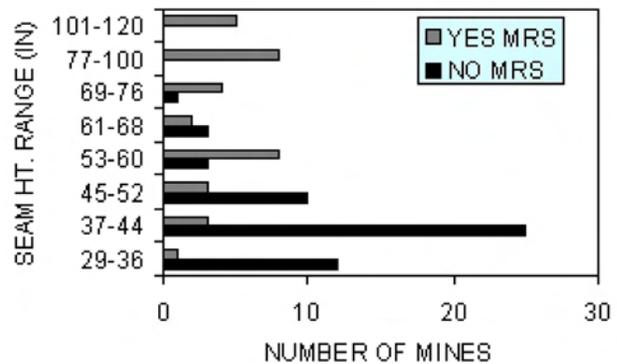


Figure 7. Distribution of MRS by seam height in southern West Virginia.

three incidents;

- *Missing heads and plates, cut off by the CM, were found in two incidents, and;*
- *Bolts were too short and missed their normal anchorage in sandstone when the underlying shale thickened in one incident.*

In four other incidents, the bolts were less than 48 in long.

Longwall mine operators recognize that headgate and tailgate entries will be subjected to abutment loads during retreat mining, and will therefore require extra roof bolts. Unfortunately, pillar recovery panels have sometimes been considered “short term,” and therefore candidates for a lower density of roof support. In fact, increasing the roof bolt support in many cases can be the simplest way to reduce the risk of roof falls during pillar recovery.

More fundamentally, roof bolts are usually the only overhead protection miners have during pillar recovery. Mobile Roof Supports do not provide full roof coverage the way longwall shields do. Yet in all but one incident during the past decade, the pillar recovery fatalities have occurred when the victims were beneath bolted roof.

There is no widely accepted method for designing roof bolt patterns for retreat mining, though the Analysis of Roof Bolt Systems (ARBS) method can be a good starting point (Mark, 2002). In general, depending on the roof strata and other factors, the effectiveness of roof bolt systems for pillaring can be improved by using:

- *Longer bolts that build a thicker beam or anchor in better quality roof;*
- *Stronger bolts, using larger diameter rod or higher grade steel, that are less likely to break from rock movement,*
- *Extra intersection support such as cable bolts, and;*
- *Point anchor resin-assisted bolts that can provide warning of high loads (while fully grouted bolts may break along their lengths without warning).*

Another advantage of supplemental roof bolt support for pillar recovery is that bolts can be installed well out by the pillar line, before the ground is affected by the high stress environment.

OTHER RISK FACTORS

Roof Geology

Weak rocks like shale, mudstone, and coal, are more likely to be fractured and damaged by abutment stresses on the pillar line. Eight of the 19 fatal pillar recovery incidents occurred where the roof was either shale or drawrock beneath sandstone. Geologic discontinuities, such as slips, slickensides, horsebacks, contributed to four more pillar line fatalities.

Weak or fractured roof normally requires a higher level of roof bolting. Leaving a final stump for roof support is also more critical where the roof is weak. Every effort should be made to identify major discontinuities before mining and apply supplemental support. It may be necessary in some cases to avoid pillaring certain areas where hazardous roof features are known or suspected. In more than one-third of the fatal incidents, the reports indicated that poor conditions were observed in the area before the fatality occurred.

Intersection Span

Intersections are the Achilles heel of coal mine ground control. Research has shown that an intersection is 8-10 times more likely to collapse than an equivalent length of entry or crosscut. Even a seemingly small increase in the intersection span can greatly reduce stability, because the rock load is proportional to the *cube* of the span (Molinda et al., 1998). Intersection hazards are most acute where the

roof is weak.

Nearly half of the fatal incidents in the data base involved intersection falls. Three more took place in the wide places that are created when lifts are turned.

Maintaining stable intersections is essential to safe pillar recovery. This can be accomplished by:

- Minimizing the entry width;
- Reducing the number and depth of turnouts during development;
- Using longer, stronger bolts in the intersections;
- Leaving an adequate final stump, and;
- Installing extra standing support (MRS or roadway posts) in the intersection if the final stump is extracted.

Depth of Cover

Greater depth means higher stress, both vertical and horizontal. During the past decade, approximately 30% of the pillar recovery fatalities have occurred in the relatively small number of mines where the depth of cover exceeds 750 ft. It seems that because global stability is harder to achieve at depth, the roof is more likely to be unstable. Proper pillar design is critical to successful mining at deep cover, but deep cover also magnifies the importance of all the other risk factors.

Multiple Seam Interactions

Many U.S. coal reserves, particularly in the Central Appalachian coalfields, occur where previous mining has been conducted above or below. Localized high stress zones can occur either above or below old works, and subsidence can damage the roof hundreds of feet above abandoned gob areas. In recent years, at least three pillar line fatalities appear to have been influenced by multiple seam interactions. Zones of potential interactions should be carefully mapped in the planning stage, and pillar recovery should be avoided where severe interactions are anticipated.

Recovery of Older Pillars

In many mines, pillars in old workings constitute substantial coal reserves. Such pillars can present an attractive target for extraction. Unfortunately, in many cases those workings were not designed with pillar recovery in mind. The pillar dimensions may be inappropriate or irregular, and entry and intersection spans may be too wide. Most importantly, the roof bolting may be inadequate, and the roof rock may have degraded over time. The age of the workings may have been a factor in at least three of the last decade's fatalities. Supplemental bolting is often required, particularly in intersections, to prepare old works for pillar recovery.

Non-Uniform Pillar Dimensions

Pillar recovery is safest when a routine can be developed and strictly followed. Developing panels with uniformly sized pillars, which facilitates a controlled and orderly extraction procedure, is strongly recommended. Where pillars are different sizes, whether by design or because of poor mining practice, “improvisation” is often necessary. In such cases, plans that call for a fixed number of lifts can result in a final stump that is too small. Requiring specific minimum cut-to-corner distances can help ensure that a properly sized final stump is left in place.

Odd-sized pillars can also result in oversized intersection spans. Pre-mining surveys should be completed to identify such hazards, and resupport may be necessary.

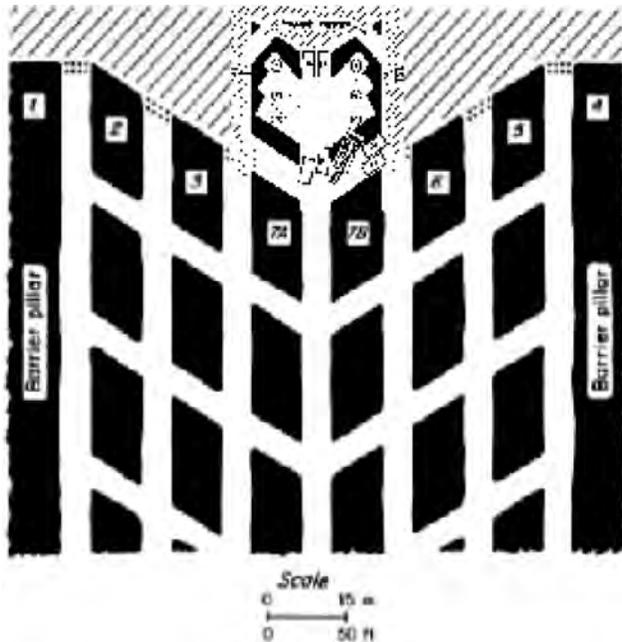


Figure 8. Pillar point created by mining with continuous haulage.

Continuous Haulage

Continuous haulage systems can result in improved productivity, particularly in thin seam operations. Unfortunately, they have several disadvantages for pillar recovery. In normal operations, the haulage system works out of the center entry intersection. The pillars must be retreated from both sides towards the middle, resulting in a pillar point (figure 8). Also, the center entry is often mined wider to accommodate the equipment, and the center entry intersections are particularly vulnerable to roof falls. Finally, the haulage system is more difficult to withdraw quickly if a hazard develops.

One partial solution was developed by a West Virginia mine after a fatality. An extra bridge was added to the haulage system, which then allowed it to be worked from the outby intersection. Then the entire row of pillars could be worked from right to left, eliminating the pillar point. It is also helpful to flatten the croscut angles out as much as possible.

Operator Positioning

The victim in 44% of the past decade's fatalities was the CM operator or helper. According to MSHA's Program Policy Manual, "Investigation of a few of these [fatal roof fall accidents that occurred during pillar recovery operations] revealed that miners were occupying work locations inby the mining machine while coal was being mined or loaded. This practice should be discouraged, recognizing that recently mined coal pillars reduce the amount of support in these areas." With regard to 30 CFR 75.221, Roof Control Plan Information, the Policy Manual states that "work procedures and location of miners while coal is being mined or loaded should be incorporated into the roof control plan as part of the description of the mining system utilized during pillar recovery." Ideally, the operators should be outby the wide place created by the lift at all times.

The pillar line is a dangerous place, and miners should never congregate there. At least five of the 23 pillar recovery victims were

not performing an essential production function when they were killed. Moreover, during the past decade, there were six multiple ground fall fatality incidents during pillar recovery, and *none* during any other activity. The toll could have been much worse. In six other pillar recovery incidents, miners were injured by the same roof falls that killed their co-workers. Careful planning of the production process, good supervision, and training and retraining may be necessary to prevent bad habits from developing.

PILLAR RECOVERY RISK FACTOR CHECKLIST

The Risk Factor Checklist can be used to identify potential problem issues for specific pillar plans. The more questions on it that can be answered with a "yes," the less risky the plan is likely to be. The checklist does not weight the individual risk factors, nor is it necessarily a comprehensive list. It is simply a tool to help mine planners evaluate the overall level of risk, and possible ways to reduce the risk.

Local Stability Risk Factors (Primary)

- **Cut sequence:** Is an outside lift sequence being used?
- **Final stump:** Is an adequate final stump consistently being left in place?
- **Support:** Are Mobile Roof Supports being used?
- **Roof bolts:** Is extra roof support used in intersections?

Global Stability Risk Factors

- **Pillar Design:** Is the ARMPS SF adequate to prevent a squeeze?
- **Collapse Prevention:** If the ARMPS SF < 2.0 and the pillar w/h < 4.0, either on advance or in the workedout area, have steps been taken to prevent a massive pillar collapse?
- **Barrier Pillar Design:** If the depth of cover is greater than 1000 ft, are stable barrier pillars (SF > 1.5 to 2.5) being used to separate the panels?

Other Risk Factors

- **Roof geology:** Is the roof at least moderate in strength?
- **Intersection span:** Have entry widths and turnouts been minimized?
- **Multiple seam interactions:** None anticipated?
- **Depth of cover:** Less than 650 ft?
- **Block size:** Are the blocks uniform in size?
- **Age of workings:** Is the development less than 1 year old?
- **Continuous haulage:** None?

CONCLUSIONS

Pillar recovery continues to be one of the most hazardous activities in underground mining. Global stability, achieved through proper pillar design, is a necessary prerequisite for safe pillar recovery. Local stability means preventing roof falls in the working area. It is achieved by minimizing the "risk factors" described in this paper.

The Roof Control Plan is essential to every underground coal mine, but nowhere is it more important than in pillar recovery. Pillaring leaves little tolerance for error, and mistakes can be deadly. Roof Control Plans must be carefully drawn up to address the site-specific conditions, and then carefully implemented and followed. Both miners and foreman involved in pillar extraction should be trained to know and understand the plan.

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Exhibit 13

DEEP COVER PILLAR EXTRACTION IN THE U.S. COALFIELDS

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ABSTRACT

Deep cover retreat mining (overburden in excess of 750 ft) is an important emerging issue which will intensify in the future as the more easily mined shallow seam reserves are depleted. Analysis of Mine Safety and Health Administration (MSHA) statistics indicates that deep cover pillar recovery accounts for a disproportionate share of the underground coal mine roof/rib fall fatalities and injuries. Past research has shown that previously recommended Analysis of Retreat Mining Pillar Stability (ARMPS) stability factors (SF's) may be excessive for deep cover pillar design. The objectives of this study were to evaluate the various methods and strategies by which panels, production pillars and barrier pillars are developed and extracted under deep cover, and to develop appropriate design guidelines. In the course of the research, 29 mines in 7 states were investigated to collect panel design case histories. At each mine site, underground geotechnical data were collected on the pillar line in order to document roof rock, coalbed and floor conditions. The analyses indicated that squeezes were the most likely failure mode where the depth was less than 1,250 ft, but bumps predominated in the deeper cover cases. Immediate roof rock quality, the ARMPS SF's, and barrier pillar stability factors were all found to be important parameters in determining the outcomes of the case histories. Design guidelines, including suggestions for barrier pillars to isolate active panels from nearby gobs in bump prone ground, are also proposed.

INTRODUCTION

Over the past 2 decades, retreat mining has gained a disparaging reputation in terms of safety. Since 1978, approximately 25% of the roof/rib fall fatalities have occurred during pillar recovery operations. However, retreat mining only accounts for about 10% of the total U.S. underground coal production (1). Since 1997, deep cover (overburden in excess of 750 ft) pillaring operations have accounted for 40% of the fatalities which have occurred during pillar recovery. To put this in perspective, Mine Safety and Health Administration (MSHA) Roof Control Specialists from across the country were surveyed and 48 deep cover pillaring operations were identified. In addition, comparative evaluations conducted by National Institute for Occupational Safety and Health (NIOSH) personnel of MSHA data (2) determined that ground fall incidence rates were 27% higher for

deep cover retreat mining operations as compared to all other room-and-pillar mines.

Realizing that deep cover pillar recovery was an important emerging issue which will intensify in the future as mines are forced to go deeper, NIOSH investigators began examining the situation in 1997. Because there were relatively few prior research efforts in the area of ground control for deep cover pillar extraction, NIOSH personnel went to the coalfields to document the actual experiences of the operators. The underlying premise was that information gathered by documenting the trial-and-error/success panel design refinement processes of several mining operations should yield valuable design guidelines and strategies. This in the same research methodology that proved successful in generating and validating the Analysis of Retreat Mining Pillar Stability (ARMPS) computer program (3) which today is widely used to size pillars for retreat mining.

Analyses of approximately 150 case histories in the original ARMPS database found that where the depth of cover is less than 750 ft, a Stability Factor (SF) of about 1.5 is normally a reasonable starting point. However, for the deep cover cases two conclusions were drawn (3, 4):

- Many panels with a SF less than 1.5 were successful, but;
- No single SF seemed to be an appropriate design criterion.

The goal of this study was to develop appropriate criteria for applying ARMPS to size pillars for deep cover, and determine what other significant factors should be considered in design. In order to accomplish this objective, 97 panel design case histories were gathered at 29 mines located in the following states: CO, KY, PA, TN, UT, VA, and WV. Underground geotechnical data on the immediate roof rock, coalbed, and floor conditions were collected for each case history. Due to the fact that limited core hole data was available at several mines in the immediate vicinity of the case history, the main roof rock's composition, strength, and caving characteristics could not be considered. Obviously, this was unfortunate because the characteristics of the main roof can play an important role in determining the outcome of a particular design, for example, the likelihood of a bump occurring. Also, excluded from the data base were any panels which were over- or undermined. During this investigation, careful attention was also paid to documenting the various methods and strategies by which panels,

production pillars and barrier pillars were developed and extracted to determine the current state-of-the-art. In order to select mine sites representative of the deep cover population, the opinions of several Roof Control Specialists from the Mine Safety and Health Administration (MSHA) and State Department of Mines personnel throughout the country were solicited.

GROUND CONTROL CONCERNS

Hazards associated with pillar extraction tend to intensify with depth. Pillar failures, including both bumps and squeezes, are generally more severe at depth and are evidence of a highly stressed environment. Bumps are sudden violent pillar failures where the coal is expelled into the workings. Documented bumps in the deep cover database have caused fatalities, serious injuries, personnel entrapments, and/or equipment damage. Many of these events shook the surface facilities and adjacent mine workings. As compared to shallow cover pillar extraction, there is an audible increase in coal pillar popping and roof thumping and bouncing at greater depths.

Squeezes (also called rides or pillar runs) are nonviolent gradual pillar failures that cause noticeable coal sloughage and roof-to-floor convergence. It may take hours, days, or even weeks for a section to squeeze. As the pillars steadily fail, the overlying strata settle and the roof may break. Some squeezes which have occurred during idle shifts have resulted in equipment entrapments. Also, extensive portions of panels and mains have been abandoned due to squeezes.

Other effects of a deep cover high stress regime can include excessive roof falls, pillar spalling, and floor heave. Failed panel design case histories attributed to roof falls were documented under both weak and competent immediate roof strata (Appendix 1). When mining under weak roof, the structural integrity of the rock may be sufficient enough to withstand development stresses; however, the strata may fail later when subjected to retreat mining induced abutment stresses, as was the case in a Colorado mine visited. Conversely, the beam building ability of a strong immediate and main roof rock units may inhibit caving. This can generate inordinate pillar line stresses, which, in turn, can produce severe pillar sloughage and floor heave. As the size of the worked-out area expands, the bridging capability of the roof may be exceeded and it caves. The result can be a powerful and potentially hazardous air blast. A sudden failure of a massive roof unit can also produce a hazardous "feather edge" which can override the breakers into the workings. The feather edge fracture has a conchoidal appearance, and is essentially a brittle failure phenomenon. Feather edge failures have been responsible for several fatalities in Australia (5), and at least one pillar line fatality in the U.S.

Horizontal stress magnitudes also tend to increase with depth. Roof potting on development, cutters, and long running roof falls are all problems associated with horizontal stress. Horizontal stress may also be concentrated around the gob areas created by retreat mining. Some mines have experimented with stress control techniques like "advance-and-relieve" mining to improve conditions in operations subjected to high horizontal stresses (6, 7).

In thicker coalbeds, overstressed pillars are prone to severe spalling and pose a serious threat to underground miners. Since 1995, rib roll fatalities have averaged more than one per year. In high coal, miners almost always indicate that one needs to pay more attention to the ribs than to the roof. Highly cleated coalbeds are particularly hazardous because these planes of weakness can define huge vertical

slabs of coal which can roll over without warning (figure 1). Some mines experiencing cleat related rib rolls have been compelled to orient entries 45° to the face cleat to maintain safer travelways in both entries and crosscuts. However, this orientation can cause the cleat to segment the pillar corners into large triangular columns of coal which tend to fail into the intersections. After experiencing these various conditions, some operators have opted to drive entries at a low angle (25-30°) with respect to face cleat in an attempt to minimize rib sloughage problems.



Figure 1. Vertical coal pillar slabs associated with face cleat.

Floor failure can also be a deep cover operational issue. More typically, a competent roof tends to punch overstressed pillars into a weaker floor units causing heave in the roadways. Heave can be so extreme that equipment is not left in the working faces during idle shifts for fear of entrapment. Instances where it was necessary to use the continuous miners to regrade roadways for equipment clearance into the faces have also been documented. In one mine visited in southern West Virginia, approximately 4.5 ft of heave was observed just outby the pillar line in the 9 ft thick Beckley Coalbed (figure 2).



Figure 2. Excessive pillar line floor heave.

PANEL DESIGN

Coal mine operators have employed different production panel design philosophies under deep cover. One strategy employed is to develop a wide section (9 or more entries) the entire length of the panel on advance, and then recover the pillars on retreat. With this approach, large production pillars are developed with the intent that they, and the adjacent barrier pillar(s), should be able to withstand all anticipated loading conditions encountered during panel advance and retreat. One drawback to this full panel advance and retreat method is that at greater depths, the production pillars can become too wide to be fully extracted with single pass pillaring techniques. Most operators indicate that once the entry centers exceed 80 ft and leaving significant stumps is undesirable, pillar splitting before extraction becomes the only alternative if the pillars are to be fully extracted. Pillar splitting is generally not desired because it requires numerous place changes and roof bolting. In a thick coal high stress regime, rib rolls pose a serious threat to bolter operators and splitting is generally avoided. When conducting full panel advance and retreat, some operators slab cut the barrier pillar(s) as they pull the section back.

An alternative approach is the panel advance and rooming out on retreat method (figure 3). With this method, a narrow panel (4 or 5 entries) is advanced, leaving a large barrier between the section and the previous panel gob. On retreat, rooms are driven into the barrier, and then these and the panel production pillars are recovered all the way across the section. This technique is a modified version of the Old Ben method (8) which was used in Illinois in the 1960's and 1970's. One advantage of the panel advance and rooming method is that if problems are encountered on retreat, development into the barrier can be halted and a few rows of production pillars can be left intact so as to contain or isolate the problems inby.

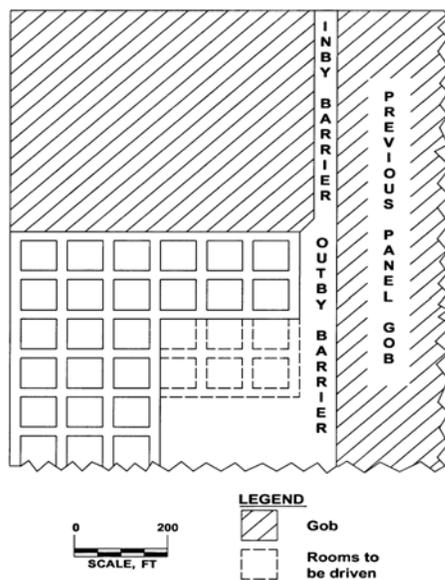


Figure 3. Panel advance and rooming out on retreat mining method.

The "thin-pillar" technique is a variant of the panel advance and rooming method which has been used for bump control (9). With this approach, both development entries and rooms are driven on narrow centers to create pillars that are designed to yield as they are developed. The goal is to have the minimum amount of ground

opened up at any time. However, extremely serious problems can arise if the pillar sizes, extraction sequence, timing, etc., are not designed and executed properly. If pillars are too large to yield yet too small to withstand the applied loadings, they can be prone to squeezes or bumps.

Barrier pillars are an essential element in deep cover retreat mine design. Traditionally, barrier pillars have been employed to isolate active panels from adjacent gobs as a stress control technique. As the cover deepens, it becomes more important to isolate the active panel from side abutment loads transferred from the adjacent mined out workings by employing barrier pillars. An important design issue is just how wide the final remnant or inby barrier pillar (after rooming and/or slabbing) should be (figure 3). This topic is a critical and life threatening design concern in highly stressed environments because of the historically high occurrence of bump incidences during partial and full barrier pillar extraction (10). Campoli et al. (11) proposed just such a design method for sizing barrier pillars under deep cover. In the example he provided, no barrier was needed when the cover was less than 1,000 ft, but then the suggested barrier pillar width ranged from 150 to 240 ft as the cover increased from 1,200 to 2,200 ft. It should be noted that leaving large remnant barrier pillars can cause loads to transfer to seams above and below. Therefore, when mines are in multiple seam configurations, pillar load transfer should be anticipated. Pillar load transfer can cause various ground control problems (12), including bumps (10).

PILLAR EXTRACTION METHODS

Deep cover operators practice both full and partial production and barrier pillar recovery during panel retreat. An operator's rationale for electing one extraction method over another is usually based on factors including: equipment and timber availability and cost, pillar size, coalbed thickness, roof competency, and local custom. Approximately two thirds of the panels in the data base were extracted using either the Christmas tree or split and fender extraction methods (13). Of the two techniques, Christmas treeing is usually the one most favored by operators because it does not require place changes and bolting. Another extraction method practiced to fully recover large pillars is the pocket and wing procedure (13) which also requires place changes and bolting. Some operators indicated that if large pillars require splitting, that the split and fender method is preferred because it minimizes gob exposure as compared to the pocket and wing technique. In five panel designs studied, the outside lift method was used. In order to fully extract a pillar using this process with 40 ft extended cut lengths, the section needs to be driven up on narrow centers (60 ft or less).

The most commonly cited reasons for opting for partial pillar recovery were safety and/or productivity. Some operators indicated that the roof rock in their mines was weak and sometimes fell prematurely on the pillar line. They also felt that the remnant stumps which remained after pillar recovery acted like coal cribs and provided just enough load bearing capacity to support the roof during the extraction process. Partial pillar recovery also reduces the number of turn posts required to extract a pillar. The sacrificed coal is justified based on safety and/or economics. In high coal, setting posts weighing 175 pounds or more requires three miners. One miner has to climb a step ladder which in itself can be hazardous. In addition, because far fewer posts are set during partial pillar recovery, miners minimize their exposure to rib rolls in high coal. Economically, setting posts is expensive and reduces production time. This is

especially true in western mines where there is a scarcity of inexpensive hardwoods. In some of the 12 ft plus thick western reserves, some operators notion of retreat mining is only to mine the floor coal. To combat the posting issues, several operators have turned to mobile roof support usage (figure 4).



Figure 4. Full pillar extraction using mobile roof supports.

One of the more favored partial pillar recovery techniques is pillar splitting. Most typically the pillars are designed on narrow entry centers (60 ft or less) and crosscut centers are usually 100 ft or less. On retreat, from one to three extended cut lifts (splits) are taken from the entry or crosscut. Another popular partial pillar recovery method is slabbing, where successive adjacent lifts are removed from a pillar leaving a significant saw toothed remnant stump. These lifts are usually taken from the entry. If lifts are also taken from the crosscut, this technique is referred to as “L” slabbing (figure 5). When practicing partial pillar recovery under competent roof rock which does not cave, the possibility of a massive remnant pillar collapse occurring in the mined out workings is a distinct possibility. These events should be considered and preventive measurements taken because both the roof fall and the resultant air blasts can be life threatening and devastating (14).

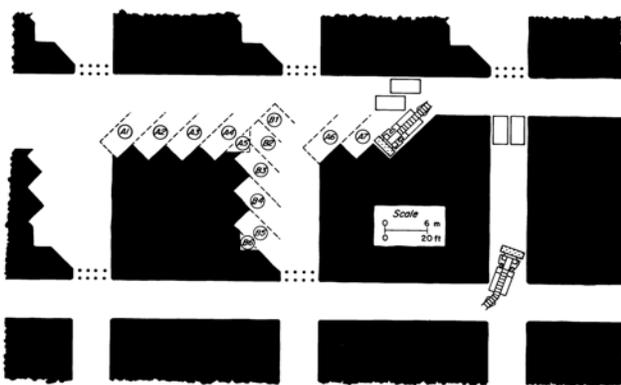


Figure 5. “L” slabbing on a super section using mobile roof supports.

Most typically, pillars developed by mining into the barrier are extracted in the same manner as are the production pillars in the panel. One noticeable exception is a variation of the wongawilli technique (15) employed by a few southern WV mines. With this method, four rooms, up to 200 ft long, are driven on 50 ft centers into

the barrier. The 30 ft pillars are then extracted by taking consecutive lifts as shown in figure 6.

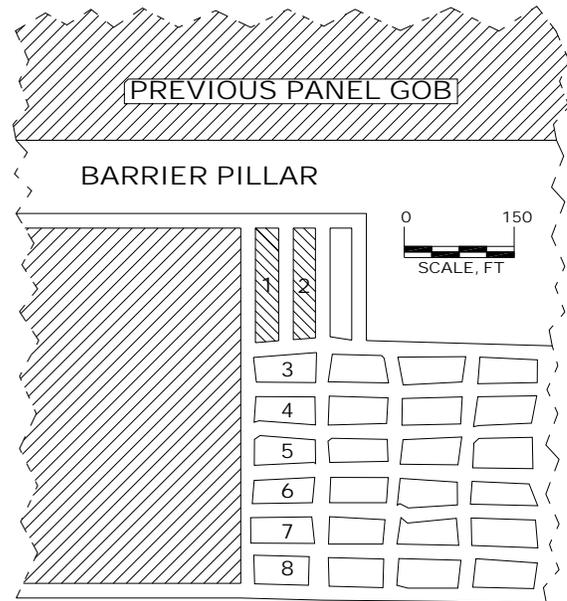


Figure 6. Barrier pillar development and extraction using a modified wongawilli technique.

DESCRIPTION OF THE DATA BASE

During this investigation, 97 panel design case histories were gathered at 29 mines located in 7 states. At each mine, underground geotechnical data on the immediate roof rock quality, coalbed, and floor conditions were collected. Careful attention was also paid to documenting the various methods and strategies by which panels, production pillars and barrier pillars were developed and extracted. The following parameters were determined for each case history:

- Roof Quality was evaluated using the Coal Mine Roof Rating (CMRR) system (16). The case histories were categorized as having weak (CMRR <45), intermediate (45 < CMRR < 65), and strong (CMRR > 65) immediate roof rock conditions;
- Panel Advance Width;
- Panel Retreat Width (the panel advance width, plus rooms driven into and/or slab cuts taken from the barrier pillar(s) on retreat);
- ARMPS SF using the normal default valves for in situ coal strength and the active mining zone;
- Barrier Pillar SF determined using the ARMPS computer program, and;
- Outcome, either success, squeeze, bump, or panel abandonment due to excessive roof falls.

When examining the data base (figures 7-9), it was readily apparent that there were only a handful of weak immediate roof rock cases. A total of 8 weak immediate roof rock cases were collected, and half of those were failures. In addition, the deepest successful weak roof rock case history occurred at approximately 850 ft. Given the fact that 60% of the deep cover mines were investigated during this study, the authors contend that the scarcity of weak roof rock case histories is indicative of the deep cover mine population, and does not

signify a data base quirk. Quite simply, based on past experiences, operators have determined that it is not feasible to mine under weak roof conditions in a deep cover, high stress regime. As for the remaining case histories in the data base, they were fairly evenly divided between “intermediate” and “strong” roof rock categories.

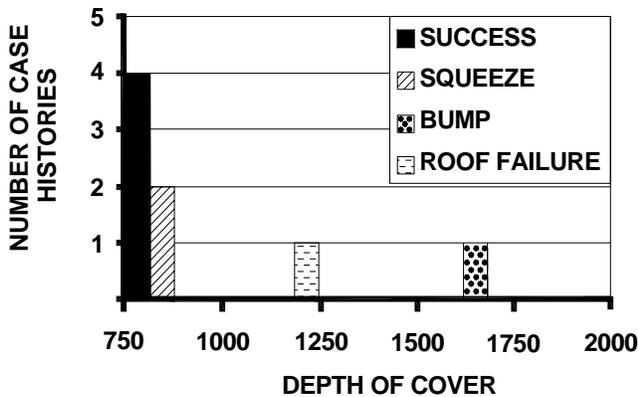


Figure 7. Deep cover weak roof rock data base.

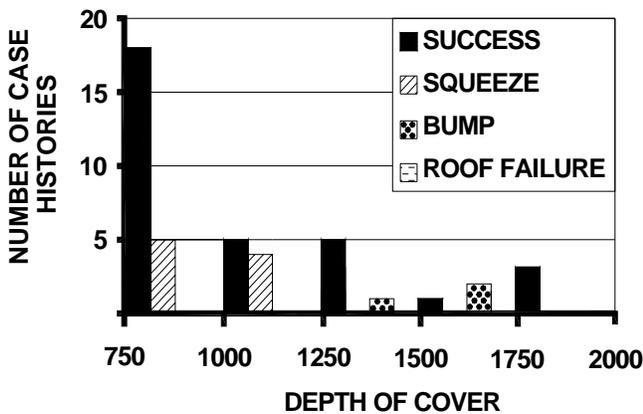


Figure 8. Deep cover intermediate strength roof rock data base.

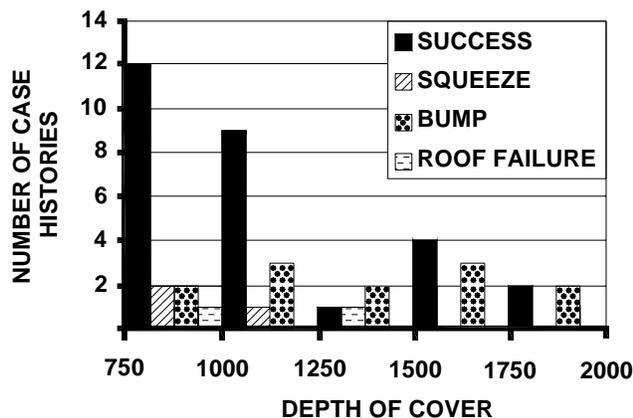


Figure 9. Deep cover strong roof rock data base.

The data base includes 16 bump and 14 squeeze failures. It should be noted that a majority of the squeezes (70%) occurred in the intermediate roof strength category, while 76% of the bumps happened under strong immediate roof rock conditions. Figures 7-9 also show that when the depth of cover was less than 1,250 ft, most

of the failed cases were squeezes. As for the immediate floor quality in the squeeze data base, 6 cases occurred where the floor was weak and 3 cases had an intermediate floor strength. Surprisingly, five squeezes happened in panels which had a strong immediate floor. In general, the bumps occurred under deeper cover and in wider panels as shown in Appendix 1. In the bump data base, it is important to note that in 64% of the cases barrier pillars were not employed to isolate active panels from adjacent side gobs.

The use of barrier pillars also varied with depth. In the cases that were shallower than 1,300 ft, only 40% of the active panels were separated from adjacent gobs by barrier pillars. Deeper than 1,300 ft, 68% of the panels used barrier pillars. Only 27% of the strong roof cases used barrier pillars, compared with 62% for the weak and intermediate cases. When the mines which were operating under strong roof did use barriers, the SF's were often lower.

Another interesting observation was that all 21 ARMPS Loading Condition 2 case histories (3) were successful. In Loading Condition 2, side abutment load transfer does not occur because the adjacent panels (if any have been driven) have not been retreat mined. Therefore, the program considers these areas as being unmined coal or, infinitely large barrier pillars.

DATA ANALYSES

Figure 10 compares the ARMPS SF's, depth of cover and outcomes for approximately 250 shallow, moderate and deep cover panel design case histories. Analyses indicate that an ARMPS SF of 1.5 or greater is appropriate where the depth of cover is less than 650 ft. As the cover increases from 650 to 1,250 ft, there seems to be a decreasing trend in SF's for both the successful and the unsuccessful cases. However, deeper than 1,250 ft, there does not seem to be any clear trend. These observations, combined with the fact that the most common failure mechanism shifts from a squeeze to a bump at approximately 1,250 ft of cover, seems to justify separating the data into two groups by depth. Logistic regression was used to analyze the two groups. The failures were weighted as two in order to balance the data. Because of the small number of weak immediate roof rock cases, they were added to the intermediate strength roof rock category.

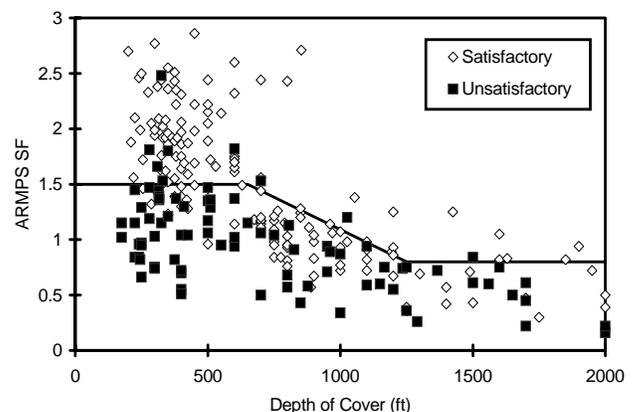


Figure 10. ARMPS case history data base.

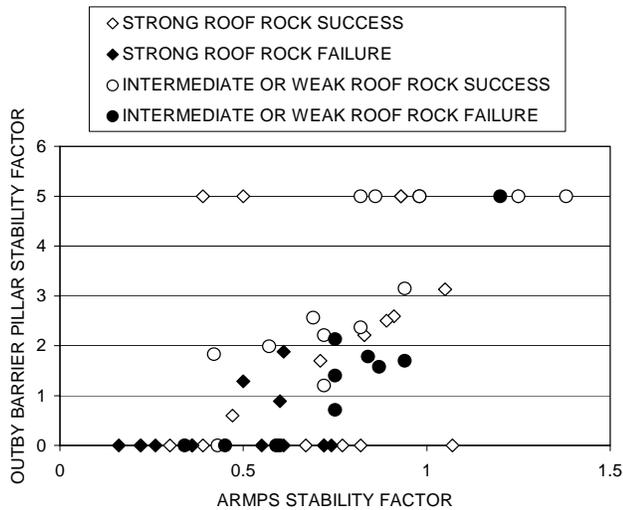


Figure 11. ARMPS and barrier pillar stability factors for the overburden exceeding 1,000 ft. data base.

Table 1. Pillar design considerations

Immediate roof rock quality	Weak and intermediate roof strength	Strong roof
ARMPS SF		
650 ft < H ≤ 1,250 ft	$1.5 - \left(\frac{H - 650}{1000} \right)$	$1.4 - \left(\frac{H - 650}{1000} \right)$
1,250 < H ≤ 2,000 ft	0.9	0.8
Barrier pillar SF		
H > 1,000 ft	≥ 2.0	≥ 1.5 ¹ ≥ 2.0 ²

¹Nonbump prone ground

²Bump prone ground

When considering the cover (H) group ranging from 650 to 1,250 ft, the only two variables which were significant at the 0.15 level were the immediate roof rock quality and the ARMPS SF. The analyses also confirmed that the necessary ARMPS SF could be reduced if the immediate roof is strong. For the deepest cover (H > 1,250 ft) grouping, the only two significant variables at the 0.15 level were the immediate roof rock quality and the barrier pillar stability factor. Again, strong immediate roof permitted a reduction in the suggested SF. Figure 11 compares the ARMPS SF, barrier pillar SF and the outcomes for the 57 case histories where the depth of cover was 1,000 ft or greater. As shown in figure 11, out of 12 cases, only one failure occurred when the ARMPS SF was greater than 0.8 and the barrier pillar SF was greater than 2.0. Conversely, 30 case histories had an ARMPS SF less than 0.8 and a barrier pillar SF less than 2.0, and 60% of these cases were failed designs. Of these 18 failed designs, 13 were bump events. In addition, every bump case history collected had a barrier pillar SF of less than 1.9. Based on these analyses, conservative design guidelines are proposed in Table 1. It should be noted that when examining figures 10 and 11, there are numerous successful case histories with stability factors less than those suggested in Table 1. Therefore, the

recommendations proposed in Table 1 should be considered as first approximation design guidelines which should be tempered with other cite specific variables deemed relevant based on past experiences and sound engineering judgement. Finally, regression analyses also indicated that narrower panels reduced the required SF, but only at the 0.25 significance level.

DISCUSSION

One of the rationales for this research endeavor was the observation that lower ARMPS stability factors may be successfully employed when mining at deeper cover. There are two plausible explanations for this:

- The actual pillar strengths of the larger pillars used at depth are greater than that predicted by Mark-Bieniawski formula used in ARMPS, or;
- The actual pillar loadings are less than ARMPS predicts.

Recent research indicates that the immediate roof strength may be related to pillar strength for squat pillars (large w/h ratios). For example, data collected by Gale (17) indicates a wide range in measured strengths for pillars having the same width-to-height ratio. He attributed these strength differences to pillar confinement or, lack thereof. Gale concluded that strong immediate roof rock units with high shear strength can generate greater pillar confinement which increases the pillars strength.

Pillar loading may be affected by both the geology and the depth of cover. Where dealing with strong roof members at depth, the beam forming ability of stiffer immediate and main roof rock units may more readily transfer and equally distribute the mining induced loads to nearby abutments and barrier pillars. Conversely, where mining under weaker roof, one would expect the load transfer to be more problematic. Using field stress measurements collected in some of the deeper Australian coal mines, Colwell et al. (18) back-calculated lower abutment angles than the 21° default angle which ARMPS uses. In fact, it was noted that: “the abutment angles calculated for the two deepest mines, are the smallest of any in the database, 5.9 and 8.5°.” An examination of the Australian database also indicates that for the most part, an abutment angle of 21° is reasonable for the generally shallow supercritical panels (panel depth to panel width ratio less than approximately 1.3). For the normally deeper, subcritical panels which have higher depth-to-width ratios (H/P), lower abutment angles are warranted.

In another relevant article, Heasley (19) using LAMODEL suggests that the constant abutment angle concept employed by ARMPS probably over predicts the amount of abutment load as the depth of cover increases. Heasley thought it unreasonable that the gob loading remain constant after H/P exceeds 1.3. Heasley contends that “if the overburden displacement is considered to be linearly proportional to the depth, and the gob material is strain-hardening, then the gob should support an increasing percentage of load as the panel gets deeper.” He also suggested that some type of systematic abutment angle reduction with increased depth might be more realistic.

In order to examine Heasley’s suppositions, the SF’s for the database were recalculated using adjusted abutment angles back-calculated from the laminated overburden model with a constant lamination thickness. As was expected, there was marked increase in

calculated SF's for subcritical panels as the depth of cover increased. However, no apparent correlations between the adjusted SF's and panel performance could be established. A more concentrated effort in this endeavor is warranted if the pillar mechanics of deep cover recovery is to be fully understood.

CONCLUSIONS

1. Ground control problems associated with pillar extraction generally intensify with increased depth. Conditions responsible for failed panel design case histories documented during this investigation include: bumps, squeezes, or excessive roof falls which caused large portions of, or entire panels to be abandoned.
2. Past research suggests that under shallow to moderate cover, an ARMPS SF of 1.5 seems to be appropriate. The data collected during this investigation indicates that where the depth cover exceeds 650 ft, lower ARMPS SF's can be successfully employed. In the overburden range between 650 and 1,250 ft, immediate roof rock quality and ARMPS SF were determined to be the significant variables. Greater than 1,250 ft, roof rock quality and barrier pillar design were concluded to be the significant variables.
3. Currently, deep cover operators are more likely to employ barrier pillars where the depth of cover exceeds 1,300 ft; however, their usage is not as widespread as one would anticipate. The data collected during this investigation substantiates the utility of barrier pillars to isolate active panels from nearby gobs where the depth of cover exceeds 1,000 ft. This is especially true in highly stressed, bump prone ground conditions.
4. Analyses of the database indicates that roof rock quality is an integral component in the panel design process. ARMPS SF's for production and barrier pillars can be lower when the immediate roof is strong (CMRR>65). Conversely, under weaker roof conditions, operators should consider advancing narrower panels and deploying larger barrier pillars to isolate the active working from adjacent gob areas.
5. The data suggests that squeezes are the predominate failure mode in mines operating at moderate depths with intermediate strength immediate roof rock conditions. However, bumps typically occur at greater depth and under stronger roof rock units.
6. A conservative approach to panel design for deep cover pillar recovery is to advance a narrow panel which is separated from the adjacent gob with a large barrier pillar. On retreat, rooms can be driven into the barrier pillar to extract a portion of it. In bump prone ground conditions, past experiences and sound engineering judgement should be employed when determining how wide the final or inby barrier pillar should be so as to isolate the workings from adjacent gobs. Information collected during this investigation indicates that when the barrier pillar SF was greater than 1.9, no bumps occurred.
7. This investigation confirmed that there is a decreasing trend in satisfactory ARMPS SF's as the depth of cover increases. It is possible, as other researchers have postulated, that ARMPS's constant abutment angle concept over predicts the abutment loads and underestimates the gob loading in subcritical panel designs. In this case, some type of systematic abutment angle

reduction with increased depth might be warranted. However, a greater understanding of deep cover pillar mechanics is necessary to calibrate this reduction and this topic warrants future research efforts.

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Appendix 1.--Deep cover case history data base

Name	Case	H	h	Pillar Size	Ext pct	w/h	LC	ARMPS SF	Outby BP width	Outby BP SF	Inby BP width	Inby BP SF	Panel advance width	Panel retreat width	Roof	Floor	Ext. meth.	Comments
CO Mine A	1	1,560	9	50 x 110	40	5.5	3	0.6	0	0	0	0	230	230	W	I	L Slab	Miners entrapped by coal pillar bump.
CO Mine B	1	800	11.5	65 x 70	41	5.6	2	0.95	-	-	-	-	780	780	I	I	2-1/2 OL from entry & floor coal	Satisfactory design.
CO Mine C	1	850	9	60 x 100	38	6.7	2	1.28	-	-	-	-	320	630	W	I	OL	Satisfactory design.
CO Mine C	2	850	9	50 x 110	40	5.6	2	1.2	-	-	-	-	370	470	W	I	OL	Satisfactory design.
CO Mine D	1	750	7	42 x 100	41	6	4	0.95	0	0	0	0	260	730	I	I	Partial OL	Satisfactory design.
CO Mine D	2	750	7	42 x 100	41	6	3	1.21	0	0	0	0	340	500	I	I	Partial OL	Satisfactory design.
CO Mine D	3	800	7	32 x 82	48	4.6	3	0.76	0	0	0	0	220	495	I	I	Partial OL	Satisfactory design.
CO Mine D	4	950	7	42 x 100	41	6	3	0.94	50	1.1	50	0.56	335	500	I	I	Partial OL	Several rows of pillars lost due to excessive loading under deepest panel cover.
CO Mine D	5	1,100	7	42 x 100	41	6	4	0.59	0	0	0	0	260	730	I	I	Partial OL	Three rows of pillars lost due to heave and sloughage under deepest panel cover.
CO Mine E	1	1,250	8.5	30 x 80	52	3.5	4	0.36	135	2.37	135	1.61	170	270	S	S	Double split & floor coal removal	Excessive heave and floor bumps caused panel to be abandoned.
CO Mine E	2	1,250	8.5	30 x 80	52	3.5	3	0.39	0	0	0	0	170	270	S	S	Single & double split and floor coal removal	Satisfactory design.
CO Mine E	3	1,250	8.5	30 x 80	52	3.5	3	0.36	0	0	0	0	170	370	S	S	Double split & floor coal removal	Satisfactory design.
CO Mine E	4	1,250	8.5	30 x 80	52	3.5	3	0.36	0	0	0	0	170	370	S	S	Double split & floor coal removal	Satisfactory design.
CO Mine E	5	1,700	8.5	30 x 80	52	3.5	4	0.22	130	1.8	130	1.0	170	370	S	S	Single & double split & floor coal removal	Overstressed pillars next to the barrier were abandoned due to severe bumping.
CO Mine E	6	1,750	8.5	30 x 80	52	3.5	3	0.3	0	0	0	0	170	370	S	S	Double split & floor coal removal	Satisfactory design.
CO Mine E	6	2,000	8.5	30 x 80	52	3.5	2	0.39	-	-	-	-	170	170	S	S	Single split and floor coal removal	Satisfactory design.

Appendix 1.--Deep cover case history data base

Name	Case	H	h	Pillar Size	Ext pct	w/h	LC	ARMPS SF	Outby BP width	Outby BP SF	Inby BP width	Inby BP SF	Panel advance width	Panel retreat width	Roof	Floor	Ext. meth.	Comments
CO Mine E	7	2,000	8.5	30 x 80	52	3.5	4	0.16	125 0	1.5 0	125 0	.71 0	170	270	S	S	Double split & floor coal removal	Down dip pillars by barrier pillar and side gob bumped.
CO Mine E	8	2,000	8.5	30 x 80	52	3.5	4	0.22	125 0	1.6 0	125 0	1.0 0	170	270	S	S	Single split & floor coal removal	Richter 3.7 bump event shook surface facilities
CO Mine F	1	882	6.3	60 x 60	44	9.5	3	1.11	0	0	0	0	400	400	I	I	S&F	Satisfactory design.
CO Mine F	2	889	11	50 x 60	46	4.5	4	0.57	60 238	0.99 4.57	60 238	.49 4.84	520	680	I	W	S&F	Satisfactory design.
CO Mine F	3	961	5	50 x 60	46	10	3	1.14	65	1.97	65	1	280	280	I	W	S&F	Satisfactory design.
CO Mine F	4	961	5	50 x 50	49	10	3	0.89	0	0	0	0	420	420	I	W	S&F	Lost 3 rows of pillars due to excessive pressures.
CO Mine F	5	1,250	5	40 x 80	47	8	3	0.75	95	2.13	65	0.71	240	270	W	W	Xmas	Roof falls over-rode the breakers and the section was abandoned.
KY Mine A	1	878	8	61 x 61	42	7.6	4	0.58	0 0	0 0	0 0	0 0	340	340	S	S	S&F	Excessive pressures in pillar point caused 3 rows of pillars to be lost.
KY Mine A	2	1,166	7	61 x 61	42	8.7	3	0.75	29	0.71	29	0.18	340	570	I	S	S&F	Lost 6 rows of pillars in squeeze.
KY Mine A	3	1,193	7.2	61 x 61	42	8.5	3	0.89	160	2.5	160	2.2	340	560	S	S	S&F	Satisfactory design.
KY Mine A	4	1,235	6.7	61 x 61	42	8.7	3	0.74	0	0	0	0	340	590	S	S	S&F	Severe bump fatally injured 2 miners in pillar point.
KY Mine A	5	1,290	7	41 x 51	50	5.9	4	0.26	0 0	0 0	0 0	0 0	260	260	S	S	S&F	Moderate coal pillar bump pushed the continuous miner out of the lift.
KY Mine A	6	1,366	5	61 x 61	42	12.2	3	0.72	0	0	0	0	340	980	S	S	S&F	Lost 4 rows of pillars due to excessive pressures.
KY Mine A	7	1,489	8	61 x 81	38	7.6	3	0.71	140	1.7	130	1.1	340	450	S	S	S&F	Satisfactory design.
KY Mine A	8	1,630	7	61 x 81	38	8.7	3	0.83	140	2.21	140	1.31	500	500	S	S	S&F	Satisfactory design.
KY Mine B	1	1,300	4.5	36 x 61	50	8	3	0.69	110	2.56	65	0.78	350	380	I	S	Xmas	Satisfactory design.
KY Mine B	2	1,600	5	61 x 74.8	40	12.2	3	1.05	175	3.13	140	1.8	340	370	S	S	Xmas	Satisfactory design.
KY Mine B	3	1,700	5	51 x 61	44	10.2	3	0.47	50	0.6	20	0.04	625	655	S	S	Xmas	Satisfactory design.
KY Mine B	4	1,850	5	66 x 74.8	39	13.2	3	0.82	150	2.37	120	1.08	360	390	I	S	Xmas	Satisfactory design.
KY Mine B	5	1,950	5	66 x 71	39	13.2	3	0.72	150	2.21	115	0.92	360	390	I	S	Xmas	Satisfactory design.
KY Mine C	1	800	4.2	23 x 50	64	5.5	3	0.57	35	1.32	10	0.07	335	365	W	W	OL	Lost 14 rows of pillars in squeeze.

Appendix 1.--Deep cover case history data base

Name	Case	H	h	Pillar Size	Ext pct	w/h	LC	ARMPS SF	Outby BP width	Outby BP SF	Inby BP width	Inby BP SF	Panel advance width	Panel retreat width	Roof	Floor	Ext. meth.	Comments
KY Mine D	1	1,000	10	50 x 50	49	5	4	0.34	0 0	0 0	0 0	0 0	370	370	I	S	S&F	While retreating bottle necked mains, numerous fenders were lost due to excessive loading.
KY Mine E	1	775	6	35x60	53	5.8	3	0.84	80	2.24	40	0.53	355	440	I	I	Xmas	Satisfactory design.
KY Mine E	2	800	5.6	35x60	52	6.3	2	1.12	0	0	0	0	345	410	S	I	Xmas	Satisfactory design.
KY Mine E	3	800	6	35x60	53	5.8	3	0.81	80	2.16	40	0.51	360	440	I	I	Xmas	Satisfactory design.
KY Mine E	4	800	4.3	70x70	41	16.3	3	2.43	150	5.9	120	4.6	380	440	I	I	Xmas	Satisfactory design.
KY Mine E	5	1400	5.5	35x50	56	6.4	3	0.42	100	1.83	70	0.61	350	410	I	I	Xmas	Satisfactory design.
KY Mine E	6	1400	4.3	35x65	52	8.1	3	0.57	90	1.99	60	0.56	355	420	I	I	Xmas	Satisfactory design.
KY Mine E	7	1425	4.3	70x60	43	14	3	1.25	220	5.25	190	4.16	380	410	I	I	Xmas	Satisfactory design.
KY Mine E	8	1500	4.3	35x60	44	8.1	3	0.84	90	1.78	50	0.36	355	440	I	I	Xmas	Moderate bump caused face equipment damage.
KY Mine E	9	1600	4.3	60x65	44	14	3	0.75	75	1.4	45	0.27	370	435	I	I	Xmas	Severe bump pushed continuous miner back 15 feet out of the lift and broke the frame.
KY Mine E	10	1700	7.4	70x50	44	6.8	3	0.45	0	0	0	0	375	395	I	I	Xmas	Moderate bump events caused several pillars to be abandoned.
KY Mine E	11	1900	4.3	60x70	43	14	3	0.94	170	3.15	140	1.6	320	380	I	I	Xmas	Satisfactory design.
KY Mine F	1	764	5.7	35 x 60	52	6.1	2	1.26	-	-	-	-	350	240	S	S	OL	Satisfactory design.
PA Mine A	1	806	7.2	60 x 60	39	8.3	4	1.13	0	0	0	0	710	710	W	W	P&W	Lost 115 pillars overnight squeeze,
PA Mine A	2	853	7.2	70 x 80	34	9.7	2	2.71	-	-	-	-	539	539	W	W	P&W	Satisfactory design
TN Mine A	1	1,000	2.5	40 x 35	61	14	3	0.87	35	1.58	0	0	260	290	I	W	OL	Majority of panel lost due to squeeze.
TN Mine A	2	1,026	2.5	35 x 30	66	12	2	0.98	-	-	-	-	240	270	I	W	OL	Satisfactory design.
TN Mine A	3	1,026	2.5	35 x 30	66	12	3	1.2	180	9.87	180	14.7	240	240	I	W	None	Squeezed caused 2,200 ft of mains to be abandoned.
UT Mine A	1	1,200	8.4	65 x 65	0.42	7.7	2	0.86	-	-	-	-	350	440	I	I	L Slab	Satisfactory design.
UT Mine B	1	1,000	7	60 x 60	0.44	8.6	3	0.72	0	0	0	0	180	340	S	W	Partial Xmas	Satisfactory design.
UT Mine B	2	1,100	9	70 x 80	0.38	7.8	3	0.91	215	2.59	115	1.17	380	410	S	I	S&F	Satisfactory design.
UT Mine B	3	1,100	7	60 x 60	0.44	8.6	3	0.82	0	0	0	0	590	590	S	W	Partial Xmas	Satisfactory design.
UT Mine B	4	1,200	7.5	60 x 60	0.44	8	3	0.55	0	0	0	0	420	420	S	W	Partial Xmas	Moderate squeeze occurred at pillar point.
UT Mine B	5	1,200	9	80 x 70	0.38	7.8	2	0.93	-	-	-	-	400	600	S	I	S&F	Satisfactory design.

Appendix 1.--Deep cover case history data base

Name	Case	H	h	Pillar Size	Ext pct	w/h	LC	ARMPS SF	Outby BP width	Outby BP SF	Inby BP width	Inby BP SF	Panel advance width	Panel retreat width	Roof	Floor	Ext. meth.	Comments
UT Mine B	6	1,200	5.5	60 x 60	0.44	10.9	2	1.25	-	-	-	-	340	340	S	W	S&F	Satisfactory design.
UT Mine B	7	1,500	9	60 x 80	0.4	6.7	4	0.43	60 350	0.61 4.34	60 300	0.28 4.36	350	380	I	I	L Slab	Satisfactory design.
UT Mine B	8	1,600	9	70 x 80	0.38	7.8	2	0.82	-	-	-	-	380	410	I	I	L Slab	Satisfactory design.
UT Mine C	1	800	7.5	63 x 63	0.42	8.4	3	1.03	0	0	0	0	415	415	S	S	S&F	Satisfactory design.
UT Mine C	2	800	7.5	63 x 63	0.42	8.4	3	0.93	0	0	0	0	350	350	S	S	S&F	Satisfactory design.
UT Mine C	3	800	8.2	63 x 63	0.42	7.7	4	0.68	0	0	0	0	350	350	S	S	S&F	Excessive bumping caused panel abandonment. Panel located in ridge nose.
UT Mine C	4	1,000	8	63 x 63	0.42	7.9	3	0.77	0	0	0	0	350	350	S	S	S&F	Satisfactory design.
UT Mine C	5	1,000	8	63 x 63	0.42	7.9	2	0.93	-	-	-	-	1,100	1,100	S	S	S&F	Satisfactory design.
UT Mine C	6	1,200	6.6	63 x 63	0.42	9.5	3	0.67	0	0	0	0	250	250	S	S	S&F	Satisfactory design.
UT Mine D	1	1,500	9	60 x 60	44	6.7	3	0.61	145	1.88	145	1.48	500	415	S	S	S&F	Three rows of pillars bumped.
UT Mine D	2	1,650	9	60 x 60	44	6.7	3	0.5	105	1.29	105	0.88	500	420	S	S	S&F	A Richter 3.6 bump event occurred when 7 rows of pillars failed violently.
UT Mine D	3	2,000	9	60 x 60	44	6.7	2	0.5	-	-	-	-	500	425	S	S	S&F	Satisfactory design.
VA Mine A	1	1,700	5.5	60 x 60	44	10.9	3	0.61	0	0	0	0	340	340	S	S	S&F	Moderate coal pillar bump.
VA Mine B	1	790	5.5	35 x 50	55	6.4	2	1.15	-	-	-	-	240	240	W	W	2 Cut	Satisfactory design.
WV Mine A	1	970	5.5	40 x 60	50	7.3	2	1.06	-	-	-	-	440	470	I	W	Xmas	Satisfactory design.
WV Mine A	2	1,054	5	60 x 60	44	12	2	1.38	-	-	-	-	500	530	I	W	Xmas	Satisfactory design.
WV Mine B	1	750	8	50 x 70	44	5	2	1.17	-	-	-	-	580	580	S	S	S&F	Satisfactory design.
WV Mine B	2	750	8	50 x 70	44	5	3	1.04	59	1.53	59	0.84	580	580	S	S	S&F	Stable LC2 development pillars protecting mains failed after adjacent panel was pillared.
WV Mine B	3	800	7	50 x 70	44	7.1	3	0.95	0	0	0	0	440	440	S	S	S&F	Satisfactory design.
WV Mine B	4	900	6	50 x 70	44	8.3	3	0.98	45	1.15	45	0.48	470	470	S	S	S&F	Satisfactory design.
WV Mine B	5	1,000	6	70 x 70	40	11.7	3	1.07	0	0	0	0	560	560	S	S	S&F	Satisfactory design.
WV Mine C	1	1100	6	55 x 77	44	9.2	3	0.94	80	1.7	45	0.38	300	360	I	S	Xmas	Lost 4 rows of pillars in squeeze.
WV Mine C	2	1100	6	50 x 69	46	8.3	3	0.72	70	1.2	35	0.21	310	370	I	S	Xmas	Satisfactory design.
WV Mine C	3	1100	6.5	50 x 79	43	7.7	2	0.98	-	-	-	-	650	650	I	S	Xmas	Satisfactory design.
WV Mine D	1	750	7.5	40 x 80	47	5.3	4	0.84	80 0	1.99 0	50 0	.71 0	315	505	I	I	Xmas	Satisfactory design.
WV Mine D	2	750	7.5	50 x 70	44	6.7	3	1.05	45	1.29	45	0.59	360	360	I	I	2 cut	Satisfactory design.

Appendix 1.--Deep cover case history data base

Name	Case	H	h	Pillar Size	Ext pct	w/h	LC	ARMPS SF	Outby BP width	Outby BP SF	Inby BP width	Inby BP SF	Panel advance width	Panel retreat width	Roof	Floor	Ext. meth.	Comments
WV Mine D	3	750	4.7	35 x 80	49	7.4	4	0.98	60 0	2.15 0	30 0	.42 0	300	465	I	S	Xmas	Satisfactory design.
WV Mine D	4	750	7.5	40 x 60	50	5.3	2	1.09	-	-	-	-	320	350	I	I	Xmas	Satisfactory design.
WV Mine D	5	900	4.7	35 x 70	51	7.4	3	1.04	0	0	0	0	300	465	I	S	Xmas	Satisfactory design.
WV Mine D	6	900	7.5	40 x 80	47	5.3	3	0.83	0	0	0	0	500	675	I	I	Xmas	Satisfactory design.
WV Mine D	7	950	7.5	40 x 60	50	5.3	3	0.71	60	1.59	60	0.83	560	560	I	I	Xmas	Heavily loaded outby workings caused panel to be abandoned.
WV Mine E	1	850	9	50 x 50	49	7.1	4	0.43	0 0	0 0	0 0	0 0	370	370	S	W	Xmas	Pillar point roof fall had continuous miner buried for 2 weeks. Excessive heave.
WV Mine E	2	900	7	50 x 50	49	7.1	3	0.67	0	0	0	0	440	620	S	I	Xmas	Satisfactory design.
WV Mine E	3	1,150	6	55 x 70	43	9.2	4	0.6	43 0	0.89 0	43 0	0.32 0	330	490	S	S	Split & Xmas	Pillar point bump caused lost time injury.
WV Mine F	1	825	4.5	50 x 50	49	11.1	4	0.91	0 0	0 0	0 0	0 0	440	440	S	S	P&W	Moderate bump occurred in pillar point.
WV Mine G	1	850	4.5	60 x 40	50	8.9	2	1.24	-	-	-	-	660	660	S	I	Xmas	Satisfactory design.

Legend:

BP - barrier pillar

Ext pct - extraction percentage on advance

h - mining height

H - overburden

I - intermediate rock strength

LC - loading condition

OL - outside lift

P&W - pocket and wing

S - strong rock strength

S&F - split and fender

SF - stability factor

W - weak rock strength

w/h - width-to-height ratio

Xmas - Christmas tree

Exhibit 14

MINES OPERATING IN BUMP PRONE GROUND¹

	COMPANY	MINE	MSHA ID	DISTRICT
1	Consol Energy	Buchanan No. 1	44-04856	5
2	Lone Mountain Processing	Darby Fork No. 1	15-02263	7
3	Harlan Cumberland Coal	C-2	15-07201	7
4	Harlan Cumberland Coal	No. 19	15-17903	7
5	Rex Coal	C-5	15-19114	7
6	Genwal Resources	Crandall Canyon	42-01715	9
7	Andalex Resources	Aberdeen	42-02028	9
8	Canyon Fuel	Dugout Canyon	42-01890	9
9	Canyon Fuel	Skyline #3	42-01566	9
10	Energy West Mining	Deer Creek	42-00121	9
11	West Ridge Resources	West Ridge	42-02233	9
12	C.W. Mining	Bear Canyon #4	42-02335	9
13	C.W. Mining	Bear Canyon #3	42-02263	9
14	Twentymile Coal	Foidel Creek	05-03836	9
15	Mountain Coal	West Elk	05-03672	9
16	Bowie Resources	Bowie No. 2	05-04591	9
17	Oxbow Mining	Elk Creek	05-04674	9
18	McClane Canyon	McClane Canyon	05-03013	9

REDACTED

¹Conditions are considered to be bump-prone when overburden depth exceeds 1500 feet and strong strata (e.g. sandstones) are present above and below the coalbed or previous experience has demonstrated that bumps can occur in the mine or mining region.

Exhibit 15

From: Davis, Allyn C - MSHA
Sent: Wednesday, August 23, 2006 8:18 PM
To: Thompson, Michael A - MSHA
Cc: Langton, John F - MSHA; Pon, Melinda - MSHA; Cornett, Bob E - MSHA; Gibson, Pauline M - MSHA
Subject: Donny Durrant

Mike,

I interviewed Donny, but have been on the go since. I'll get the information to you after I get back in the office. Bob Murray, an extremely difficult coal operator from Pennsylvania, has purchased the West Ridge Mine and their people took over yesterday. Donny wrote an order on their longwall for 80 damaged hydraulic hoses to be replaced, and they are alleging retaliation and have informed our FO Supervisor they will work to get him removed as an inspector. [REDACTED]

They also told my supervisor they have been very successful at getting MSHA people removed in other districts. I expected we would have trouble with this operator, but didn't expect it on the 2nd day after they took over.

AI

Exhibit 16

From: Davis, Allyn C - MSHA
Sent: Friday, September 01, 2006 12:10 PM
To: 'Varley, Floyd D. (CDC/NIOSH/RLAB)'
Cc: Vermulen, Erik - MSHA; Elkins, David W - MSHA; Knepp, William P - MSHA
Subject: RE: H2S research in Utah
Attachments: ACARP H2S.PDF

Floyd,

[REDACTED]

For your information, the West Ridge Mine is under new ownership now. It was purchased by Bob Murray of Murray Enterprises. Our relationship with Mr. Murray has been stormy thus far. That is also the pattern of his relationship with MSHA at his eastern mines. Just wanted to give you a heads up on that. He may not be a willing participant if he senses that anything you do could impact his ability to produce coal.

Thanks and good to hear from you,
Al

[REDACTED]

Exhibit 17

From: Knepp, William P - MSHA
Sent: Wednesday, October 04, 2006 9:04 AM
To: Stricklin, Kevin G - MSHA
Cc: Davis, Allyn C - MSHA; Cornett, Bob E - MSHA
Subject:
Sensitivity: Confidential

Kevin, a summary of the situation at Aberdeen:

[REDACTED]

Over the course of the first 10 days of Murray Energy ownership they have aggressively opposed enforcement actions taken by Inspectors Durrant and Schumway, accused them both of retaliation, met with Supervisor Farmer and attempted to dictate how inspections should be performed at the mines. All indications so far are that this operator intends to use whatever means available to try to leverage enforcement at their mines.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Exhibit 18

From: Cornett, Bob E - MSHA
Sent: Tuesday, November 07, 2006 4:28 PM
To: Stricklin, Kevin G - MSHA
Subject: RE: meeting with Bob Murray
Follow Up Flag: Follow up
Flag Status: Red

I'm probably not telling you anything you don't know, but Murray fired those who did not seem to agree with his philosophy (not sure if that is good or bad). Several good persons have quit because they did not agree also.

I did talk to one of our more level headed inspectors last week and he said the mines are doing less in compliance since Murray took over and that if you want something corrected or done different, you would have to cite it to get it fixed. There is no grey area with the mine management now, if you don't issue a citation or try to suggest they do something, they will not do anything without paper.

From: Stricklin, Kevin G - MSHA
Sent: Tuesday, November 07, 2006 6:17 AM
To: Davis, Allyn C - MSHA
Cc: Cornett, Bob E - MSHA; Knepp, William P - MSHA; Langton, John F - MSHA
Subject: meeting with Bob Murray

Al,

As you know, Richard Stickler and I met with Bob Murray and Jerry Taylor last Friday. [REDACTED]

[REDACTED]

[REDACTED] He as well is upset in the time delay of getting seals approved. We have discussed that in the past and that is out of our hands. I have shared the concern with Mark Skiles and tech support. His third complaint was inconsistency in enforcement at his 3 mines. I'd suggest District 9 do a quarterly breakdown of the last 4 inspections at these 3 mines and show the number of citations and orders issued under the various sections of law. I would like for the district to forward a copy of the info to John and me. I expect Richard to want to look at the info and want us to know what is there before Richard does. [REDACTED]

[REDACTED] All in all, it wasn't that bad of a meeting. I have been in a lot worse ones with him.

Exhibit 19

From: Sargeant, Bryan P - MSHA
Sent: Friday, September 01, 2006 2:47 PM
To: Cornett, Bob E - MSHA
Subject: RE: Mines

He has gone after several. Tell your people to be careful when dealing with him or any person associated with his operations. Mr. Murray can be personable until he feels that you have crossed him. He will take any statement and twist it to his advantage. The incidents here were primarily comments made by inspectors and presented at the national level out of context of the original intent of comment. He can become abusive if he feels that it will serve his purpose. His sole intent is to discredit the inspectors that are enforcing the law.

REDACTED

Exhibit 20

panel from his testimony at two of the hearing and being intimately involved in the panel's tour of Tower. While additional verbal testimony will not be allowed, Jim's presence will indicate the significance UEI and Utah places on the recommendations of the panel. In addition, Bruce Watzman will be in attendance for part of the hearings (he has to attend the NMA board of directors meeting during part of the public hearing).

- UEI's mine rescue team competed in the Annual Price Mine Rescue Competition on Wednesday. The competition has been on-going for 31 years. The UEI team finished in third place. Considering the team has never been competitive and had limited practice as a team (three new members), the results were very impressive. We are entering the team in the national competition scheduled for the end of the month. *Sight.*
- Another major issue now before the industry is the Emergency Temporary Seal (ETS) standards now in effect. The comment period has been extended until August 17th. Jim Poulson submitted testified at the July 17th public hearing in Denver. Critical issues discussed included:
 1. The required PSI strength of a seal. MSHA wants 120 PSI whereas the industry wants 50 PSI.
 2. The time it is taking to gain approval for seals is out of hand. As you know, we are constantly fighting MSHA for approval and UEI was literally the first company to gain an approval in the country (only after you and I sent letters to MSHA personnel). The approval process continues to be a major problem.
 3. What are inter-panel seals between longwall panels going to be considered and what strength will be required. This is a major issue for UEI as we build seals between each panel at West Ridge and a 120 PSI seal would create major construction and cost problems.
 4. What is considered the threshold for an immanent danger behind the seals and what has to be done when the atmosphere behind the seals are in the explosive range.
- We are now contesting all violations issued to UEI mines, as discussed on our conference call this week. UEI had submitted payment for 6 violations written after April 22nd, but accounting had not paid the assessment and has placed the payment on hold. In addition, we have contested the violations. The assessment for the six violations ranged between \$300 and \$4,000. Except for the \$4,000 violation, all of the remaining violations were below \$500. The one large violation was a result of the section of law (75.400) having been written 29 times in the past 24 months. *noted.*
- We have scheduled Marco Rajkovich to meet with all UEI supervisors on August 18th to discuss the mine act changes, the financial impact of the changes and the personal liability associated with the act. This is very important training for our managers given MSHA's incredulous actions from a financial perspective. *noted.*
- During the month of July we terminated 2 employees for not passing their random drug test. This brings to 5 the total number of employees who have been terminated since we started random testing in November. *Good work.*
- MSHA plan approval for ventilation, roof control and seal approvals is almost at a standstill. While I understand the problem is nationwide, the process is almost at a halt in District 9. We spoke to Al Davis at the mine rescue contest this week and he acknowledges the problem, but offered no relieve for the problem. We continue to apply pressure on the critical issues. *a chronic issue - and critical.*

Exhibit 21

Robert E. Murray SandS Violation History

08/01/2006 - 07/31/2007

Mine ID	Mine Name	Mine Type	Mine Status	Mine Status Date	On-Site Inspection Hours	S&S Cited**	S&S PIH
1102752	Galatia Mine	Underground	Active	11/07/1983	4,510	369	0.08
1517741	Paradise #9	Underground	Active	04/13/2000	1,511	53	0.04
3301070	Century Mine	Underground	Active	06/07/2001	1,425	52	0.04
3301159	Powhatan No. 6 Mine	Underground	Active	11/01/1980	2,464	257	0.10
3304381	Powhatan Transportation Center	Facility	NonProdActive	06/07/2000	21		0.00
3600968	Maple Creek Preparation Plant	Facility	NonProdActive	06/28/2005	72		0.00
3602695	Energy Resources Inc	Surface	Active	02/15/1970	43	14	0.33
3608525	Burrell Mine	Underground	NonProdActive	08/02/2002	152	1	0.01
3608544	Cleaning Plant	Facility	NonProdActive	03/06/2001	4		0.00
3608678	Monvalley Transportation Center Inc	Facility	TempIdle	10/05/2005	2		0.00
3608867	Irishtown Strips	Surface	Active	01/08/2004	18	2	0.11
3609051	ERI Prep Plant	Facility	Active	05/11/2004	7		0.00
3609114	ERI Rail Loadout	Facility	NonProdActive	06/05/2007	6		0.00
*4201474	Pinnacle	Underground	NonProdActive	01/13/2006	48	6	0.13
*4201715	Crandall Canyon Mine	Underground	Active	11/22/1983	349	27	0.08
*4201864	Wildcat Loadout	Facility	Active	06/17/1985	58	6	0.10
*4202028	Aberdeen	Underground	Active	03/28/2002	1,377	134	0.10
*4202233	West Ridge Mine	Underground	Active	11/04/1999	1,102	74	0.07
*4202356	South Crandall Canyon Mine	Underground	NonProdActive	11/01/2006	78	2	0.03
Totals for Robert E. Murray Mines					13,243	997	0.08

*Indicates Robert E Murray began ownership on 8/9/2006

**Excludes vacated S&S Citations and Orders

Industry Average	On-Site Inspection Hours	S&S Cited**	S&S PIH
Facility	23,777	1,772	0.07
Surface	45,453	2,896	0.06
Underground	290,455	22,601	0.08
All Bituminous Coal	359,684	27,269	0.08

PEIR - 08/09/2007

Exhibit 22

MEC
Safety - Weekly Report
C + A

7-29-07

Interoffice Correspondence

Dist + cc: Jerry Taylor
Noted.

Bob Murray

To: Mr. Robert E. Murray

From: J. M. Taylor

Date: July 20, 2007

Re: Safety Status Report

Dist + cc: Bruce Hill
Louis Adair
Jim Paulson
Darnell Leonard
Steve Kishers
Guy Research
Bob Murray
Kevin Hughes
Dick Hambo

The incident rates for the 2nd quarter 2007 are listed below. Galatia N had the lowest incident rate (1.12) and will receive the MEC quarterly safety flag.

Redacted:
Not Responsive

Good.

Crandall Canyon 10.70

Redacted:
Not Responsive

Awful.

Redacted:
Not Responsive

The final engineering drawings for the breathable air sleds have been completed. We will install the breathable air supply as you and I discussed using barricade walls in lieu of emergency shelters. If we are later forced to go to emergency shelters we can have the oxygen and CO2 scrubbers removed from the sleds and installed in an emergency shelter. Roger Blumling has received bid for these sleds. Strata has worked closely with Ron VanHorne and me to design the breathable air supply sleds, and they have quoted the lowest price of all the vendors. They are going to cost around \$61,000.00 each. We designed the sleds and our emergency plans to provide the least

cost method of providing the emergency breathable air required by the MINER Act. I asked Strata to put MEC at the bottom of their production and delivery schedule. The sleds should not be delivered until sometime in 2008. This will give us time to make any changes that may be required by the Second MINER Act, should it be enacted.

noted.

I have been scheduling meetings with various communications and tracking device manufacturing companies. I have included the Superintendents, electrical and maintenance personnel in these meetings. Currently we are attempting to track all the miner's locations by having them call a designated person on the surface and keeping a written log of their location underground. This is difficult to accomplish and maintain an accurate record. MSHA inspectors are starting to monitor our tracking systems and are issuing violations if a miner fails or forgets to call before moving to and after they reach another location. The cost of violations and the time wasted for employees to go to a phone and notify the person on the surface of their location will more than pay for an electronic tracking device.

noted.

cc: R.D. Moore
R.A. Heidelberg

Exhibit 23

From: Farmer, Ted E - MSHA
Sent: Friday, August 31, 2007 8:47 PM
To: Cornett, Bob E - MSHA
Cc: Davis, Allyn C - MSHA; Taylor, William M - MSHA
Subject: RE: General Overview

Bob,

I'm not sure you got this information so I am sending it again.

During the week between Christmas 06 and New Year 07 very few people were in the office on Friday, December 29, 2006 (Michael Shumway, CMI, Rick Boyle, Diesel Specialist Bill Bordea, Electrical Specialist Trainee and myself).

Mike answered the Office phone and forwarded the call to me. An individual who would not identify themselves and did not want to file a complaint but wanted MSHA to know what was going on up at the Crandall Canyon Mine. Crandall Canyon Mine is under work group 02 jurisdiction but Bill Taylor was on leave I asked what the problems were?

The Caller stated that for the men to make bonus they needed 4,000 tons by the end of the year and the belt lines were dirty, no rock dusting was being done and the section foreman Jessie Gordon was even driving a shuttle car through lunch so the tonnage could be met and no attention was being given to safety.

I got Mike, Rick and Bill and made assignments for an immediate inspection at the mine. Mike, Rick and Bill were to go to the section and check it out completely and I would walk the entire belt line.

The findings of this inspection were 3 S&S citations, 7 Non-S&S citations, 1 104(d)(1) citation and 1 104(d)(1) order. A 110 investigation was also requested on three management officials. Gary Jensen, MSHA Special Investigator was investigating the "KW" as of last month according to Rick Boyle because Gary had interviewed him.

Ted

•

[REDACTED]

[REDACTED]

[REDACTED]

From: Cornett, Bob E - MSHA
Sent: Fri 8/31/2007 1:52 PM

To: Erramouspe, Pat - MSHA; Taylor, William M - MSHA; Farmer, Ted E - MSHA; Beacco, Alice - MSHA
Cc: Ronzone, Dario R - MSHA; Knepp, William P - MSHA; Fast, JoLynn - MSHA
Subject: General Overview

Al wants information to put in a power point he has us all working on from various aspects here in the District and we are going to need the following from the field office no later than early Tuesday morning so we can put it in and have a chance to review it.

Looking at the time frame of August 1, 2005 until August 6, 2007, basically one year before Utah American took it over until the accident date

We need a General Overview of the Crandall Canyon Mine from the inspection/enforcement standpoint. Any inspection or enforcement issues that were encountered, a general overview of inspection/enforcement during this time frame, any problems at the mine. This needs to be a brief narrative on these subjects. We are trying to do the same from the plan standpoint and Dario has been working on inspection summary and violation summary, possibly graphs. These will be done here, but we need the mine overview from the field office perspective.

I was not sure if both work groups had this mine during this time frame is why I am asking both to input information into it.

Pat, please get this to Bill and Ted asap so they can be working on it. OT/Comp time is authorized.

Exhibit 24

POSSIBLE KNOWING/WILLFUL VIOLATION REVIEW FORM
(Confidential, Pre-decisional Information)

U.S. Department of Labor
Mine Safety and Health Administration



MINE ID 42-01715 MSHA OFFICE Price, Utah 01
MINE NAME CRANDALL CANYON MINE
COMPANY NAME GENERAL RESOURCES, INC.
Citation/Order No. 7286499 Date 12-29-2006

ACCIDENT INFORMATION:
Was this violation associated with an accident which caused an injury? YES NO If yes: Fatal? Non-fatal?

REVIEW CRITERIA: (Attach supplemental information if needed)

1. Did the condition or practice cited create the presence of a high degree of risk to the health and/or safety of miners? Yes No
a) Who was exposed to the hazard? (Name and Occupation)
All employees and occupations that work on MMU-002-0
b) How were they exposed to the hazard? 1900 feet in both intake entries did not have sufficient rock dust. Mining of coal was taking place and to make rock was being cut along with the coal in these entries
c) When and over what period of time did the exposure occur?

d) Is this first hand information? Yes No
If not, who provided the information? (Name and Occupation) _____

2. Did the operator or agent have actual knowledge, or reason to know, of the facts or conditions constituting the violation? Yes No
a) Who had this knowledge? (Name and Title) Jessie Gordon, Dwight Gilbert Shift Foreman and Beany Allred, Acraig Shift Foreman
b) How was this knowledge evidenced? Only one section is operating at this mine. All Mine Foremen have to traverse this area to get to the working section. Condition was obvious and extensive and had existed for several shifts
c) Is this first hand information? Yes No
If not, who provided the information? (Name and Occupation) Gary Percock, Mine Manager

3. Any other pertinent information: Rock dust band samples were taken from entry #128 to #135 in the #14#2 intake entries. The results of these samples from lab tests will verify that very little rock dust had been applied. Under Alert requires high standards. Lack of rock dust, cutting rock with coal and bunches that suspended coal dust making a coal dust ignitable more probable

INSPECTOR'S CONCLUSION:
Based on this review, does this appear to be a possible knowing and/or willful violation of the Act or mandatory health or safety standard? Yes No

Inspector AR Number: 24125 Signature: Richard O. Goye Date: 1-5-2007

Supervisor: Do you agree with the inspector's conclusion? Yes No
Signature: Todd E. Farn Date: 1-5-2007

POSSIBLE RECOMMENDED ACTIONS:

A. Conduct a special investigation. C. No further action.
Assistant District Manager: Recommendation: A (A or C from the list above)
Signature: Allen Hillman Date: 2/15/2007
Supervisory Special Investigator: Recommendation: A (A or C from the list above)
Signature: Adam Welter Date: 2/15/07
District Manager: Action Decision: A (A or C from the list above)
Signature: Allen C. Davis Date: 2-15-07

ADDITIONAL COMMENTS OR REMARKS:

CASE ASSIGNMENT INFORMATION:

Investigation Case No DENU-CSE 2007-14 Date Assigned 2-15-07
Investigator Assigned Gary Jensen ID No _____

POSSIBLE KNOWING/WILLFUL VIOLATION REVIEW FORM
(Confidential, Pre-decisional Information)

U.S. Department of Labor
Mine Safety and Health Administration



MINE ID 42-01715 MSHA OFFICE Price Utah
MINE NAME Cranhall Canyon Mine
COMPANY NAME Utah American Energy
Citation/Order No. 7256500 Date 12-29-06

ACCIDENT INFORMATION:
Was this violation associated with an accident which caused an injury? YES NO If yes: Fatal? Non-fatal?

REVIEW CRITERIA: (Attach supplemental information if needed)

- Did the condition or practice cited create the presence of a high degree of risk to the health and/or safety of miners? Yes No
 - Who was exposed to the hazard? (Name and Occupation) Mining Crew on MMU 002
 - How were they exposed to the hazard? 1900 in both intake entries did not have sufficient Rock Dust. Misting was taken place & 6' of rock was being cut in these entries
 - When and over what period of time did the exposure occur? on 12-29-06 day shift misting was taking place in these entries - condition has existed for several previous shifts
 - Is this first hand information? Yes No
If not, who provided the information? (Name and Occupation) _____
- Did the operator or agent have actual knowledge, or reason to know, of the facts or conditions constituting the violation? Yes No
 - Who had this knowledge? (Name and Title) Benny Alford acting shift supervisor, Dale Black, Doug Erickson, Art Blain foreman
 - How was this knowledge evidenced? the area is reported to have been on shift examining these areas - the areas were inspected and no hazard was observed
 - Is this first hand information? Yes No
If not, who provided the information? (Name and Occupation) Gary Peacock & Per Shift Records
- Any other pertinent information: these conditions were obvious & extensive and a hazard was noted in the records of examination

INSPECTOR'S CONCLUSION:

Based on this review, does this appear to be a possible knowing and/or willful violation of the Act or mandatory health or safety standard? Yes No
Inspector AR Number: 24125 Signature: Richard J. Boyle Date: 1-5-07
Supervisor: Do you agree with the inspector's conclusion? Yes No
Signature: [Signature] Date: 1-5-07

POSSIBLE RECOMMENDED ACTIONS:

A. Conduct a special investigation. C. No further action.
Assistant District Manager: Recommendation: A (A or C from the list above)
Signature: [Signature] Date: 2/15/07
Supervisory Special Investigator: Recommendation: A (A or C from the list above)
Signature: [Signature] Date: 2/15/07
District Manager: Action Decision: A (A or C from the list above)
Signature: [Signature] Date: 2-15-07

ADDITIONAL COMMENTS OR REMARKS:

CASE ASSIGNMENT INFORMATION:

Investigation Case No. DEMO-CST-2007-14 Date Assigned 2-15-07
Investigator Assigned [Signature] ID No. _____

Investigation Assignment Control

U.S. Department of Labor
 Mine Safety and Health Administration



1. Case Number DENV-CSI-2007-14		2. Date Case Assigned 02/15/2007	3. Investigator JENSEN
4. Mine Company UTAH AMERICAN ENERGY		5. Mine Name CRANDALL CANYON	6. ID Number 42-01715
7. Address Crandall Canyon Hwy 31, Mile Post 33, Huntington, UT Discrimination Complaints Only items 9 - 13		8. Type of Discrimination 84528	
9. Complainant's Name		10. Phone Number	
11. Address		12. Respondent's Name(s)	
13. Date Complaint Received	15-Day Start Date	90-Day Decision Date	14.
15. Prior History/Supervisor's Remarks/Event Number Prior history is attached. Citation Nos: 7286499 and 7286500 Issued 12-29-07 30 Days: 01-28-07 60 Days: 02-27-07 120 Days: 04-28-07 150 Days: 05-28-07			
16. Attorney Assigned	17. Date	18. Disposition	19. Field Office PRICE
MSHA Form 2000-158, Oct 88 (Revised)		Headquarters Control	Copy B

RECEIVED MAR 2 - 2007

Sent to Assessments

Special Assessment Review Form

U.S. Department of Labor Mine Safety and Health Administration JAN 16 2007

This form contains information that is privileged or otherwise exempt from disclosure under applicable law. Do not disclose without consulting the Office of the Solicitor or the Office of Assessments.

1. MSHA District Office 9	2. Field Office PRICE Utah
3. Mine ID/Contractor ID 24-01715	4. Mine Name CRANDALL CANYON MINE
5. Operator Name Utah AMERICAN ENERGY	6. Citation/Order Number 7286499
	7. Citation/Order Issue Date 12-29-06

8. Accident Related Violation? Yes No If yes, all violations must be submitted together with any accident report or memorandum.

9. Operator Notified of Special Assessment? Yes No

10. Inspector's Recommendation Is this a flagrant violation? Yes No

Special Assessment? Yes No If yes, explain below the serious or aggravating circumstances involved.

MMU 002 WAS OPERATING WITH 1900' OF INTAKE AIR WAY, ENTRIES 1 & 2, WITH VERY LITTLE ROCK DUST. THIS CONDITION WAS OBVIOUS + EXTENSIVE. ROCK WAS BEING CUT IN #1 & 2 ENTRIES. (ABOUT 6" THICK IN LEFT SIDE OF EACH ENTRY) BAND SAMPLES WERE TAKEN IN BOTH ENTRIES FROM X CUT 12B TO THE LOC AT 135 TO SUBSTANTIATE THIS CONDITION. BOUNCES ARE COMMON IN THIS AREA & COULD CAUSE COAL DUST TO BE SUSPENDED & CONTRIBUTE TO CONDITIONS THAT WOULD SUPPORT A COAL DUST EXPLOSION. THIS CONDITION HAS EXISTED FOR SEVERAL PREVIOUS SHIFTS.

See Continuation Sheet Signature: Richard J. Boyle Date: 1-5-07

11. Supervisor's Review Is this a flagrant violation? Yes No

Special Assessment? Yes No

Comments: See Continuation Sheet Signature: T. E. Famer Date: 1-5-07

12. Assistant District Manager's Review Is this a flagrant violation? Yes No

Special Assessment? Yes No

Comments: See Continuation Sheet Signature: Bob Bennett Date: 1-16-07

13. District Manager's Review Is this a flagrant violation? Yes No

Special Assessment? Yes No

Comments: See Continuation Sheet Signature: Allen C. Down Date: 1-16-07

Exhibit 25

December 21, 2007

Memorandum to: Edward Clair
Associate Solicitor

From: Mark Malecki
Counsel for Trial Litigation

Re: Crandall Canyon Mine
Case DENV-CSI-2007-14

This memorandum discusses the circumstances regarding a special investigation arising out of violations at the Crandall Canyon mine in a case designated "DENV-CSI-2007-14." The case arose out of the issuance of Citation No. 7286499 and Order No. 7286500 both issued on December 29, 2006 at the Crandall Canyon mine. Respectively, the citation and order were for 30 C.F.R. Section 75.403 on grounds of insufficient incombustible content in an intake air course and Section 75.360(a)(1) issued on grounds of failure to adequately examine the same area. On February 15, 2007 a Possible Knowing/Willful Review form signed by District Nine officials recommended the commencement of a special investigation regarding these issuances. The case was assigned to Gary Jensen. Gary Jensen was a newly designated SI at the time and did not have his credentials to conduct special investigations until April 8, 2007. At the time of the August 6th mine disaster at Crandall Canyon, Gary Jensen had not commenced the investigation. The agency was, however, legally in a position to continue to investigate the matter so long as the penalties could be assessed by June 28, 2008.

The agents who are identified on the memorandum recommending commencement of the special investigation as potentially responsible for a knowing violation of the combustible content standard were Jessie Gordon, Dwayne Gilbert - - both designated as foremen - - and Benny Allred, designated as "Acting Shift Supervisor." The agents who are identified as potentially responsible for a knowing violation of the examination requirements were Benny Allred, and firebosses Dale Black, Don Erickson and Art Blotas. Of these two groups, Allred, Erickson and Black were killed in the disaster or rescue attempt. Since this left only two potential targets, both of whom were relatively low level agents, as potentially liable, the matter was closed on October 17, 2007.

I have spoken with the Chief of the Office of Technical Compliance and Investigations regarding the circumstances surrounding the workload in D-9 regarding special investigations and she indicates that the group was at about half strength during the period in question. Supervisory Investigator Judy Peters had transferred to District 1, and one of the investigators was sent to District 4 on a detail for an extended period of time in the spring of 2007. As indicated above, Gary Jensen was not credentialed until April, 2007 and the investigators also had responsibility to conduct inspections in addition to conducting investigations.

For your information, the data retrieval system indicates that the two underlying citations were specially assessed, were not contested, and they became final orders of the Commission. They are in delinquent status.

Exhibit 26

U. S. Department of Labor

Mine Safety and Health Administration
P O Box 25367
Denver, Colorado 80225
Coal Mine Safety and Health
District 9



October 17, 2007

CMS&H MEMORANDUM NO. D9-00-08-28

MEMORANDUM FOR CAROLYN T. JAMES
Assistant Director, Technical Compliance and
Investigation Office

FROM:

Allyn C. Davis
ALLYN C. DAVIS
District Manager

DAN VETTER *DV*
Supervisory Special Investigator

SUBJECT:

Recommendation of No Further Action in Possible Knowing/
Willful Violation Review of Citation Numbers 7286499 and 7286500
issued on 12/29/2007 to Genwal Resources, Inc. at Crandall Canyon
Mine, ID No. 42-01715, Case No. DENV-CSI-2007-14

After further review, the district has determined that this case will not be investigated. Due to several obstacles, such as pending conference results, and the lack of resources, we have determined that this case cannot be completed in a timely manner, since the 60 day investigation deadline was February 27, 2007. And unfortunately, the cited agents on these citations were accident victims of the Crandall Canyon Mine disaster and are deceased. Therefore, this case is closed without investigation.

cc: Boyle, CMS&H Inspector
Farmer, Supv. CMS&H Inspector
TCIO
SOL
SI Files

Case Number: DENV-CSI-2007-14 District Office: 9 160 Day Date: 5/28/2007 Primary Event No: 4476315
 Investigator: JENSEN Violation Date: 12/29/2006 Date Assigned: 2/15/2007 Old Event No.
 When start up is received please ensure that all information noted in red is complete. (if applicable)

Company Information

MineID# 4201715
 Company: UTAH AMERICAN ENERGY
 Mine Name: GRANDALL CANYON MINE
 Address: GRADALL CANYON HWY 31 MILE POST 3
 City, State, Zip: HUNTINGTON UT 84528

Contractor Information
 (if applicable)

Contractor Id:
 Company:
 Address:
 City, State, Zip:

Merits Progress in TCIO/District Mailin

Mailed Merits to TCIO: 10/17/2007
 Investigation Start:
 Received in TCIO:
 Recd by Reviewer:
 TCIO Reviewer Initials:
 TCIO Review Completed:
 Returned To District:

Conference/SOL/USA

Sent for S&H Conference:
 Date from S&H Conference:
 Date To Assessments:
 Date To SOL:
 Date To SOL 2nd Time:
 Date To US Atty:
 Company Plea/Convict Date:

Looking New Case Method

New Case Previous Case

Next Case Remarks

Agent Data Save

Recommendations and Findings

District Recommendation NV
 SH Conference Recommendation
 HQ Recommendation
Do not select NV for HQ if DM recommended NV

SOL Finding: Date:
 Assessment Finding: Date:
 US Atty Findings: Date:
 Final Action: NV Date: 10/17/2007

DENV-COI-2007-14

Back

Purged and Returned

Done

DM CLOSED: PENDING CONFERENCE RESULTS, LACK OF RESOURCES, CITED AGENTS ON THE CITATIONS WERE ACCIDENT VICTIMS OF THE MINE DISASTER

Delete

Exhibit 27

Inspection Report - Special

Printed On: 1/24/2005

Period

Inspection Number: SWF110404

Mine Name: Genwal	Fiscal Year: 2005
Mine Owner: Andalex/IPA	Period Type: Quarterly
Inspector: Steve Falk	Period End Date:
Operator: Genwal	Active Faces: 4
Operator Rep:	Accompanied By:
Remarks: On Thursday, November 4, 2004, I (Stephen Falk) inspected the Crandall Canyon Mine, operated by Genwal Resources, Inc., a subsidiary of Andalex, which is a 50 percent owner/lessee along with 50 percent Intermountain Power Agency (IPA). James Sorenson, Mine Engineer for Andalex, was my company rep.	Finalize Date: 1/24/2005

On October 27, 2004, John Lewis, Mining Engineer for Andalex, called and informed me that Genwal would need to seal off the west portion of the Main West mains at the Crandall Canyon Mine. Conditions were deteriorating and access through the area near impossible. I informed him that I would be up the next week to inspect the area. On the 4th of November, I arrived at the mine and James Sorenson was there for the inspection. We went directly to the section with the idea to note conditions and a final inspection of the area before sealing to assure if materials are left or taken out.

Main West is in use up to crosscut 92 where South Mains intersects and accesses 6th East pillar area. Main West continues back west from crosscut 92 to 105 where 1st Right submains drove north to access longwall panels 7-12. This is sealed off. From crosscut 107 to the Joe's Valley Fault at 167, Main West was used as access to the bleeder for longwall panels 13-18. Now this bank of panels is sealed off and use is no longer needed. A number of years ago, BLM inspected Main West after the north longwall block was mined out and the first few panels to the south were mined out. The barrier planned on both sides looked like it was designed to only hold up for only a short while. The north entry was taking weight and extra roof supports and rebolting had to be done. Now the situation is even worse. Genwal plans to seal at 116. At 116, the depth of cover is about 1500 feet and rises to 2000 feet by crosscut 127 and stays 2000+ feet to 143. The depth is between 1500 and 2000 feet from 143 to 154 and drops off to 1000 feet at the fault, 167. It was apparent from traveling down the intake that the area is taking unacceptable weight. Main West is a 5 entry main entry system that was mined to the Joe's Valley Fault back in 1995. The entries were on 90 foot entry and crosscut centers, leaving a 80 x 80 foot pillar. However, the crosscuts from the belt (middle) entry to the left intake (number 2) entry, were driven on an angle off of 90 degrees due to the need for the continuous haulage system then in use to have a easier turn for gathering the track mounted belt. The end result of cutting this crosscut on an angle is that the intersections have tended to be wider and irregular and they are caving in under the pressure. I traveled down the number 1 or left most intake entry and noted the inside pillar rib rash that was occurring past crosscut 123. I peeked past check currents at crosscut 141, 142 and 149 and noted large intersection caves. Genwal is maintaining the left intake but is being told by MSHA that if Main West is to be used in the near future for access, then all travel ways need to be cleaned up and supported against any future caves. It is very apparent that pressure arches from both side gobs are sitting right down on the main entry pillars. At this depth, the pillars are failing. Genwal tried to split a pillar around an intersection cave and could not hold the top and side pillar failures were occurring.

The situation in Main West is untenable for future pillar recovery. No mining company in the area has ever pulled pillars in main entries with mined out sides and under 1500+ feet of cover. That Genwal had thoughts and plans to try pillar recovery was wishful thinking and was more wanting to extend mine life when they failed to get the Mill Fork lease and the need to blend off high sulfur coal from West Ridge.

At the same time, I noted the area for any materials left before sealing. All equipment in the travelable areas had been removed. Belt structure had been also taken out except for a 50 foot section that had been caved on in an intersection. No other materials were noted that had been left. James will file out the haz-mat certification sheets and get them to me.

Close Out Discussion:

Closeout Discussion:

After the inspection, the following items were noted and agreed on. First, Main West past crosscut 116 is no longer of any use and sealing off would release the extra ventilation air for other use. Second, the pillars in Main West are failing over time with greater than 1700 feet of cover. Caves are occurring at intersects compounded by irregular intersection dimensions. Third, attempts to split pillars under this depth could not hold the top and prevent pillar outbursts.

Conclusions: Main West was designed only to hold up until longwall panels were mined out on both sides. Depth of cover precludes pillar recover even if there were no mined out sections next door. Weight on the pillars is substantial and dangerous conditions are present. Mining any of the coal in the pillars will result in hazardous mining conditions such as pillar bursts and roof falls. Original mine plans called for pillar recovery only in general sense and recent plans conditioned recovery on favorable geologic conditions. If any further mining is to be in this area, MSHA will require making both intake entries travelable and some of the belt and structure would have to be replaced. I agree that further mining in this area would be dangerous and most likely too expensive to rehabilitate. The reserves left in the pillars and the two barriers were never included in the recoverable reserve base as far as I can determine and Genwal not required for further coal recovery in this area. The sealing should go forth and revisions to the R2P2 for this area will be covered in an approval for mine-wide revisions recently submitted.

Inspection Addenda

Entry Date: 1/24/2005

Comments: After the inspection was completed, a question about the in-mine water monitoring well MW-7, located near the back end of Main West, was raised. Upon inquiry, this well was stopped monitoring in 2002 with the consent and knowledge of DOGM due to dangered off area from pillar failure. The well was only 40 feet deep into the Starpoint sandstone and the well did not flow. A pipe cap was place on the well and no notes of any water inflow was recorded. We conclude that sealing Main West will not adversely affect any aspects of the abandoned monitoring well.

Exhibit 28



United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Utah State Office

P.O. Box 45155

Salt Lake City, UT 84145-0155

<http://www.blm.gov>



IN REPLY REFER TO:
 UTU-68082
 U-54762
 (UT-923)

FEB 23 2005

Certified Mail--Return Receipt Requested

INCORPORATED

FEB 28 2005

Mr. John C. Lewis
 Mining Engineer
 Genwal Resources, Inc.
 P. O. Box 1077
 Price, Utah 84501

DIV OF OIL GAS & MINING

Re: Minor Modification, Resource Recovery and Protection Plan (R2P2), Revised Life of Mine Plan, Low-Seam Longwall Panels, East and North Mining Areas, Crandall Canyon Mine

Dear Mr. Lewis:

The Bureau of Land Management (BLM) has received from Genwal Resources, a modification to the subject R2P2. The proposed modification revises mining plans for low-seam areas with the acquisition of low-seam longwall machinery, and updates timing for life of mine recovery. The changes are for Federal coal leases UTU-68082, U-54762, and adjacent State of Utah coal leases.

Genwal plans a number of revisions to the approved R2P2.

1. Convert a previously approved area for room and pillar mining to mine two small longwall panels, #'s 20 and 21. This area is south of West Mains and directly between the old longwall panel # 3 on the west and old works on lease SL-062648 to the east. The area had projected coal heights less than what the previous longwall equipment could mine. The acquisition of low-seam longwall equipment is Genwal's justification for the change.
2. Develop and mine longwall panel # 22 parallel to West Mains and east of old longwall panel # 2. Again, this area originally was projected with seam heights. In addition, Genwal has requested a lease modification for additional coal lands at the eastern boundary of UTU-86082, just west of the outcrop in Huntington Canyon. With the acquisition of low-seam longwall equipment, Genwal will attempt to develop and extend longwall panels into this area.

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FEB 28 2005

DIV OF OIL GAS & MINING

3. Probe/develop the area north of planned longwall panel # 22, as shown on Genwal's map of Oct 12, 2004, to ascertain if coal heights will support coal recovery. If probing/development proves a recoverable reserve, a panel plan will be submitted for approval. Any coal to be left unmined must be approved by BLM prior to abandoning the area.
4. Revise planned recovery of coal remnants in mains and sub-mains. Genwal plans retreat recovery of some pillars and barriers remaining in main entries and sub-main entries and updates timing and sequencing of this recovery.

The BLM has reviewed and analyzed the proposed revisions. Starting with the proposed longwall panels # 20 and # 21, we agree with the plan. When Genwal had earlier completed longwall panel # 19 and had developed Main East directly north of panel # 19, the BLM had given verbal approval to develop 3 1/4 East (a three entry development set) into this low coal block that was previously planned for room and pillar mining if coal heights were high enough. Subsequent quarterly inspections (June 29 and September 14, 2004) confirm coal heights above 5 feet thick and in the range of the new low-seam longwall equipment. Though the apparent and projected coal heights are near the minimum limits for operating the longwall equipment, the BLM encourages full recovery.

The area north of Main West and east of old longwall panel # 2 is also approved with similar conditions as in area one. This area was not previously scheduled for mining as the back end of old panel # 2 stopped due to coal below 6 feet which was the limits of the previous longwall machinery. With the acquisition of a low-seam continuous miner and longwall equipment, BLM gave verbal approval to connect up the Main West entries with the back end bleeder entries of old longwall panel # 2 (now called 3rd North off Main West) and then drive development entries east (called 1st Right Gate off of 3rd North) to ascertain coal heights for a low-seam longwall panel. In addition, Genwal applied for a lease modification for the east end of lease UTU-68082 to acquire unleased coal (if it exists with minable thickness) between the boundary and the outcrop to Huntington Canyon. An inspection on September 14, 2004, verified that the beginnings of 1st Right Gate had thicknesses of greater than 5 feet. We agree with the proposal and also the general plan to develop north of this proposed panel # 22 to recover minable coal with the new low-seam mining equipment. The requirements for the R2P2 for this lease modification area are met with your submission. However, Genwal is not authorized to mine in the lease modification area (west quarter of section 32, township 15 south, range 7 east) until a permit under the Surface Mining Control and Reclamation Act (administered by Utah Division of Oil Gas and Mining) is issued. This letter will be copied to Utah Division of Oil Gas and Mining (UDOGM) and will serve as our concurrence to them for requirements under the Mineral Leasing Act.

The fourth part of the proposed revisions depicts new sequencing and timing of mining remnant pillars left in the mains and sub-mains as part of final retreat mining. We agree and find the plan for recovering pillars in the mains and sub-mains a good attempt to recover remnant coal surrounded by mined out areas. We note that no retreat mining of Main West inby crosscut 116 is depicted on the latest submission. Genwal informed the BLM in late October, 2004, that they were planning to seal Main West due to adverse loading and the inability to maintain passage back to the end of Main West. BLM inspected the area on November 4, 2004, and noted the conditions. Heavy pillar loading was noted from crosscut 125 all the way back to near the end of Main West. Two large intersection caves were noted and heavy rib sloughage on the intake entry for most of this length. In addition, the rib line to the north barrier was pushing out coal well into the entry. It is apparent that pillar recovery will not be possible. First, before any additional mining can occur, all entries must be made travelable which will require all caves and failures clean up and secured. The depth for most of Main West is over 1500 feet with the middle area (where the worst conditions were noted) is over 2000 feet deep. Main West perform its function of

longwall gob return air courses for the life of the north and south longwall block near Joe's Valley fault but cannot be used for final pillar recovery. We agree that the pillars in Main West inby crosscut 116 cannot be recovered safely or practically. We also concur with sealing the area as the coal is not recoverable, return ventilation is no longer needed and equipment and any hazardous materials have been removed.

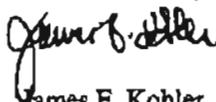
Our approval for these revisions to the R2P2 is conditioned on Genwal updating the recoverable reserve base for the Federal leases at the Crandall Canyon Mine within 30 days. Should extra time be necessary to finalize these numbers, please inform us at the contacts listed below. This is not a punitive measure, just an acknowledgement that reserve figures were not tracked in the past by all concerned. We wish to rectify recoverable reserves for all leases and lessees.

This approval of a minor modification to an existing R2P2 is Categorically Excluded from National Environmental Policy Act (NEPA) analysis in that no new surface disturbance will occur from this action as stated in Overview of BLM's NEPA Process, February 1997, Appendix 2, page 2-7 (F)(7). NEPA analysis was conducted for the lease modification area, and a Finding of No Significant Impact (FONSI) was signed in November 2004.

Genwal's proposed changes to the R2P2 complies with the Mineral Leasing Act of 1920, as amended, the regulations at 43 CFR 3480, the lease terms and conditions, and will achieve maximum economic recovery of the Federal coal. The mining plans as depicted on the October 12, 2004 submission (ACAD REF: R2P2 CRANDALL) is approved as submitted with the mentioned condition for reserves update. A copy of the approved mine map is enclosed. This approval constitutes our concurrence for R2P2 requirements for UDOGM on the area of the lease modification.

If you have any questions, please contact Stephen Falk in Price at (435) 636-3605 or Jeff McKenzie of my staff at (801) 539-4038.

Sincerely,



James F. Kohler
Chief, Solid Minerals Branch

Enclosure
Approved Mine Map

cc: Price Field Office (w/encl.)

Utah Division of Oil Gas and Mining (w/encl.)
1594 West North Temple, Suite 1210
Salt Lake City, Utah 84114-5801

INCORPORATED

FEB 28 2005

UTAH OIL GAS & MINING

Exhibit 29

U.S. Department of Labor

Mine Safety and Health Administration
P.O. Box 25367
Denver, Colorado 80225-0367
Coal Mine Safety and Health
District 9,



JUN - 9 2005

Laine W. Adair
General Manager
Genwal Resources, Inc.
P.O. Box 1077
Price, UT 84501

RE: Crandall Canyon Mine
ID No. 42-01715
Mine Ventilation Plan
6-Month Review

Dear Mr. Adair:

The enclosed plan amendment, dated June 2, 2005, consisting of a Cover Letter and Pages 8, 16, 17, 36A, 37, 38, 39, 40, and 42, concerning the 6 month review, is hereby approved in accordance with 30 CFR §75.370(a)(1). This amendment will be incorporated into the current plan originally approved on September 24, 2004.

This amendment supersedes the approval for Pages 8, 16, 17, 37, 38, 39, 40 and 42, dated September 24, 2004.

Page 36A is new and will be added to the plan.

The following plan amendments were approved for site specific conditions and were to terminate at the conclusion of the projects. Mr. Pruitt informed this office in his letter dated June 2, 2005 that these projects had been completed. Therefore, the following amendments have been removed from the plan:

1. Amendment approved on June 15, 2004, concerning Mining in 1st Left and 6th East.
2. Amendment approved on July 23, 2004, concerning Breaching of 7th Right Seals.
3. Amendment approved on October 27, 2004, concerning Sealing of Main West.
4. Amendment approved on November 18, 2004, concerning 1st Right to Main North Break Through.
5. Amendment approved on January 19, 2005, concerning 1st Right and 2nd Right Connection.

The Mine Ventilation Plan has been reviewed by MSHA in accordance with 30 CFR §75.370(g). The plan appears adequate and shall remain in effect. Be reminded that ventilation plans [30 CFR §75.370 and 30 CFR §75.371] and their associated ventilation maps [30 CFR §75.372] are classified as public documents under the Freedom of Information Act.

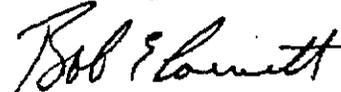
The approved Mine Ventilation Plan now consists of the following.

1. Original Ventilation Plan approved on September 24, 2004.
2. Amendment approved on December 14, 2004.
3. Amendment approved on December 17, 2004.
4. Amendment approved on December 29, 2004.
5. Amendment approved on April 4, 2005.
6. Amendment approved on April 26, 2005.
7. Amendment approved on May 27, 2005.
8. Amendment approved on June 3, 2005.
9. Amendment approved with this letter.

No optional information to satisfy the requirements of 30 CFR §75.371 is shown on the map. Consequently, in accordance with 30 CFR §75.372(a)(2), the map is not subject to approval.

A copy of this letter shall be made available to the miners and reviewed with all miners affected by this plan.

Sincerely,



h Allyn C. Davis
District Manager

Enclosure

cc: Jim Pruitt

Exhibit 30

than 8' thick, coal top or bottom may be left. Within the physical limitations of the mining equipment retreat coal will be mined rock-to-rock in order to maximize resource recovery.

GENWAL has found that in areas of the mine, cutting coal higher than 8' on development results in excess rib sloughage, exposing miners to unnecessary dangers. GENWAL has found that width to height (w/h) ratios lower than 5.6 results in large slabs (2' - 3' thick and 8' high) separating from pillars and sliding or rotating into the entry. These slabs cause an immediate safety hazard to personnel working or traveling in the area and may be classified as accumulations by MSHA. Cleaning up the slabs results in more slabs sloughing which reduces the size of the pillar and results in entries that are wider than legally allowed. For these reasons, GENWAL may not cut higher than 8' on development. Although maximum recovery is an important design criteria, other considerations must be looked at in the final analysis in the extraction of coal. These factors consider the insurance of protection of personnel and the environment. Coal reserves will not be recovered in the following areas:

1. Areas where the coal thickness is less than 5'. Mining below this height is not feasible under current economic conditions.
2. Solid coal barriers will be left to protect main entries from mined out panels and to guarantee stability of the main entries for the life of the mine.
3. Solid coal barriers will be left between particular panels for roof and floor protection.
4. When extreme hazardous conditions exist, and personnel safety is compromised, coal extraction could then be terminated in that area of concern.
5. Coal will only partially be recovered in areas under existing perennial streams within the specified angle of draw with the consent of the Forest Service and approval by the Division. Expected recovery at GENWAL is predicted to be 80% in panels and 60% overall.
6. In areas of development in coal height of 8' or greater, top and/or bottom coal may be left.
7. In panels where the coal height exceeds the effective mining height of the mining equipment, including longwall equipment, either top or bottom coal will be left.

Mining in the South Crandall lease area will be done in accordance with the approved Resource Recover and Protection Plan (R2P2) (See Appendix 5-24). This plan was recommended for approval by the BLM on Nov. 12, 2004. This plan states that full extraction mining (i.e. longwall mining) is not authorized in panels BC-4 and HLA-5 in areas with less than 600' overburden unless it can be determined that these areas can be mined without adverse impacts to the Little Bear

Canyon municipal watershed. Final approval of full extraction mining in these panes will be addressed as a modification to the approved R2P2. Multiple seam mining beyond spring site LB-7 in Little Bear Canyon is contingent upon a monitoring plan approved by the Division in concurrence with the Forest Service at least two years prior to mining in that area.

Maps 5-2 (BC) and 5-2 (H) and Appendix 7-63 show the areas with less than 600' cover affected by this R2P2 condition. These maps show which areas are planned for longwall mining and which areas are planned to be mined with continuous miner units.

According to stipulation #17 of Federal Lease UTU-78953 (see App. 1-13) the Castle Valley Special Service District water treatment plant (constructed as water replacement for Little Bear Spring) must be operational prior to mining in the following areas:

- Mill Fork Graben - Area within 1,000 feet of the southeast corner of the lease in Section 8 (corner of Sections 8, 9, 17, and 16 in T. 16 S., R. 7 E., SLM).
- North of Little Bear Spring (possible water-bearing fracture system) - Area within 1,000 feet of the southern boundary of the lease in Section 9, T. 16 S., R. 7 E., SLM).

It should be noted that under the currently approved R2P2 there is no mining being proposed in either of these areas. The water treatment plant is scheduled for completion in January 2005.

INCORPORATED
APR 15 2005
DIV OF OIL GAS & MINING

Exhibit 31

5.23 Mining Methods

GENWAL will use both Room and Pillar and longwall mining methods for coal production. Projected mine development is depicted on Plate 5-2. In general, room and pillar development mining will be accomplished using continuous mining methods. Retreat mining will use longwall mining and room and pillar methods. The mine plan has been developed to maximize coal recovery in an economical manner.

Second (recovery) mining by continuous miner will occur in those areas which are not longwall mined (Plate 5-2) and will be done in accordance with the approved MSHA roof control plan. Specifically, in areas where long-wall panels cannot be installed due to the presence of stream buffer protection zones or in perimeter areas with irregular boundaries, room and pillar methods will be utilized to maximize coal recovery and still maintain regard for environmental and safety concerns listed in Section 5.22 above. All pillars in the mine, with the exception of barrier pillars or other pillars needed to protect the outcrop, will be fully extracted. However, safety or economic reasons may dictate some pillars or partial pillars remain in place. Pillars used to protect mains, submains, and fire breaks will be left until final retreat or when they serve no useful purpose.

Mining in the Incidental Boundary Change area will consist primarily of longwall gateroads, setup rooms and barrier pillars. (No room and pillar mining will be conducted in the Incidental Boundary Change Area or adjacent areas.) First mining will be done with continuous miners. The longwall entries will be extended to the west but in no case will they extend past the 22 degree angle of draw projected from the surface expression of the Joes's Valley Fault. No pillars will be removed during mining in the Incidental Boundary Change area and consequently, no subsidence will occur. No surface disturbance or breakouts will occur within the Incidental Boundary Change area. Refer to Plate 5-2A.

When mining in the longwall gate entry nears the fault (between 200-300 feet away) an underground drill will be used to drill west toward the fault to determine its location. The drill will drill horizontally toward the fault up to 50 feet ahead of the entry face. If the fault is not encountered, the continuous miner will advance about 30-40 feet toward the fault, leaving at least 10 feet of coal between the entry and the end of the hole. The drill will again drill ahead. This sequence will continue until either water or fault gouge is encountered in the hole or the entry has been developed to its maximum extent (providing no fault was detected). If the fault is encountered prior to reaching the bleeder entries, then mining will stop and the bleeder entries will be relocated. At least 10 feet of solid coal will be left between the face of the entry and the fault. GENWAL will notify the Forest Service and DOGM if substantial water is produced from the drill holes or the fault. Any appreciable outflow from the fault will be monitored.

At least one horizontal hole will be drilled in the headgate and tailgate of each panel. Should water be encountered by the drill hole, the hole would be evaluated. If flow is low to moderate and the flow rate diminishes, drilling would be re-initiated. However, if the flow is high (greater than



50 gallons per minute) and the end of the hole close to the fault, the hole would immediately be plugged and entry development would stop at least 10 feet from the end of the hole.

Although large amounts of water and high pressure have not been previously encountered by mining near the fault, an emergency plan to handle water inundation from the fault has been developed. The plan consists of the following actions:

1. Pull equipment back from face
2. Erect two Kennedy stoppings at least 2 feet apart
3. Place appropriate sized de-water pipe w/valve at bottom of stoppings
4. Pump quick drying cement into the space between the stopping
5. After minimum drying time, close water valve

5.23.10 Mining Operation

The mine was developed in an area of old works in the Hiawatha seam. Coal was produced from this operation during the period of 1940 through 1955 and was sold locally for domestic use. Certain sections of the old-mine were reopened so that water sumps, ventilation, and coal haulage facilities were re-established. Plate 5-2 illustrates the manner in which the old workings were modified and repaired in order to bring them into compliance with current regulations and the overall mining plans of GENWAL.

Where necessary, the old workings were widened to accommodate a 48-inch coal haulage conveyor. Proper roof supports were placed in areas where questionable roof control conditions were encountered.

The mining operations has accessed the Hiawatha seam by drifting into the seam from the coal outcrop. The portal area for the Hiawatha seam has three entries: one intake ventilation entry, which will also serve as a haulage route, one neutral coal haulage conveyor entry, and one return airway. The portal access area for the mine has the necessary surface support items such as a ventilation fan, conveyor belt drive, power, etc.

5.23.20 Mining History

The Hiawatha seam, is the only seam to be mined on the leases, has an average thickness of 7.5 feet. The coal heights encountered range from 5.5 to 11 feet except in the sandstone roll area

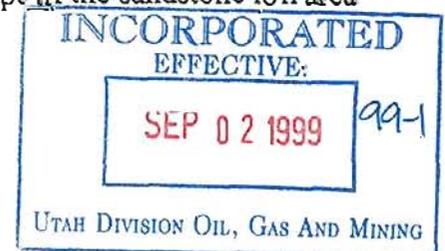


Exhibit 32



State of Utah

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF STATE LANDS AND FORESTRY

Norman H. Bangarter
Governor
Dee C. Hansen
Executive Director
Richard J. Mitchell
Division Director

355 West North Temple
3 Triad Center, Suite 400
Salt Lake City, Utah 84180-1204
801-538-5508

December 31, 1991

Daron Haddock
Permit Supervisor
Division Oil, Gas, and Mining

Dear Daron:

RE: ACT/015/032-91-1
Crandall Canyon Mine

I have made a preliminary review of the Chapter 14 Amendment of December 20, 1991, to the Crandall Canyon Mine. I have concerns for maximum coal recovery and believe the plan to be deficient with respect to R614-301-522. The following issues need to be addressed.

1. Barrier Pillars.

The description of mine layout does not explain why 100 feet wide barrier pillars (250 foot wide at the east edge of Section 36, ML 21569) are planned at the property boundary. The proposed subsidence area to be permitted upon national forest lands makes it possible to mine up to the boundary of the state lands. The plan needs to explain why such wide barrier pillars may be necessary and indicate how much they may be shaved off during secondary mining.

2. Retreat Mining of Mains and Submains.

The plan states that main and submain mining panels to be developed within the two state sections will not be retreat mined. I assume that these will provide access for the mining of adjacent lands. The plan should provide, however, for the eventual retreat mining of these areas when the mine is permanently abandoned in the distant future. Alternatively, the plan must provide technical expiation as to why these areas can never be retreat mined.

Daron Haddock
December 31, 1991
Page Two

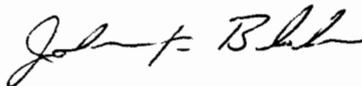
3. The Mysterious Submain 5th West.

The plan hints of a Submain 5th West in the middle of Section 36 (ML 21569) but fails to show it on the mine map. The mine map rather shows an east-west submain along the northern edge of Section 36 and shows long north-south mining panels treading across the section. The plan needs to clarify the location and role of "Submain 5th West" in the development of the mine.

4. The plan states that up-holes will be drilled up a maximum of 100' on one-half mile spacing in the mains of Section 2 (ML 21568), as they are being developed, in an attempt to locate and evaluate the Blind Canyon and Bear Canyon seams. An up-distance of only 100' is insufficient. Genwal's drillhole in Section 36 (ML 21569) revealed a distance of about 136' from the top of the Hiawatha seam to the top of the Bear Canyon seam. A corehole drilled one mine south of the property by UGS (DN-2), in 1977, revealed a distance of 142' for this interval. Doelling (1972) lists an average interval of 140' for the northern Hiawatha NW Quadrangle. In order to allow for local variations and ensure penetrating the two targeted coal seams the holes to be up-drilled in Section 2 must be a vertical distance of not less than 150 feet. Also, the plan must stipulate that if any of the up-drilled holes discover mineable coal reserves then additional up-drilling will be conducted to define the mineable seams and the mine plan will be revised to accommodate multiple seam mining. The plan must also require that all up-drilling and evaluations and multiple seam mine planning be completed prior to the commencement of any secondary mining in Section 2.

Please discuss these issues with Genwal Coal Company and provide me with a response. I will be happy to meet with the Division of Oil, Gas, and Mining and Genwal at your convenience.

Sincerely,



JOHN T. BLAKE
MINERAL RESOURCES SPECIALIST

JTB/tdw

cc: Mr. Jay Marshall, Genwal Coal Co.

Exhibit 33

GENWAL COAL COMPANY

January 14, 1992

Mr. Daron Haddock
Division of Oil, Gas & Mining
3 Triad Center, Suite 350
355 West, North Temple
Salt Lake City, Utah 84180-1203

RE: Permit # ACT 015-032
Genwal Coal Company
Submittal Revisions
Mine Plan / Chapter 14

Dear Mr. Haddock:

As per our telephone conversations please find enclosed fourteen (14) copies of revised pages 14-2, 14-5, 14-6, 14-38, and 14-40 of chapter 14. These revised pages reflect a 21 degree angle of draw under the perennial stream channels. I hope that this is agreeable with DOGM and USFS as well as State Lands.

Genwal Coal Company continues to believe that the 21 degree angle of draw is two conservative but agrees to it until further studies can be conducted which might support a smaller angle of draw. Please replace the old (revised 12/20/91) pages 14-5, 14-6, 14-38, and 14-40, as well as plate 3-3 with the newly revised (revised 1/14/92) pages.

John Blake's comments and concerns expressed in his December 31, letter are addressed below.

Barrier Pillars:

The proposed subsidence area to be permitted upon national forest lands does make it possible to mine up to the property boundary, but only if other laws, regulations, practical engineering design, and good mining practice are not considered. Barrier Pillars used in the mine plan submitted in chapter 14 for State Leases ML-21568 and ML-21569 were designed using accepted engineering methods. Three widely used formulas, the Mine Foreman (Ashley), British,

and Holland formulas, were used to determine a minimum barrier size of between 225' and 300'. Federal Regulations mandate in CFR 43 Part 3484.1 (c6) that a minimum boundary barrier of 50' be left in place, in addition MSHA requires a minimum of 50' barrier between adjacent properties. Seam location and geometry, pillar size and shape, panel layout, ventilation, operating experience, and engineering judgment all have an effect on barrier dimensions.

As the plan shows no second mining of barrier pillars is planned at this time. Barrier pillars are designed to protect mine workings by supporting stresses that are redistributed from the mining of section panels. Because these barriers are "loaded up" with high concentrations of stresses it is not good mining practice to second mine barrier pillars and in fact could be dangerous.

Retreat Mining of Mains and Submains:

The mains and submains are needed to provide access and ventilation for the mining of present leases and adjacent lands. The plan states Mains and Submains will not be retreat mined. Mains and submains in mines that have been operating for an extended period of time are generally not retreated due to several reasons. With production panels on both sides being fully retreated the mains and submains tend to load-up and deteriorate with time. Trying to pull pillars that are loaded-up can be risky and could possibly result in bumps that can result in injuries to workers. Pulling the mains with sealed panels on both sides could result in rupturing the seals allowing Carbon Monoxide, Methane or other noxious gas to escape from the sealed area into the Mains being pulled.

The Mysterious Submain 5th West:

The mysterious submain 5th West is not really a mystery, it can readily be identified as the bleeder that runs east-west at the top of section 36. The submain 5th West (bleeder), is needed to complete the wrap around bleeder system required by MSHA for ventilation purposes.

Underground Drill Holes:

The State Lands concern about the stated 100' drill holes are not adequate to penetrate both the Blind Canyon and the Bear Canyon seams. It was Genwal's belief that the seam in question was the Blind Canyon, in which a 100' hole

would be adequate. Since State Lands is concerned with the Bear Canyon in addition to the Blind Canyon seam. Genwal Coal Company will commit to drilling the up holes a maximum of 150' even though there is no indication of minable height of either upper seam on our present leases. Please see revised page 14-2.

Genwal Coal Company has already committed to evaluating the upper seams for minability prior to second mining (page 14-2).

In addition please find enclosed the Affidavit of Publication. If I am not mistaken this will officially start the 30 day public comment period.

If you have any questions or comments please call.

Sincerely;

R. Jay Marshall
R. Jay Marshall P.E.
Chief Engineer
Genwal Coal Company

Exhibit 34



GENERAL - Main West Benior Mining

John Lewis

435 888-4016

Development stability?

Pull pillars >1600'?

Affect of mining into W. West on dev. and retreat?

S. Mains calibration

MSHA nervous >1500' pillaring

Floor coal - deep to west

< 6 months

MRS Christmas tree pattern

S. Side Pillar Retreat

Bouncing in places, left occasional pillar

70+ % typ. recovery

Get about 70% of pillars

Roof collapse

Floor OK

old bolts 3/4" Ø 5' bolts

Support as necessary - rebolt in old workings

Primary - 6 bolts/row

6' fully-grd

mesh

Visit after started

S. Mains

Retreat - bump, acct to move to other side, roof fall
had to cut/cable bolt out by

Start Dev.

Wed. - scope

Exhibit 35

Re: Month End February, 2006.
To: Laine Adair and Garth Nielson
From: Jack Marinos

The total production for February was [REDACTED] tons. There were 4 [REDACTED] tons that came out of the pillar section in the Crandall mine. [REDACTED] Redacted: Not Responsive

The average ash was [REDACTED] for the 24 days we hauled coal. The ash being mined was significantly lower than the average shows. This is due to hauling [REDACTED] more tons, of the high ash stock pile coal, than we mined. Our total haulage for the month was [REDACTED] tons. This reduced our stock pile by about [REDACTED]. We are continuing our daily emphasis on low ash coal that is shipped outside.

In the Crandall mine we spent 10 days developing and the rest of the month pulling pillars. The conditions were significantly worse than in the past month. We had an unplanned cave that prompted us to establish a detailed procedure plan for extra support, test holes, condition evaluations and positioning. We also met with everyone and put a strong emphasis / demand on safety. We were down for 2 days getting the additional roof supports in place. We also lost 2 days of production taking the south mains #2 drive and take-up out. We were at xc-21 at the end of the month. The conditions were causing some lower production. The new procedures were working very well and the people were upbeat about the changes.

In 1st cast we continued to drive the bleeder entries to the south. The cable bolting and long haul to the feeder caused some lower production. We also had two major break downs on the miner. We lost a gear out of the center gear case that cost us 3 days of production. We also lost a tram gear case that cost us four days of production. We have had a lot of big break downs with the Phillips machine miners. The bleeder was broke through on the 14th. We was down from 14th to the 20th waiting for the MSHA plan to start the set up face. All of the down time was well utilized setting square sets, running 4/0 cable and dust line for the bleeder. The square sets are done to xc-42, the 4/0 is done and the dust line has a good start. Getting these projects done is going to free up more people to get the longwall set up and ready to go. The set up face was going very good and we had developed 2 breaks at the end of the month. The height was 6' and the conditions were good.

The 2nd east section finished driving to the back. We went through several sand rolls, the height dropping to 46" at one point. Overall the height remained about 64". They drove 2 xc's in the bleeder towards 1st and 2 xc's towards 3rd. We continued cable bolting in the bleeder for long term support, but the conditions were good for the most part. We moved the set-up face outby about 20' due to some cracks in the roof going parallel with the set up face. We had drove one and a half xc's towards 1st at months end.

The mains finished necking off 3rd cast on the 14th began construction. The shooting was about done in the belt entry and the drilling was done for the overcasts at the end of the month. The conditions were good and things seemed to be on schedule for the construction.

We finished getting all the pan line outside and sent to Pacific Central for the modifications. [REDACTED] Redacted: Not Responsive The stageloader, head drive, and tail drive have also been hauled out and sent off.

Exhibit 36

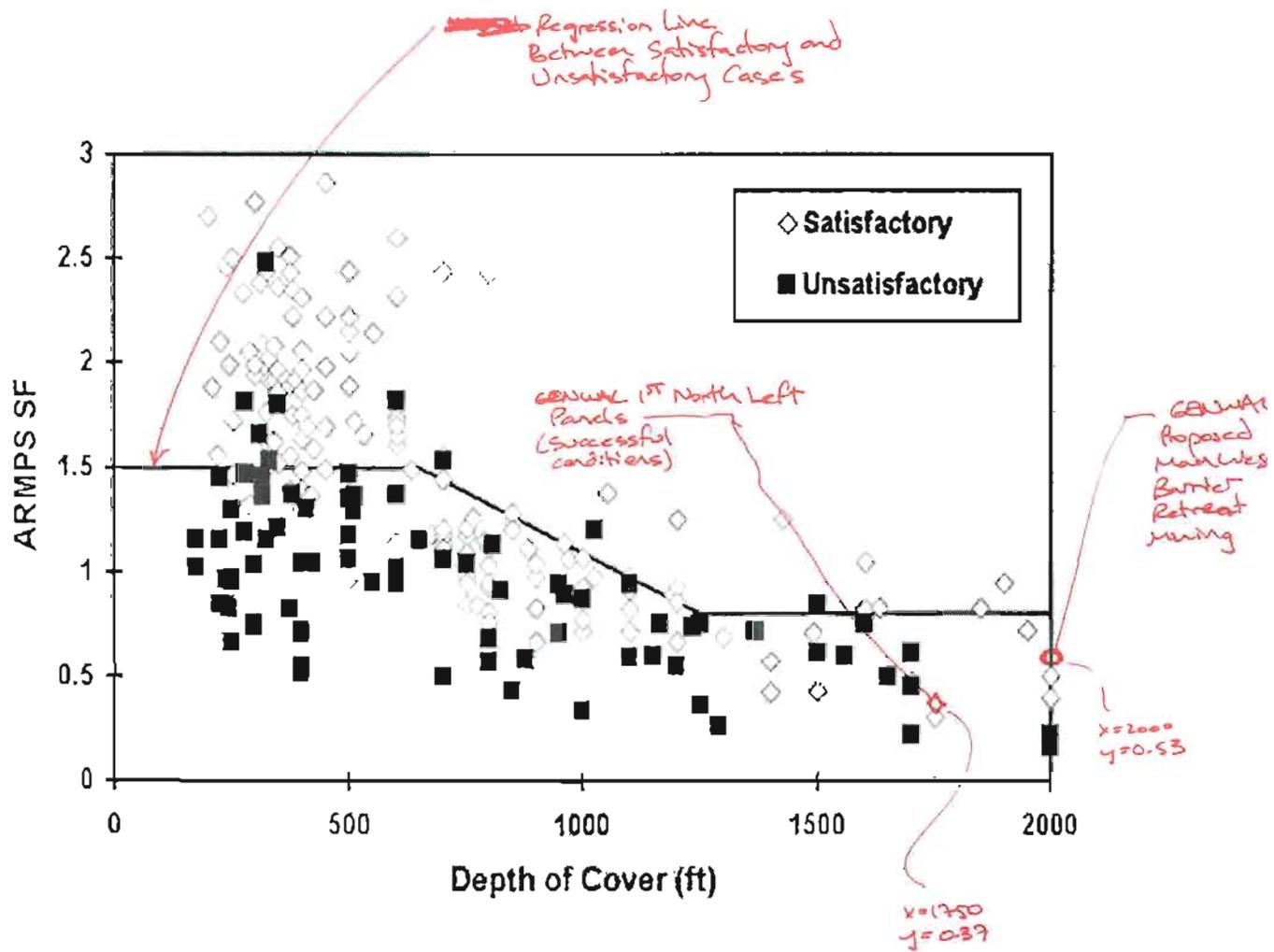


Fig. — Comparison of ^{GENWAL} Past and Proposed Retreat Mining ~~and~~ Stability factors with ARMPS Case Histories

5.653
39

Exhibit 37

North Barrier Section Lamodel Analysis

54. It appears that AAI's Lamodel analysis for the North Barrier section included both the Section 36 MBC panels and the North Barrier in the same model. Were the boundaries of the model symmetrical or rigid?

The section 36 MBC panels and North Barrier section were analyzed in two different models. Symmetrical boundary conditions were applied for the four model boundaries for both models.

55. Were different widths of pillars modeled? Were different lengths of pillars modeled?

The only pillar width modeled in the north main was 60 ft. Two pillar lengths of 70 ft and 80 ft were modeled in this area.

- a. If so, how was the final pillar design selected?

Model results indicated that increasing the pillar length from 60 ft to 70 ft does not significantly affect ground conditions; 60-ft by 72-ft pillars were recommended for the final design.

- b. Was mining efficiency considered in the design?

No

56. In the May 3, 2006, proposal to Genwal, AAI stated that "Concern exists for potentially high stress caused by a combination of deep cover and side-abutment loads from the adjacent longwall gobs, and to a lesser extent, load transferred onto the barriers by time-dependent pillar convergence in Main West."

- a. How did AAI account for load transferred onto the barriers by time-dependent pillar convergence in Main West?

No time-dependent load transfer from Main West was incorporated in the model. AAI is not aware of any data indicating that there was significant time-dependent load transfer onto the barriers from Main West. Problematic load transfer was not observed on development in the North or South Barrier.

- b. If AAI opted not to consider load transfer, please explain the basis for this decision?

It is impossible to quantify the load transfer onto the barriers by time-dependent pillar convergence in Main West based on the information about Main West at that time. The existing 70-ft by 72-ft pillars in Main West have been maintained over the long-term (12 plus years) and have required additional roof support at some locations. No significant pillar failures have been reported. Their performance has been satisfactory for ventilation and bleeder access. Genwal elected not to use the West Mains for men and materials and haulage as they reoriented the longwall panels after the West Mains were developed. Excessive convergence in the West Mains has not been reported so it was a reasonable assumption that the pillars were supporting the overburden load without significant load transfer onto the barriers due to time-dependent Main West pillar convergence.

Exhibit 38

4-5-07

Value

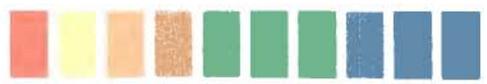
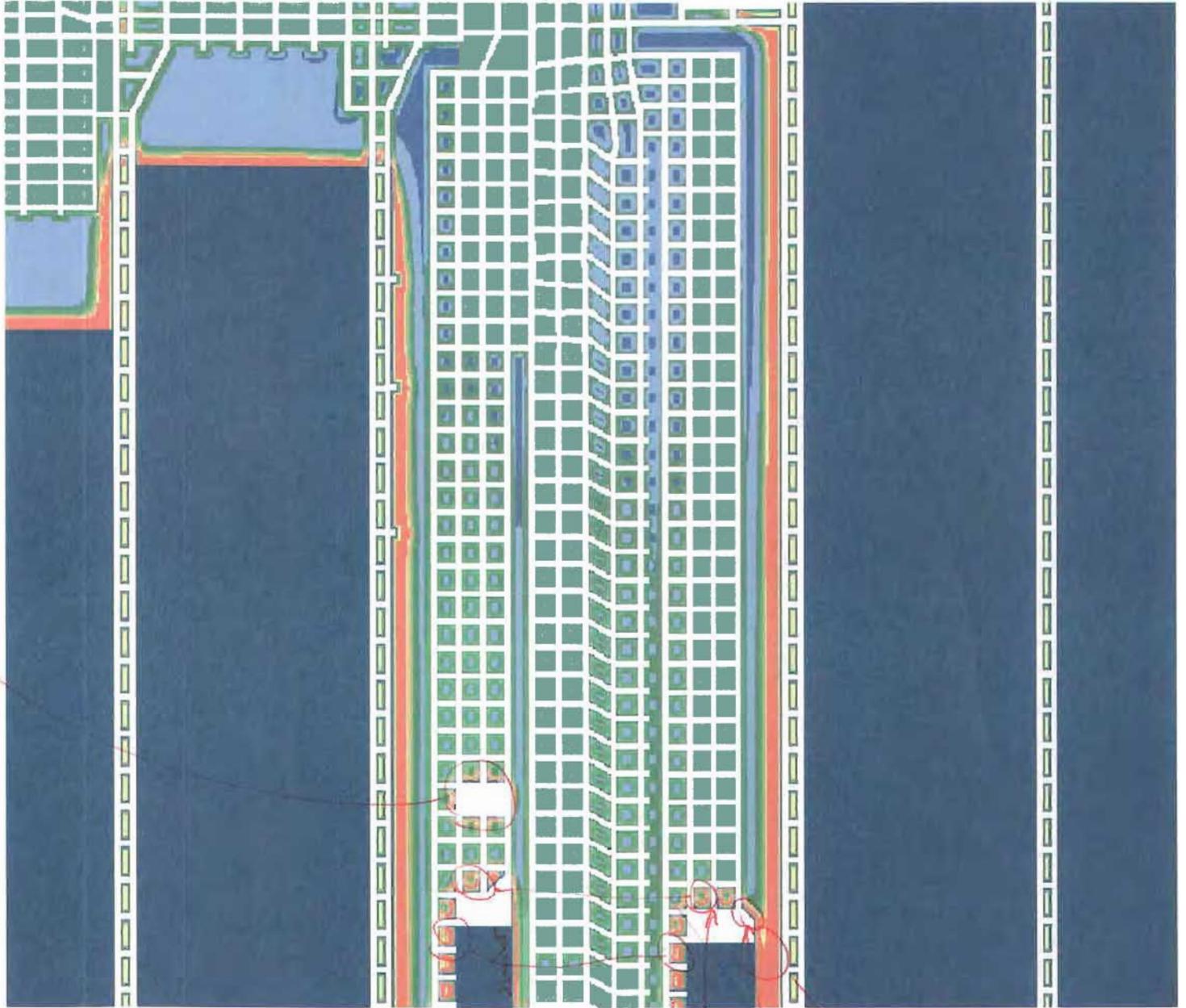
37' cuts

- Longitudinal pillars
~37'

- Decide on
depth of w/barricade
stopping

- Letter next
etc.

Worst 8



Not any worse
than retreat
line before (N side)

High 6
but main
danger will be
500' S of 4th
outlay

Barriers
width ~
Depth ~

Barriers?
depth

Exhibit 39

42. Approximately how long has AAI used Lamodel?

Since 2003. Personnel in our Golden office have used it before 2003 when with a prior employer.

43. How did the AAI personnel who performed and/or interpreted Lamodel analyses learn to use the software (e.g. did they attend seminars on the use of Lamodel, rely on the software and accompanying documents, etc.)?

Dr. Bo Yu and Dr. Hua Zhao attended Lamodel classes and seminars.

44. For the Crandall Canyon analysis, did AAI use elastic, plastic or strain-softening properties for the coal? Which variety were conclusions drawn from?

Strain-softening properties were used for pillar ribs. Elastic properties were used for the other grids. The conclusions of yield conditions were drawn from the plastic conditions of the pillar ribs.

45. For each model at Crandall Canyon, were topographic contours (or overburden variations) incorporated?

Yes.

a. What was the source of this information?

We extracted the topographic data from the AutoCAD file that Crandall Canyon Mine sent to us.

b. How were these overburden variations incorporated into the models?

The topographic data were first extracted from AutoCAD, and then Surfer was used to convert the contour lines to a topographic grid. The topographic input file was used in Lamodel to model the overburden variations.

46. A July 20, 2006, AAI report indicates that coal strength and modulus values of 1640 psi and 500,000 psi, respectively, were used in the Lamodel analyses. How were these parameters determined?

The coal strength was calibrated from three mining stages in the south panel of Section 36. The coal strength was incrementally increased from 900 psi to 1,640 psi until modeling results were consistent with actual conditions. The average cover depth in this calibration panel was about 1,700 ft. We were told that all the pillars during retreat mining were stable and only limited yielding occurred at some pillar ribs. The coal modulus of 500,000 psi was based on the previous EXPAREA model calibration report (Agapito Associates, Inc., Panel 6th Right Experiment Back Analysis and Model Calibration, report to GENWAL Resources, Inc. October, 1997—Bates numbers AAI003903 thru AAI003012 transmitted digitally September 20 and October 25, 2007).

AAI009962

Exhibit 40

From: Phillipson, Sandin E - MSHA
Sent: Sunday, August 19, 2007 12:10 PM
To: Thomas, Charles J - MSHA
Subject: RE: geological hazard training

Mike and I are just on standby in case anybody needs any information about the map or previous work. Of interest, having the Mapinfo map not only showed Mike that they were just coming to the deepest overburden, rather than already through it like they thought, but Agapito also did their modeling based on the incorrect topography that the mine had. It was apparent by looking at the Mapinfo map that their overburden was wrong, so the margin of safety that they may have thought they had didn't exist. Their model was based on 1,800 feet of overburden at a different area, when in fact it was only 1,600 feet of overburden.

We haven't been involved in the actual discussions going on today. I would suspect a problem with arches is two-fold: 1) people have to be exposed to the bad conditions while assembling them. It wouldn't be possible to slide them up because the bumped coal is piled out into the entries; 2) the arches would have to be properly blocked in order to give any safety, and how do you block the arches against coal rubble? Without being properly blocked, the next bump could just as well twist the arches like a greenstick fracture. I doubt there will be a way to continue mining underground through the barrier section because it's just too collapsed. The Mains were already showing stress when the longwalls on either side went by, so the stress had already jumped the wide barriers, and then they mined out those barriers and pulled pillars, so conditions were only getting worse. There's just nothing left to support that roof, except the few remaining pillars that have bumped. The stress zone has shifted almost to the outby section neck, so the whole room-and-pillared barrier is failing.

Mike had a good idea about breaking the seals to the old longwall section, and driving along the old bleeder, around back of the panels, and coming to the rear of the old barrier that way, even though it would require some mining to break through where the bleeder only had a 10 inch augur hole instead of a mined entry for airflow. That's the idea that I like best.

The capsule idea will be tough. Who will volunteer to get lowered down a borehole through strata that is in the cave zone of the longwall gob? That would be tough to be the guy trapped in the capsule if the ground shifted and wedged the capsule in the hole. Or worse yet, make it all the way into the mine and then be trapped. And that's assuming they can even drill the 30 inch hole through it. They'd likely get the bit wedged, and snap the drill string mining through the rubble from the angle of influence of the longwall gob subsidence.

I wondered about driving a decline from Joe's Valley downward to the bleeders in back of the barrier, but that's still drilling and blasting a thousand feet through the longwall subsidence zone, and a major fault, and would take months.

Sandin E. Phillipson, Ph.D.
Geologist
Mine Safety & Health Administration
Pittsburgh Safety & Health Technology Center P.O. Box 18233 Pittsburgh, PA 15236


REDACTED

Exhibit 41

PILLARING @ CRANDALL

SEPT 2006

CRANDALL ANALYSIS

- USED RAMP MODELING (NIUSM)
- CALCULATED MINIMUM SF FOR CRANDALL
 - 1ST NORTH LEFT BLOCK HISTORICAL SECTION
 - .37 MINIMUM CALCULATED
 - USED .40 AS LOW SF
- CALCULATED SF FOR PILLARING
 - .53 - .67

MY ANALYSIS

- HISTORICAL ANALYSIS
 - .42 MINIMUM SF
- ANALYZED BOTH PILLAR SECTIONS
 - .34 - 1.0
 - .27 - .91
- COULD NOT ANALYZE 3RD SECTION
O/D OF LA MODEL

FUNDAMENTAL DIFFERENCES

↳ IN SITU COAL STRENGTH

- 1640 PSI VS 900 PSI
- MODELING GEOMETRY
~~BRICK WALLING~~
- HISTORICAL
 - GOB ~~BRICK WALLING~~
 - BARRIER PILLAR
 - ACTIVE GOB
- CURRENT
 - 2 GOBS
 - DIFFERENT SIZED BARRIER PILLARS
 - SEE ATTACHED COMMENTS

Exhibit 42

Coal Mine Safety and Health
District 9

Gary Peacock
General Manager
Genwal Resources, Inc.
P.O. Box 1077
Price, UT 84501

RE: Crandall Canyon Mine
ID No. 42-01715
Preliminary Pillaring Plan

Dear Mr. Peacock:

A preliminary analysis for projected pillaring of the Main West section was submitted to this office for a cursory review. The plan, as is currently written, would not be approved. The Roof Control Group conducted the cursory review.

The technical review noted certain inconsistencies in the plan. These are as follows:

1. In situ coal strength was estimated at 1640 psi. An explanation of how this strength was determined should be included. Typical coal strength values are much lower.
2. The elastic modulus of coal was estimated at 500 ksi. An explanation of how this modulus was determined should be included. If experimental analysis of test samples was conducted, an explanation of the number of samples, the size of samples, and the testing method employed should be included in the submittal.
3. The mine geometry employed in the computer model differs from the physical mine map geometry. This observation applies to the ARMPS model geometry employed in the analysis of the historical section and the projected sections.
4. The LAMODEL analysis shows, that during pillaring, surrounding pillars exhibit yielding zones. This could indicate a violent outburst since the in-situ coal strength is stated as 1640 psi.

5. A stability factor of 0.37 was determined by analyzing the pillaring of 1st North 9th Left Panel. The analysis of this area was employed to determine the minimum stability factor for favorable retreat mining. This stability factor appears to be determined from where mining ceased due to poor ground control conditions. Therefore, a higher stability factor should be employed that ensures an adequate factor of safety.

If you have any questions or if you would like to meet and discuss the above items, please contact Billy D. Owens at 303-231-5590 or Pete Del Duca at 303-231-5660.

Sincerely,

Allyn C. Davis
District Manager

bcc: Price #1 FO (FYI - NOT for UMF) (Copy surname letter)

Laine Adair
Genwal Resources, Inc.
P.O. Box 1077
Price, UT 84501 (Copy letterhead letter)

RC MHF (Original surname letter - plan -Backup Material)
RC Reading (Copy surname letter)
Pete Del Duca (Copy surname letter)
A. Davis\D-9 Chron (Copy surname letter)
WORD(T:\COAL\RC\pd\und\crandall canyon\pre-pillar-dis-10-4-06.doc)

Exhibit 43

Crandall Canyon Mine - Roof Control Plan Approval Timeline

****New Slide (NS)****

September 8, 2006: Mr. Laine Adair, General Manager of Genwal Resources, Inc. met with the district 9 roof control group and presented two geotechnical reports prepared by Agapito Associates, Inc. These reports analyzed the proposed room-and-pillar mining of the Main West barrier pillars using computer modeling, and knowledge of western coal mining conditions. One report concluded that it was a "workable design" that would "limit geotechnical risk to an acceptable level". The other report concluded that "ground conditions should be generally good on retreat in the barriers, even under the deepest cover (2,200 ft)."

****NS****

November 21, 2006: A roof control plan amendment for performing only development mining in the North Barrier of Main West was approved. On this same day, a separate letter was issued to Genwal Resources, Inc. stating that the projected pillaring of Main West would not be approved due to five concerns with technical issues relating to the Agapito reports.

December 2006: It was determined that the Agapito computer modeling had been done more conservatively than originally assumed, and the five concerns were resolved.

****NS****

January 3, 2007: A plan amendment for retreat mining the North Barrier of Main West was submitted to MSHA.

January 9, 2007: The roof control supervisor and a roof control specialist trainee (both mining engineers) traveled to Crandall Canyon Mine to assess the conditions in the North Barrier of Main West for potential pillar extraction. The roof was supported with six bolts per row, and wire mesh was installed on cycle. The pillars were observed to be yielding in a non-violent manner, as desired. Due to problems with the immediate roof raveling onto the continuous miner prior to being bolted, it was determined that the mine should leave top coal to help control this.

January 10, 2007: A plan amendment for leaving top coal in the North Barrier of Main West was submitted to MSHA, and it was approved on January 18, 2007.

January 31, 2007: The roof control supervisor notified Crandall Canyon Mine that additional roof support would be required for the North Barrier Main West bleeder entry.

February 2, 2007: A roof control plan amendment for pillar extraction of the North Barrier of Main West was approved. (This amendment incorporated the additional roof support requirements requested by the roof control supervisor.)

****NS****

March 8, 2007: A roof control plan amendment for performing only development mining in the South Barrier of Main West was approved by MSHA.

March 13, 2007: The ventilation supervisor listened to a voice mail from the mine operator which requested to relocate the MPL in the North Barrier of Main West due to a bump and deteriorating roof conditions. The mine operator did not reveal that the bump had been severe.

March 28, 2007: A formal inspector review of the roof control plan declared it to be "Adequate", with no deficiencies listed.

****NS****

May 15, 2007: The mine submitted to MSHA a plan amendment for retreat mining the South Barrier of Main West and a copy of a geotechnical report by Agapito Associates, Inc. which was dated April 18, 2007. This report stated that a "large bump" had occurred in the North Barrier of Main West. (MSHA had been previously informed that mining had ceased in the North Barrier of Main West due primarily to deteriorating roof conditions.) The Agapito report recommended a modified pillar design for the South Barrier of Main West which "is expected to provide a reliable level of protection against problematic bumping for retreat mining under cover reaching 2,200 ft."

May 22, 2007: The roof control supervisor and the local roof control specialist (Gary Jensen) traveled to Crandall Canyon Mine to assess the conditions in the South Barrier of Main West for potential pillar extraction. The roof was being adequately supported with six bolts per row, with wire mesh installed on cycle. The ribs were yielding as expected on development, with no yielding noise heard outby.

June 15, 2007: A roof control plan amendment for pillar extraction of the South Barrier of Main West was approved.

****NS****

Considerations for Approval of the Roof Control Plan Amendments

****NS****

COMPUTER MODEL

Agapito Associates, Inc. conducted a geotechnical analysis of room-and-pillar mining in the Main West barrier pillars.

The analysis back calculated a stability factor for the 1st North Left, where the Crandall Canyon Mine had successfully conducted pillar mining.

The successful stability factor for 1st North Left pillar mining was 0.40

The stability factor calculated for proposed pillar mining of the Main West barrier pillars was 0.53, an increase of 32.5%

The 1st North Left roof was supported by 5-foot long bolts with five bolts per row. The Main West Barrier Pillar roof would be supported by 6-foot long bolts with 6-bolts per row.

The analysis employed entry and crosscut widths of 20 feet, the center entry in 1st North Left was 23 feet wide, and the proposed entry widths in the Main West Barrier were 17 to 18 feet. The 1640 psi coal strength employed in the model was less than the typical Hiawatha Coal Seam value of 1800-2800psi. This was a conservative analysis.

****NS****

ACCIDENT/INJURY DATA

Since January 1, 2002, the mine had five roof and rib accidents, as follows:

2 bounces on the longwall face resulted in broken bones

2 injuries from rock falling from face area on longwall face

1 rib slough while retreat mining – broken ankle

For 2006, Crandall Canyon's Incidence Rate was 2.79, while the National IR was 7.48.

****NS****

PREVIOUS MINING

From September 2005 to October 2006, the mine successfully retreat mined the South Mains between two longwall districts.

The size of the barrier pillars on both sides of the South Mains was reduced, i.e. slabbing into the barrier pillars was done on retreat.

There were no ground failures, and only one injury caused by a rib roll while mining a pillar lift.

****NS****

INSPECTOR OBSERVATIONS

No MSHA inspectors notified the district office of any ground control issues or problems with the roof control plan during FY 07. From September 2006 through March 2007, four different MSHA inspectors completed 2000-204 forms – all four of which declared the roof control plan to be adequate.

****NS****

ON-SITE GROUND CONTROL EVALUATIONS

In addition to numerous on-site evaluations of ground control conditions performed by MSHA inspectors and company personnel, the following evaluations were conducted by professional engineers:

12/01/2006 – Agapito engineers – Main West North Barrier development;

observed good to excellent ground conditions;

the roof, rib and floor were consistent with the analytical predictions

01/09/2007 – Billy Owens, MSHA - Main West North Barrier development;

made recommendations to improve support for the bleeder entry

made recommendation to leave top coal where there was not a sandstone roof

coal pillar ribs were yielding in manner that did not eject coal into travelways, sloupage was outby the face area

03/16/2007 – Agapito Engineers - the bump location in the North Barrier of Main West;

they were “able to analyze the stress and convergence conditions at the time of the bump and modify the pillar design accordingly to control the potential for similar events in the south barrier.”

05/22/2007 – Billy Owens, MSHA - Main West South Barrier development;

the ribs in the face were yielding as expected on development
the outby areas were quiet and the ribs had yielded as expected
the roof was well supported

****NS****

CONCLUSION

Based upon;

conservative computer analyses,

successful retreat mining history,

optimistic predictions by mine personnel,

zero negative feedback from local inspectors,

multiple on-site observations by MSHA personnel, company personnel, and engineering consultants,

the best available information at the time, and

design recommendations from a respected engineering consulting firm,

the retreat mining plan amendments were approved.

Exhibit 44

From: Laine, Adair
Sent: Friday, February 23, 2007 11:47 PM
To: Hill, Bruce
Subject: RE: Crandall pillar section

No. The cover is going to increase over the next two weeks to + 2000'. We will keep a close eye on it. Also, I am obligated to keep Billy Owens MSHA Denver up dated.

Laine

From: Hill, Bruce
Sent: Friday, February 23, 2007 2:28 PM
To: Laine, Adair
Subject: RE: Crandall pillar section

Great news. Do we continue to lose cover the rest of the way out of the panel?

From: Laine, Adair
Sent: Friday, February 23, 2007 2:25 PM
To: Hill, Bruce
Subject: Crandall pillar section

Bruce

The ground conditions in the Crandall pillar section are very good. They have retreated 6 rows of pillars and are now under about 1,600' of cover.

Laine

Exhibit 45

UNDERGROUND MINE FILE	
DATE FWD.	1-18-07
INITIALS	AM

Signature	Date
<i>[Signature]</i>	1/17/07
<i>[Signature]</i>	1/18/07

Coal Mine Safety and Health
District 9

JAN 18 2007

Gary Peacock
General Manager
Genwal Resources, Inc.
P.O. Box 1077
Price, UT 84501

RE: Crandall Canyon Mine
ID No. 42-01715
Roof Control Plan Amendment
Site-Specific Main West barrier
development

Dear Mr. Peacock:

The referenced roof control plan amendment is approved in accordance with 30 CFR 75.220(a)(1).

The submittal consisted of a cover letter, dated January 10, 2007, one page, and a map, addressing leaving roof coal to support the immediate roof in weak areas. This amendment will be incorporated into the current plan originally approved on July 3, 2002.

This approval is site-specific for the development of the north barrier of Main West and will terminate upon completion of the project. Since this approval is site-specific, no pages in the roof control plan will be superseded. That is, this amendment will be added to the roof control plan as a separate attachment.

A copy of this approval must be made available to the miners and must be reviewed with all miners affected by this amendment.

If you have any questions regarding this approval, please contact Billy Owens at 303-231-5590 or Pete Del Duca at 303-231-5660.

Sincerely,

/s/ William P. Knepp

Allyn C. Davis
District Manager

Enclosure

bcc: Price #2 FO (Copy surname letter & copy plan)
Price #2 FO UMF (Copy surname letter & copy plan)

Tom Hurst
Mining Engineer
Genwal Resources, Inc.
P.O. Box 1077
Price, UT 84501 (Copy letterhead letter)

EC Plan File (Original surname letter & original plan)
RC Plan File (Copy surname letter & copy plan)
RC Reading 8646 B4-A17 (Copy surname letter)
A. Davis/D9 Chron 1-10-07 (Copy surname letter)
WORD(T:\COAL\RC\pd\und\crandall canyon\al7-app-1-17-07.doc)

MHE

(435) 888-4002

United States Department of Labor

MSHA

Mine Safety and Health Administration

TO: Tom Hurst

FROM: Billy Owens

Mine Safety and Health Administration
 Coal Mine Safety and Health, District 9
 P.O. Box 25367, DFC
 Denver, Colorado 80225-0367
 Telephone: 303-231-5458
 FAX: 303-231-5553

DATE: 1-17-07

No. of Pages: ~~4~~ 5 + Transmittal Form

Remarks: Crandall Canyon 42-01715
Approved site-specific roof
Control Plan Amendment -
leaving roof coal.

U.S. Department of Labor

Mine Safety and Health Administration
P.O. Box 25367
Denver, Colorado 80225-0367



Coal Mine Safety and Health
District 9

JAN 18 2007

Gary Peacock
General Manager
Genwal Resources, Inc.
P.O. Box 1077
Price, UT 84501

RE: Crandall Canyon Mine
ID No. 42-01715
Roof Control Plan Amendment
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Sincerely,


Allyn C. Davis
District Manager

Enclosure

UtahAmerican Energy, Inc.



Crandall Canyon Mine
a subsidiary

Hwy31 MP 33, Huntington, UT 84528
PO Box 1077, Price, UT 84501
Phone: (435) 888-4000
Fax: (435) 888-4002

January 10, 2007

Mr. Allyn C. Davis
District Manager
Coal Mine Safety and Health
P.O. Box 25367
Denver, Colorado 80225

8646 B4-A17
RECEIVED
JAN 10 2007

USDOL - MSHA - CMS&H
DISTRICT 9

BDO
01/11/07

Re: Crandall Canyon Mine ID# 42-01715 Site Specific Roof Control Plan

Dear Mr. Davis:

Please find attached a revised site specific roof control plan amendment for development of the north barrier block of Main West in the Crandall Canyon Mine. The text of the plan has been revised to allow leaving of roof coal where immediate roof conditions will be improved by leaving roof coal.

Please contact me with any questions at 435.888.4023

Sincerely,

Tom Hurst
Mining Engineer
435.888.4023

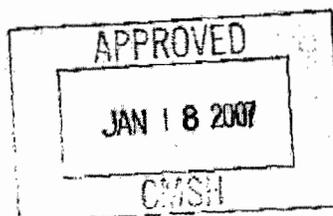
Crandall Canyon Mine MSHA ID# 42-01715
Main West North Barrier
Site Specific Roof Control Amendment

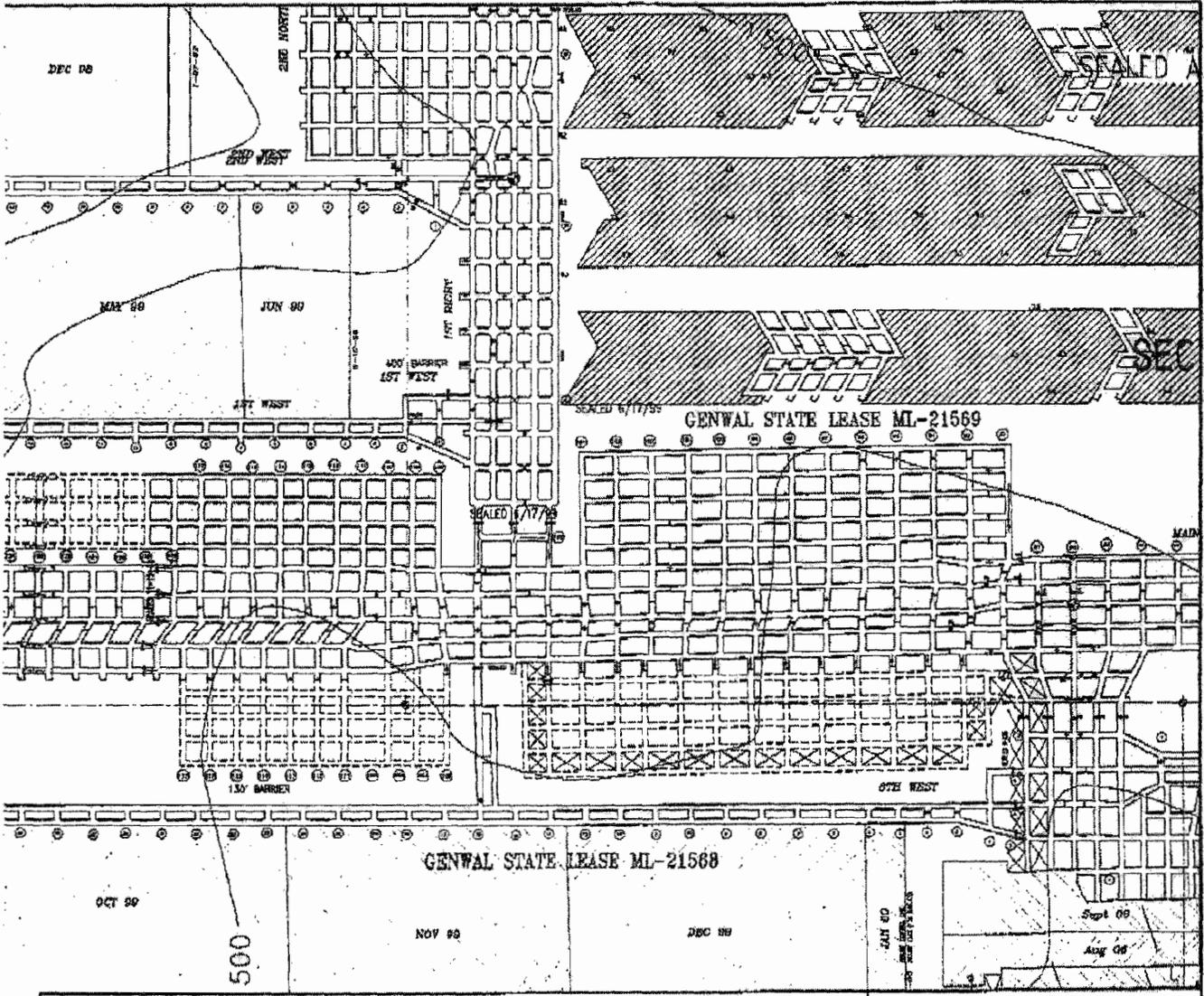
The mine is planning to develop entries into the north barrier of the Main West area. This area contains a valuable coal resource for the Crandall Canyon Mine. Consultant reports indicate the planned development will avoid the majority of the side-abutment stress transferred from the adjacent longwall gobs.

The development in the barrier pillar block will be from east to west. Four entries will be driven on a nominal 80 foot center to center spacing. Crosscut spacing will be on a nominal 90 foot center to center spacing, but can vary depending upon conditions encountered. The mining horizon will be the upper portion of the Hiawatha Seam. Roof coal may be left where areas of weak immediate roof exists. Where roof coal is left the minimum roof bolt length will be 6 feet. See Plate 1, North Block Overview. Overburden depth in the area is between 1,000 and 2,200 feet.

Systematic bolting will occur after excavation. The number of roof bolts per row will increase to a 6 bolt per row minimum. Patterned roof support will be 6 bolts per row and 5 feet or less between rows. Additional roof support will be installed whenever entry or crosscut widths exceed 20 feet or other conditions warrant additional support.

Development mining of the barriers is anticipated to last less than one year. This roof control plan is for development only. During development of the north barrier, conditions will be monitored to determine the possibility of pillar extraction. If conditions appear favorable, further discussions and plans will be submitted for approval.





LEGEND		SURVEY INFORMATION		SEAL INFORMATION	
OVERCAST	#	STOPPING	---	SEAL INSTALLATION	---
OVERCAST W/ WINDOW	#	STOPPING WITH DOOR	---	SEAL TO BE INSTALLED	---
PILLARS/LINDWALL EXTRACTED	□	EQUIPMENT DOOR	---	SEAL TO BE REMOVED	---
BLEEDER MEASUREMENT POINT	⊙	BOX CHECK	---	SEAL TO BE MAINTAINED	---
CO2 SENSOR	⊙	CURTAIN	---	SEAL TO BE REPAIRED	---
CH4 SENSOR	⊙	REGULATOR	---	SEAL TO BE REPLACED	---
PROJECTED OVERCAST	⊙	FIRE DOORS (per local standards)	---	SEAL TO BE DESTROYED	---
POSTED NOT MAINTAINED	---	FUTURE MINING	---	SEAL TO BE REINSTALLED	---
VENTILATION PIPE	---	SEAL	---	SEAL TO BE REWORKED	---
STOPPING/DAW	---	PROPOSED SEAL	---	SEAL TO BE REWORKED	---
PROJECTED STOPPING	---	ROCK STORAGE	---	SEAL TO BE REWORKED	---
BRATTICE LINE	---	SULP	---	SEAL TO BE REWORKED	---
OVERBURDEN	---	CONVEYOR TRANSFER POINT	---	SEAL TO BE REWORKED	---
TOP OF COAL SEAM	---	INTAKE AIR	---	SEAL TO BE REWORKED	---
SURFACE DRILL HOLE	---	RETURN AIR	---	SEAL TO BE REWORKED	---
UNDERGROUND DRILL HOLE	---	BELT AIR	---	SEAL TO BE REWORKED	---
WATER MONITORING WELL	---	PRIMARY ESCAPEWAY	---	SEAL TO BE REWORKED	---
BASELINE POINT	---	SECONDARY ESCAPEWAY	---	SEAL TO BE REWORKED	---
		PROPERTY CORNER	---	SEAL TO BE REWORKED	---
		STOPPING/CROSS-CUT NUMBER	---	SEAL TO BE REWORKED	---

**Plate 1
North Block
Roof Control Overview**

APPROVED

JAN 18 2007

CMASH

**CRANDALL
CANYON MINES**

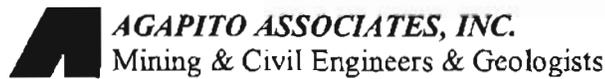
P.O. Box 1077 Potosi, Utah 84051

**CRANDALL CANYON #1 MINE
HIAWATHA SEAM**

DRAWN BY: JCL GEB MINE ID NO: 42-01718
DATE: 10-8-07 REV. DATE: 11-10-06

SCALE: 1" = 800'

Exhibit 46



715 HORIZON DRIVE
 SUITE 340
 GRAND JUNCTION, CO 81506
 USA
 VOICE 970 242.4220
 www.agapito.com

GOLDEN OFFICE
 303.271.3750

CHICAGO OFFICE
 630.792.1520

December 8, 2006

226-20

Mr. Laine Adair
 GENWAL Resources, Inc.
 195 North 100 West
 P. O. Box 1420
 Huntington, UT 84528

Re: Crandall Canyon Mine Ground Condition Review for Mining in the Main West North Barrier

Dear Laine,

On December 1, 2006, Agapito Associates, Inc. (AAI), personnel, Michael Hardy, Gary Skaggs, and Bo Yu visited Crandall Canyon Mine to review the ground conditions of the room-and-pillar mining in the north barrier pillar along Main West. AAI personnel were escorted by Laine Adair.

Current plans in Main West include developing four entries in the north barrier west of the 1st Right Submains under cover ranging from approximately 1,300 ft to 2,200 ft. The mine plans were previously evaluated by AAI,^{1,2} and the proposed mine plan with 60-ft by 72-ft (rib-to-rib) pillars was judged to be adequate for short-term recovery mining in the barriers.

At the time of our visit, four entries with 60-ft by 72-ft (rib-to-rib) pillars were developed in the Main West north barrier to Crosscut 123, where the depth of cover was almost 2,000 ft (See Figure 1). Entry widths were cut at 17 ft and were about 20 ft wide at pillar mid-height. Roof support included systematic bolting and rib-to-rib meshing. To the north and south of the mining area, 130-ft and 60-ft barriers were left, respectively, for the purpose of protection.

Good to excellent ground conditions were observed at all locations visited. Stable roof, floor, and ribs with only minor rib sloughage were observed in the recently mined areas in the

¹ Agapito Associates, Inc. (2006), "DRAFT—GEWNALL Crandall Canyon Mine Main West Barrier Mining Evaluation," prepared for Andalex Resources, Inc., July 20.

² Agapito Associates, Inc. (2006), "(226-30) GENWAL Main West Retreat Analysis—Preliminary Results," E-mail from Leo Gilbride to Laine Adair, August 9

Mr. Laine Adair
December 8, 2006
Page 2

West Main barrier. Photo 1 shows only minor rib sloughing at Crosscut 123 in the entry immediately north of the West Mains. Photo 2 shows the second entry below longwall Panel 12 with minor sloughing at the rib between Crosscut 122 and Crosscut 121. The conditions of ribs along the north remnant barriers were good and consistent as shown in Photo 3. The rib was mildly yielded, but showed no evidence of blowouts, indicating that the 130-ft-wide remnant barrier pillar is wide enough to accommodate the load transfer from Panel 12 for short-term mining. The abutment load is expected to have alleviated since the time that Panel 12 was retreated in 1999 due to ground settlement and subsidence.

In summary, current ground conditions in Main West agree with our previous analysis. Roof, floor, and rib conditions were consistent with analytical predictions. There was no indication of problematic pillar yielding or roof problems that might indicate higher-than-predicted abutment loads. Conditions should continue to be carefully observed as mining progresses to the west under deeper cover.

We appreciate the opportunity to visit this area and directly observe ground conditions in the West Mains barrier. Please contact us if you have any questions.

Sincerely,



Michael Hardy
Principal
mhardy@agapito.com

BY.MPH/smvf

Attachments(4): Figure 1
Photos 1-3

AAI000172

Exhibit 47

Mr. Murray,

Al Davis and I just completed a two hour one-on-one meeting at his Denver office. The highlights of the meeting are as follows:

1. Davis committed that he would do whatever he could to keep Durant off Utah American property, but would not promise that Durant would never again appear. Durant is currently a temporary field office supervisor in Craig Colorado, but that job will eventually end. Davis stated that Durant received a reprimand for his actions, but had been cleared by two government agencies to resume work at UEI. Davis acknowledged that it would be hard for Durant to inspect an UEI mine without bias. To that end, Davis stated he would keep Durant away from UEI, unless something unusual developed that forced a change in direction. I believe Davis was honest with his statements and will keep Durant away. He clearly does not want a confrontation.
2. We spend at least an hour discussing UEI's initiatives regarding what has been done to upgrade mine safety and production since last August. Davis acknowledged that, early on, he was apprehensive about the change, based on what he had heard from the east, but has been very impressed with our efforts since the change. He acknowledged major improvement in several areas and stated he was more comfortable with the direction of the mines.
3. On particular issues, we discussed the need for approval of the pillaring plan at Crandall within the next twenty days. He said he would help expedite the process.
4. Davis asked for help in regard to Stickler and our input about the inspection activity in the west versus the east. Specifically, he discussed a meeting he had with Stickler two days ago regarding western ventilation. The purpose of the meeting was to inform Stickler of the particular issues confronting western mines and the need to manage them differently than eastern operations. He thinks our input to Stickler, backing his thoughts, would help western operations.

I am traveling back from Denver and will not be on the 5 PM phone call today. David Hibbs, Doug Johnson and Laine are prepared to discuss.

Exhibit 48

UNDERGROUND MINE FILE	
DATE FWD.	2-5-07
INITIALS	Am

Surname	Date
pc [Signature]	1/14/07
Owens	1/31/07
[Signature]	2/1/07

FEB -2 2007

Coal Mine Safety and Health
District 9

Gary Peacock
General Manager
Genwal Resources, Inc.
P.O. Box 1077
Price, UT 84501

RE: Crandall Canyon Mine
ID No. 42-01715
Roof Control Plan Amendment
Site-Specific north barrier of
Main West pillar extraction

Dear Mr. Peacock:

The referenced roof control plan amendment is approved in accordance with 30 CFR 75.220(a)(1).

The submittal consisted of a cover letter, dated December 20, 2006, one page, and one map, addressing pillar extraction of the north barrier of Main West. This amendment will be incorporated into the current plan originally approved on July 3, 2002.

This approval is site-specific for the north barrier of Main West and will terminate upon completion of the project. Since this approval is site-specific, no pages in the roof control plan will be superseded. That is, this amendment will be added to the roof control plan as a separate attachment.

A copy of this approval must be made available to the miners and must be reviewed with all miners affected by this amendment.

If you have any questions regarding this approval, please contact Billy Owens at 303-231-5590 or Pete Del Duca at 303-231-5660.

Sincerely,

/s/ Allyn C. Davis

Allyn C. Davis
District Manager

Enclosure

bcc: Price #2 FO (Copy surname letter & copy plan)
Price #2 FO UMF (Copy surname letter & copy plan)

David Hibbs
Genwal Resources, Inc.
P.O. Box 1077
Price, UT 84501 (Copy letterhead letter)

G. Jensen (Copy surname letter & copy plan)
EC Plan File (Original surname letter & original plan)
RC Plan File (Copy surname letter & copy plan)
RC MHF (Copy surname letter & backup)
RC Reading 8646 B4-A16 (Copy surname letter)
A. Davis/D9 Chron 1-3-07 (Copy surname letter)
WORD(T:\COAL\RC\pd\crandall canyon\al6-app-1-16-07.doc)

Exhibit 49

From: Hill, Bruce [bhill@coalsource.com]
Sent: Saturday, February 03, 2007 4:07 PM
To: gpeacock@utahamerican.com
Cc: Laine Adair; Hibbs, David
Subject: FW: Crandall Production i.e.2-02-07
Attachments: Crandall Production i.e.2-02-07.tif

Gary,

Looking better. Amazing what impact a little top can have on production!! Keep it up. By the way, talked to Davis two days ago regarding your pillar plan and we received approval yesterday.

From: Crandall Canyon Conspec [mailto:conspecc@coalsource.com]
Sent: Saturday, February 03, 2007 2:14 AM
To: Washinsky, Dave; Laine, Adair; Horn, Hank; Hill, Bruce; Pinkston, Brent; Poulson, Jim; Brown, Steve; Dobbs, Ray; Behunin, Teresa; Haney, Scott
Subject: Crandall Production i.e.2-02-07

Exhibit 50

Inspection Report - IE/PV

Printed On: 7/12/2007
Period: 2007-Q2
Period End Date: ~~6/30/2007~~ 3/31/07

Inspection Number: SWF022707

Mine Name: Genwal
Mine Owner: Andalex/IPA
Inspector: Steve Falk *SWF*
Operator: Genwal
Operator Rep:
Fiscal Year: 2007
Period Type: Quarterly
Active Faces: 1
Accompanied By:
Finalize Date: 7/12/2007

Remarks: On Tuesday, February 27, 2007, I (Stephen Falk) inspected the Crandall Canyon Mine, operated by Genwal Coal Company, a subsidiary of UtahAmerican Energy, Inc.. UtahAmerican is a 50 % owner along with Intermountain Power Agency, of the property and lessee of record. Tom Hurst, Senior Mine Engineer, was my company rep.

Just one section is at this mine and personnel are being transferred to other UtahAmerican mines. The section is in the north barrier to Main West. Very little of the coal remains. This section is trying to pull all the remnant coal in the Main West area. Besides the west main pillars and barriers, the only other coal blocks remaining is in the 2nd North area and only if they can mine 5 to 6 feet of clean coal and keep production rates up with one miner section. South Crandall Mine is idled but is ventilated and inspected. Total personnel is down to about 60. The one section is run on a 4 day 10 hour shift with 2 shifts going and a overlapping maintenance shift. Then they have one super weekend shift of 3 day 12 hours. But it seems that Genwal will just finish out with this one section until Lila Canyon comes on line.

The one mining section was visited. Conditions were noted and spot measurements were taken of the section working faces. These measurements will be compared with the submitted monthly production maps to verify volumes from monthly production verification. These spot measurements are shown on the attached maps to this report and will be transferred to the monthly production maps. Genwal is mining according to the approved mine plan and no incidents of non-compliance were noted. The section visited follows below:

North Barrier Section, West Mains, Hiawatha Seam, Federal Lease UTU-68082

This section finished driving 4 entries on 92 foot entry centers and 80 foot crosscut centers. These were driven in the north barrier pillar between Main West and mined out longwall panel # 12. The barrier pillar is 450 foot wide which accommodates the 4 entries. This leaves only 130 foot barrier to the north longwall panel. This section started out back at Main West crosscuts 108 - 110 and drove out to crosscut 158. Here the section starts to dip down to the west before the Joe's Valley Fault. At this place, the section experienced large inflows of water. They could not control it enough with pumps. We think this is water flowing through fractures close to the fault, draining the gob to the north. Crosscut 158 is about 400 feet short of the bleeder entries along the fault. With the water coming in too fast, the company stopped advance at this point and began pulling pillars back. **They got a special pillar plan approved by MSHA to pull the south two of three pillars and have the return out the north most entry.** So far, the crews have pulled 18 pillars or 9 rows. Currently they are pulling the pillars between crosscut 149 and 150. **I have been concerned about pulling pillars in this environment with mining a narrow block with little coal barriers to mined out blocks on both sides.** Fortunately, the beginning depth on the west end toward the Joe's Valley Fault is somewhat shallow starting at 1300 feet. So far no inordinate pillar stresses have been noted, **though thing should get interesting soon.** The face is under 1600 feet of cover now and will increase to over 2000 feet by crosscut 139. The working face looks ok and coal is good. There is some cap rock in the roof that is not holding up during mining. Coal height is running about 9 feet. The rate of retreat mining is well ahead of water build up as the seam has a incline down to the west fault starting with pillar row 144, so the water is running down to the end of the entries. Measurements are noted on the attached map.

Leases

Lease Number	Lessee	Assignee	Status
ROW-UTU-6683			Terminated
ROW-UTU-7797			Terminated
SL-062648	Intermountain Power Agency &	Genwal	Active Mine Works
State ML-21568			Producing

Thursday, July 12, 2007

Page 1 of 2

U-54762	Andalex	Genwal	Active Mine Works
UTU-68082	Andalex	Genwal	Producing
UTU-78953	Andalex	Genwal	Producing

Was approved plan reviewed? Yes
Was I&E plan reviewed?
Was PV plan reviewed?
Was previous inspection reviewed? Yes
Was mine status reviewed with MSHA? No
Was approved plan followed? Yes
Was a noncompliance encountered? No
Was an undesirable event encountered? No
Was the reported production acceptable? Yes

subrptImages

Exhibit 51

Re: Crandall Month End December, 2006

To: Laine Adair

From: Gary Peacock

**Redacted:
Not Responsive**

The conditions have become a little more challenging as we mined most of the month under 2,200' of cover. The ribs are seeing quite a bit of sloughage causing some problems keeping the outside bolt close enough to the rib to stay in compliance. It also makes it difficult to stay on top of the rock dusting because it is constantly sloughing off. While the pillars are showing some weight we have not seen the entries show any weight. We did have a few spots where the initial top deteriorated to the point we had to take short cuts to keep it up.

**Redacted:
Not Responsive**

Our current manpower is at [REDACTED] total employees. That is also our budgeted number.

Exhibit 52

Exhibit 53

PRE-SHIFT SECTIONS

DATE OF EXAMINATION 1-9-07 SECTION/AREA Main West
 TIME OF EXAMINATION START 1145 AM PM END 1:11 AM PM
 EXAM. CALLED OUT — YES NO CALL OUT TIME 1:20 AM PM
 CALLED OUT BY Art Bolotas REPORT RECEIVED BY Leonard Rial
SIGNATURE

LOCATIONS	O ₂	CH ₄ %	CO	CFM/AIR DIRECTION	V or H	HAZARD CONDITIONS	ACTION TAKEN
LOX/INTAKE	20.9	0	0	36412		None obs	
HEADGATE #10							
TAILGATE #126							
BELTLINE	26.						
RETURN	20.9	0	0			None obs	
#1 ENTRY	20.9	0	0			None obs	
#2 ENTRY	20.9	0	0			None obs	
#3 ENRTY	20.9	0	0			None obs	
#4 ENTRY	20.9	0	0			None obs	
#5 ENTRY							
#6 ENTRY							
TRANS Scanner	20.9	0	0			None obs	
Charger	20.9	0	0			None obs	
Duster	20.9	0	0			None obs	

V = VIOLATION
H = HAZARD

ON-SHIFT HAZARDS IDENTIFIED

LOCATIONS	HAZARDS	ACTION
XC1410 ²⁰⁰³	Both specimens cause 2 by Rib Slo Flare	spot resolved AB

PRE-SHIFT REMARKS Area appeared safe at time of Exam

PRE-SHIFT/MINE EXAMINER Art Bolotas CERT.# 8916
 COUNTER SIGNATURE Phillip Cox CERT.# 8462
 SECTION SUPERVISOR _____

INITIALS (NOT REQUIRED)

2MSHA02562

Exhibit 54

CC Main West

Crandall Canyon Mine

CC Main West

DATE	1-10-07	CREW#	C	CARS LOADE		FT ADV	192	Uptime Minutes	470	FT per Uptime minute	0.40	TONS	
SECTION MANAGER	Arty Bolobatas	SHIFT MANAGER				MAINTENANCE MANAGER							
LEAVE PORTAL	7:00	ARRIVE SECTION	7:30			ARRIVE FIRST CAR	8:10					Scot Bolobatas	
LOAD LAST CAR	6:25	LEAVE SECTION	6:35			ARRIVE PORTAL	7:00						

Crandall Canyon Mine 2 West Pillar

CUT #	1	2	3	4	5	6	7	8	9	10	11	TOTALS	SHUTTLE CAR COUNT GOAL	AVG HEIGHT LOCAL BEAM	AVG INCHES TOP TAKEN	AVG INCHES BOTTOM TAKEN	TOP CONDITION	BOTTOM CONDITION
PLACE	#3	#4	#1	#2	#3	#3	#3	#3	#3	#3	#3		115	3	6	0	Poor	Good
DEPTH WIDTH of Lifts	17'x51'																	
Bolts	44	44	38	44	54													
Screens	7	7	7	7	7													
Cable Bolts																		

CONDITION OF SECTION END OF SHIFT

XC	0	1	2	3	4	5	6	7	8	9	10	11	XC	5	XC	5	XC	7	XC
DELAY CODE																			
0002																			
0009																			
0069																			

EXPLANATION OF DELAYS (Mine No. 6 - 1WTG)

RPB
 5:05
 Mining
 Travel in
 Pit off from Top coal about mine to #3
 Survey for in Pit #6 Caty

CC Main West

MINER MOVE TIME	Imake CFM	32,528	NO2=	0	
TRAVEL OUT	Hot Seat		NO2=	0	
DISTANCE FROM FEEDER TO FACE			Washed	Serviced	Needs Repairs
ENTRY					
START PLUS	146'	147.2	147.2		
END PLUS	109'	113	85		
X-CUT PLUS					
START PLUS					
END PLUS					

CONV. RUN TIME	MINER #	1978	1995.2	1997.3	
CHARGER	FEEDER	SCOOP	MANTRIP	PC	RECT
CM OPERATOR	Carlous Hernandez				
CM OPERATOR	Ignacio Manzo				
RC OPERATOR	Carlos Rodriguez				
RC OPERATOR	Carlos Rodriguez				
SCOOP	Susana Furr				
MECHANIC	Susana Furr				
Idled Cars					
# Loaded	20	03			

Signature
 Arty Bolobatas

Signature

VI 6 GDS 10/25/05

Exhibit 55

PRE-SHIFT SECTIONS

DATE OF EXAMINATION 1/16/07

SECTION/AREA M a m w.

TIME OF EXAMINATION START 3:03 ~~AM~~/PM

END 4:20 ~~AM~~/PM

EXAM. CALLED OUT — YES/~~NO~~

CALL OUT TIME _____ AM/PM

CALLED OUT BY _____ REPORT RECEIVED BY _____

SIGNATURE

LOCATIONS	O ₂	CH ₄ %	CO	CFM/AIR DIRECTION	V or H	HAZARD CONDITIONS	ACTION TAKEN
LOX /INTAKE	20.9	0	0	34995		None	
HEADGATE #10							
TAILGATE #126							
BELTLINE							
RETURN	20.9	0	0			None	
#1 ENTRY	20.9	0	0			None	
#2 ENTRY	20.9	0	0			None	
#3 ENRTY	20.9	0	0			None	
#4 ENTRY	20.9	0	0			None	
#5 ENTRY							
#6 ENTRY							
<i>Turn</i>	20.9	0	0				
<i>Chgo</i>	20.9	0	0				

V = VIOLATION
H = HAZARD

ON-SHIFT HAZARDS IDENTIFIED

LOCATIONS	HAZARDS	ACTION
<i>XC 1211 ext by lox</i>	<i>Belt opening into shaft by covered</i>	<i>got Bel Med AB</i>

PRE-SHIFT REMARKS Section set for work and tunnel
at time of exam

PRE-SHIFT/MINE EXAMINER Art of Dabeta CERT. # 8916
 COUNTER SIGNATURE Phillip Cox CERT. # 8462
 SECTION SUPERVISOR _____

Exhibit 56

PRE-SHIFT SECTIONS

DATE OF EXAMINATION 1-21-07

SECTION/AREA MAIN WEST

TIME OF EXAMINATION START 3:03 AM PM

END 4:11 AM PM

EXAM. CALLED OUT YES NO

CALL OUT TIME 4:50 AM PM

CALLED OUT BY DALE BLACK

REPORT RECEIVED BY

James Gordon
SIGNATURE

LOCATIONS	O ₂	CH ₄ %	CO	CFM/AIR DIRECTION	V or H	HAZARD CONDITIONS	ACTION TAKEN
LOX/INTAKE	20.9	0	0	38,050		NONE OBSERVED	
HEADGATE #10							
TAILGATE #126							
BELTLINE							
RETURN	20.9	0	0			NONE OBSERVED	
#1 ENTRY	20.9	0	0			NONE OBSERVED	
#2 ENTRY	20.9	0	0			NONE OBSERVED	
#3 ENRTY	20.9	0	0			NONE OBSERVED	
#4 ENTRY	20.9	0	0			NONE OBSERVED	
#5 ENTRY							
#6 ENTRY							
TRANS/CHARGER DUSTER	20.9	0	0			NONE OBSERVED	

V= VIOLATION
H = HAZARD

ON-SHIFT HAZARDS IDENTIFIED

LOCATIONS	HAZARDS	ACTION
X-CUT	RIB FELL AWAY	SET TIMBER ALONG RIB LINE
146	BOLT SPACING TOO FAR	INSTALLED EXTRA BOLTS

PRE-SHIFT REMARKS AREAS REASONABLY SAFE AT TIME OF EXAMINATION

PRE-SHIFT/MINE EXAMINER

Dale Black

CERT.# 7483

COUNTER SIGNATURE

James Gordon

CERT.# 7485

SECTION SUPERVISOR

INITIALS (NOT REQUIRED)

51

2MSHA02597

Exhibit 57

CC PILLARS

CRANDALL CANYON MINE

11/19/07
C-130130130130

DATE	11/19/07	CREWS	C	CARS LOADED		FT. ADV.	194	Uptime Minutes	4773	FT per Uptime minute	40	TONE	
SECTION MANAGER	Art Palotas	SHIFT MANAGER	Dennis Gillbert	MAINTENANCE MANAGER	Scott Sams	LEAVE PORTAL	4:00	ARRIVE SECTION	6:25	LOAD FIRST CAR	7:05	LOAD LAST CAR	4:30
LEAVE PORTAL	4:00	ARRIVE SECTION	6:25	LOAD FIRST CAR	7:05	LOAD LAST CAR	4:30	ARRIVE PORTAL	6:00				

CONDITION OF SECTION AT BEGINNING OF SHIFT												
XC	0	1	2	3	4	5	6	7	8	9	10	11
		A/B										

MINING CYCLE												
CUT #	1	2	3	4	5	6	7	8	9	10	11	TOTALS
PLACE	304	214	1202	252	2302	252						
DEPTH/WIDTH	12'50"	17'30"	12'00"	12'00"	12'00"	17'30"						
LT. BLTR.	214	36	51	48	52							236
RT. BLTR.	6	7	7	7								34
CABLE BLTS												
SCRM. MTS.												

PWT PER MINUTE GOAL: 115
 AVG HEIGHT COAL BEAM: 8
 AVG INCHES TOP TAKEN: 0
 AVG INCHES BOTTOM TAKEN: 0
 TOP CONDITION: poor
 BOTTOM CONDITION: good

CONDITION OF SECTION END OF SHIFT												
XC	0	1	2	3	4	5	6	7	8	9	10	11
		A/B										

DELAY CODE	EQUIP ID	STOP	START	DELAY MIN	EXPLANATION OF DELAYS (Mine No. 6 - 1WTQ)
0002		6:00	6:25	25	TRAVEL IN
0000		6:25	7:05	40	PT OFF - MAINT OPERATOR TO 3104
5104		4:30	5:30	60	PT OFF - MAINT OPERATOR TO 3104
0136	4192	12:00	11:00	35	Broken water line on mine

CC PILLARS

0002	330	6:00	25	MINER MOVE TIME	70	INCHES CFM	34,822	FEEDER CO	0	MOR	0
				TRAVEL OUT		RETURN CFM		RETURN CO	0	MOR	0
				TOTAL DELAY MINUTES	2:42	DISTANCE FROM FEEDER TO FACE	170	BOLTS INSTALLED	236	Washed	Serviced
ENTRY	1	3	3	4	5	7	8	9	EQUIP. #	Washed	Serviced
START PLUS	148132	148839	14825	14847						CM	
END PLUS	68	73	25	46						CM	
X-CUT PLUS	14844	14844	14845							RC	
END PLUS	6015	6015	5815							RC	

CM OPERATOR	Carlous Hernandez	RB OPERATOR	Roberto Rodriguez	CONV. RUN TIME	
CM OPERATOR		RB OPERATOR	Phil Osceda	MINER #	1978
RC OPERATOR	Ignacio Hernandez	RB OPERATOR		START	1202
RC OPERATOR	Chelous Rodriguez	RB OPERATOR		END	2030
RC OPERATOR		UTILITY		TOTAL	120
SCOOP	Jason Lopez	MECHANIC	Laing Brock		
Removals	# 9	# 12-11	#		
# Loaded	11	23			

Verifying Information (Shift Foreman)

Signature *Art Palotas*

V164DS 10/23/05

Exhibit 58

Re: Crandall Month End January, 2007.
To: Laine Adair
From: Gary Peacock

The production for January was [REDACTED] tons. The budgeted tonnage was [REDACTED] tons. That is [REDACTED] tons short for the month. The reduced production was due to two key problems throughout the month. The top conditions deteriorated to the point that we had to shorten our cuts to keep the immediate top up. We were taking 5'-20' cuts for 12 days out of the month. The top the last week of the month was a lot better and we were back to making 40' cuts for the most part. The other problems we had were on the belts. The belt availability was down to 92%, it has been 97-98% in the past. We are trying some different things to improve our belt availability to an acceptable percentage.

We advanced the section 14 xc's from 137 to 151 in January. Even though the amount of cover has gone from 2,200' to 1,500', we are still seeing a considerable amount of rib sloughage. It does create some problems, but is no worse than we would expect to see mining in the barrier like we are. The MSHA roof support specialists came for a tour of the section. They seemed to be pleased with the conditions they observed. The possibility of getting a pillar plan for this area seemed favorable after talking to them. We are installing a breaker row in each of the xc's in the #4 entry in anticipation of the pillar approval.

We hit some water coming out of the floor and out of the roof. We hit this at xc-148, it was getting worse as we advanced. The flow started out at about 1.5 gallons per minute. There was about 10 gallons a minute being made all together at the end of the month. Looking at a map, the water we are hitting is right across from the water we hit in the old mains. We have a 13 HP pump set up at xc-150 pumping back to the seals at 118.

Exhibit 59

Inspector comment sheet

DATE	LOCATION	CONDITION, COMMENTS, VIOLATIONS
2-06-07	Main West	3 cross cuts back from the face has no rock dust on the break through.
		3 cross cuts behind on the rock dusting in the return.
		1 cross cut out by last open needs pushed we are running on chunks of ribs.
		Last pillar in between #1 roadway and #2 roadway corners need supported.
		# 3 entry needs dusted
		All of these issues need to be taken care of before we produce coal.
		X-C 131 # 2 roadway need to set timbers towards belt line
		X-C 135 #2 roadway need to set timbers towards belt line
		X-C 136 #2 roadway need to set timbers towards belt line.
		X-C 137 to 138 in the haulage need to set timbers.
		X-C 138 # 2 roadway towards belt line in by corner needs timbers set.
		X-C 139 # 2 roadway towards belt line in by corner needs timbers set.
		X-C 140 #2 roadway towards the # 1 roadway need timbers set.
		X-C 141 # 2 roadway towards beltline in by corner needs timbers set.
		X-C 141 # 2 roadway towards # 1 roadway corner needs timbers set.
		X-C 142 #2 roadway towards beltline corners need timbers set.
		X-C 143 # 2 roadway towards the # 1 roadway timbers need set.

Exhibit 60

February 7th 2007

UNSAFE BEHAVIOR:

With the current unpredictable rolling out rib conditions we are experiencing in Main West, an unsafe behavior observed at times of servicing or performing mechanical repairs on face equipment near the face or in past the last open cross cut area.

This is where most of these large roll outs occur. Servicing equipment in these areas should take a little more precautions. With having ventilation curtains covering possible hazardous rib conditions and causing blind spots, along with exposure on the off operator side of the C/M to a possible hazardous struck by, or possible pinch point condition.

WHY WAS IT DONE THIS WAY?:

Most all mechanics are carrying a Ped light only. This makes having the option of moving the C/M manually back to the last open cross cut or back to an area where the rib conditions are safer. The time of removing covers and hooking up to umbilical or manually takes a little extra time and our time is very limited to complete section servicing, therefore unnecessary risks have sometimes been taken.

SUGGESTED CORRECTIONS:

The option my partner and I have taken on, is I found and rebuilt a spare pto light that was not in use and on day shift when the known task of servicing all section equipment in the allocated two hour window is to bring in two lights, the ped and the pto. This makes it very quick to set up back in the last open or back near the last open where the rib conditions are much safer at the present mining conditions.

The only problem with having two lights now is that a lot of times the pto light will be taken by other shifts or operators, and therefore is not always available. When this occurs the time to connect to umbilical or manually should be taken to ensure working back in the last open or back around safer rib conditions. It would also save a little time and would be helpful if the night shift C/M operator took this into consideration when parking the equipment, because the operator's know better than anyone of the present and current conditions.

Respectfully your,
Mechanics

2MSHA14011

UEICONG000021325

Exhibit 61

North development used mostly ⁶⁰Standard
coal and bottom into 55/54, w/ 6 bolts & crees
w/ wire mesh panels.

2 - When the ~~50~~ north development
went under the deeper cover
2000'+, Bumping and tremor
and working noises were very
evident and frequent. It stopped
after the faces had passed on
the west side of the overlying
ridge.

3 - Pillaring work became problematic
when pillaring is shown to stop
because head coal was left in
that region. The abutment stress
was causing severe buckling
screen. Could not make proper
fills into pillars (Note UG
crews said they pulled the pillars
higher than 8' entry by grading
downward in the pillar left).

Jumped the pillar rows shown
because of the poor conditions

Exhibit 62

**Redacted:
Not Responsive**

4. Gary Peacock reported on Crandall Canyon Mine.

a. There have been no injuries this month.

**Redacted:
Not Responsive**

c. There have been no violations this week in inspector days.

d. Started pulling pillars on the 16th.

e. Moved belt and power back one time.

f. Still working on belt splices.

g. Cleaning out crosscuts to have places to store belting.

h. Need to get new cat tracks for the miner.

i. Have about 45 days of pillaring before moving to the south side and need pillaring plan approved.

j. Need seal plan approved to seal off 1st South and South Mains areas.

k. Gehl skid steer loaders are worn out (engines and drive trains) and have a lot of compliance problems. Neither Gehl is running right now. One new machine would really help. Battery Mini-Track does not take the place of the Gehl. Dorian will help get problems addressed on the Terra-Pro's. Steve Langsdorf is to look into trading in battery Mini-Tracks for diesel powered units with A.L. Lee.

5.

**Redacted:
Not Responsive**

6. David Hibbs reported on engineering.

Exhibit 63

Redacted:
Not Responsive

4. Gary Peacock reported on Crandall Canyon Mine.
- a. There have been no injuries this month.
 - b. Production in Feb has been [REDACTED] tons versus budget of [REDACTED] tons. Conditions are still very good. Ash came down for a couple days, but is back to about [REDACTED] % right now. They are not taking any rock – ash is from a rock band. Have pulled ten rows (at crosscut 148), and there are 33 left to pull. Depending on height, they get about a row a day. Two rows from now the rock band is noticeably less. Recovery of coal has been good.
 - c. There have been no violations this week.
 - d. Priorities include getting a replacement for the Gehls and getting an approved plan for the south side of the mains. Current approval is for the north side only. Crandall has \$ [REDACTED] k in the budget for outby equipment. Gary Sitterud will look at existing Gehl to see what rebuild would cost. Gary Peacock is to put together a recommended plan of action and get it to Gary Sitterud and Laine.
 - e. Gary Sitterud asked Peacock to make sure the oil is kept up on the Titanic.
 - f. Dorian will come to Crandall tomorrow to look at the TerraPro's and make a plan with Gary.
 - g. Bruce asked mine managers to identify hourly people who could be moved into supervisor positions if need arises

5.

Redacted:
Not Responsive

Exhibit 64

Re: Crandall Month End February, 2007.

To: Laine Adair

From: Gary Peacock

**Redacted:
Not Responsive**

Redacted: Not Responsive

We stopped development and started pulling pillars the 16th.

We spent the first few shifts cutting the solid to the west. We were able to get some good tonnage in the solid to somewhat offset the tonnage we lost in those last 5 xc's to 163.

Pillar conditions remained excellent to the end of the month. The cave was staying right with us and we were seeing no weight outby. The water was staying inby and giving us no delays. The belt and power moves were being done very efficiently and equipment ran good. We had retreated back to 147 at the end of the month. The amount of cover is rapidly increasing going into March and I do not anticipate the same conditions we experienced in February.

The outby projects consisted of some major clean up for the entries to the south and belt maintenance. The 2 people we put on as belt mechanics have made a big improvement on the belt availability.

Exhibit 65

3.

**Redacted:
Not Responsive**

4. Gary Peacock reported on Crandall Canyon Mine.
- a. There was an incident with an electrical contractor cutting his arm while moving the Conspec system.
 - b. There was a bounce last night that hit Carlos Payon in the cheek with a lump of coal, but it was not serious enough for him to need medical attention.
 - c. There have been no injuries this month.
 - d. Production in March has been [REDACTED] tons versus budget of [REDACTED]. conditions are more challenging as they are under 2,000 feet of cover. 18 rows have been pulled; they are at xc-139 today. Should be done pillaring by the end of this month. Had a lump get caught in the belt and tear 150 feet of belting.
 - e. There have been no violations this month.
 - f. Identified new Gehl loader that they would like to replace the existing Gehl.
 - g. Getting the area cleaned out for the South development.
 - h. Short a Conspec person.
 - i. Gary needs to get Conveyor Services scheduled to re-lag the silo head roller on Good Friday.
 - j. Fully staffed as of today.
 - k. Awareness meetings yesterday went well.

Exhibit 66

Exhibit 67

PRE-SHIFT SECTIONS

DATE OF EXAMINATION 2-20-07

SECTION/AREA MAIN WEST

TIME OF EXAMINATION START 3:05 AM PM

END 4:40 AM PM

EXAM. CALLED OUT YES NO

CALL OUT TIME 5:20 AM PM

CALLED OUT BY DALE BLACK

REPORT RECEIVED BY

[Signature]
SIGNATURE

LOCATIONS	O ₂	CH ₄ %	CO	CFM/AIR DIRECTION	V or H	HAZARD CONDITIONS	ACTION TAKEN
LOX/INTAKE	20.9	0	0	37,600		NONE OBSERVED	
HEADGATE #10							
TAILGATE #126							
BELTLINE							
RETURN							
#1 ENTRY							
#2 ENTRY							
#3 ENRTY							
#4 ENTRY							
#5 ENTRY							
#6 ENTRY							
PILLAR LINE	20.9	0	0			NONE OBSERVED	
TRANS/CHARGER	20.9	0	0			NONE OBSERVED	

V = VIOLATION
H = HAZARD

ON-SHIFT HAZARDS IDENTIFIED

LOCATIONS	HAZARDS	ACTION
X-CUT 151	STOPPING DAMAGE BY CAVE	REPAIRED
X-CUT 148	STOPPING DAMAGED	REPAIRED

PRE-SHIFT REMARKS AREAS REPORTED REASONABLY SAFE AT TIME OF EXAMINATION

PRE-SHIFT/MINE EXAMINER Dale Black

CERT.# 7483

COUNTER SIGNATURE Dale Black

CERT.# 03892

SECTION SUPERVISOR _____

INITIALS (NOT REQUIRED)

41

2MSHA02179

Exhibit 68

2-21-07

Main West Very slow start. Cave on previous shift took out or damaged 8 stoppings that we had to rebuild or repair. Finished power move. CM was down in the way when we went in. Had to cut a 20' piece of cable out & splice back together to get it going. Moved it out of the way to get the other 2 MRS cables up to Transformer. Ran OK after we got going except for 1 S.C. splice. Broke a shear jack hose on CM at about 530PM

Gen Mine Shoveled #4 tailpiece to get it out of books. Built or repaired 8 stoppings that were damaged or blown down. Pre shifted. Took scoop out to #85 Main West & worked on getting extractor moved up to closer to section. Was having problems getting it up the hills in the 90's.

2-22-07

*MAIN WEST - DOWN WITH MINER FIRST OF SHIFT, REPLACE BLOWN HYD. HOSE & REFILLING MINER WITH OIL, LOST SOME TIME ON MINER WITH PROBLEM ON REMOTE - ANTENNA CABLE, RAN GOOD 2ND HALF OF SHIFT, PLUGGED FEEDER ONCE, GETTING SOME HARD BOUNCES, STILL CAVING RIGHT ON OUR ASS, MOVED SCOOP CHARGER BACK & SET-UP

*OUTBY - GOT MINER EXTRACTOR MOVED UP TO X-CUTS #117-118 MAIN WEST, LOADED GEHL ON SKID & DRUG IT OUT OF SECTION, IT'S AT X-CUT #116, BROUGHT BOOM TRUCK OUTSIDE & LOADED NEW MINER CATS ON IT, TOOK THEM BACK INTO SECTION, SHOVELED ON #5 - BELT - "IN PRE-SHIFT BOOKS," STILL NEEDS MORE CLEANING HEAD TO TAIL

Exhibit 69

Merry Christmas

12-25-06

MAIN WEST MOVED 4" Vic pipe out of Belt Entry
MRS down with BAD splice Twice
moved Bolter & Buggy

out by Pre-shifted twice - worked on Belt Foot (cleaning)
Pushed Coal on stock Pile

2-26-07 DAYS

* MAIN WEST - MECHANICS REPLACES CATS ON MINER,
SECTION CREW WORKED ON REMOVING BELT LINE
STOPPINGS AND CLEANING UP SILT AT 93, 99, 109
REBUILT STOPPINGS, ALSO HAULED IN SOME 8" - AGUA
LINE & INSTALLED OUBY #5 HEADROLLER TO HELP
CONTROL WATER & SILT, TOOK SCOOPS BACK TO SECTION
TO RECHARGE, STARTED MINING COAL AT 5:15 PM

2-25-07

cleaned X-cats 96-97-98-99 Belt line
Put stopping back in at 97
unloaded Belt mat. from Trainers -
2 people went with brake for Pre-shifting

Brent H. - Pday

Brian P. - Pday

2 27 07 Grave yard

Main West Good start. Ran real steady. Good
bounces. Lost a rubber coupler on conveyor on
feeder. Gathered up 4" pipe in section and
put on trailer. Got MT trailers ready for belt
move.

Gen. Mine Pre-shifted twice. Real short handed.
Shoveled on belts to clear books. Patched stopping
at 109.

Exhibit 70

CC Main West

Crandall Canyon Mine

CC Main West

DATE	3-1-07	CREW#	0	CARS LOADED		FT. ADV.	250	Uptime Minutes	485	FT. per Uptime/minute	5.	TONS	
SECTION MANAGER	Benny Alford	SHIFT MANAGER	Gale Anderson	MAINTENANCE MANAGER	Larry Powell	LEAVE PORTAL	6:00 PM	ARRIVE SECTION	6:25 PM	LOAD FIRST CAR	6:40 PM	LEAVE SECTION	6:00 AM
LOAD LAST CAR	5:25 AM												

Crandall Canyon Mine 2 West Pillar																
XC	0	XC	1	XC	2	XC	3	XC	4	XC	5	XC	6	XC	7	XC

CUT #	1	2	3	4	5	6	7	8	9	10	11	TOTALS	
	22	23	23	23	23	24	23	23	23			9	
DEPTH WIDTH													
or/like	X	X	X	X	X	X	X	X	X				
Bols													
Screens													
Cable Bols													

XC	0	XC	1	XC	2	XC	3	XC	4	XC	5	XC	6	XC	7	XC
DELAY CODE																
EQUIP ID																
STOP																
START																
DELAY MIN																
TRAVEL IN																
EXPLANATION OF DELAYS (mine No. 6-10719)																

7:20	7:50	30	Cable Blawh out	Telo stopping	Have MRS To south side stoppin
9:25	4:50	25	off out side	installed log rollers in car #12-9	
2:20	3:0	25	Cable splice	Have wind cable slack back	
4:20	4:50	15	Cable splice		
5:00	5:30	30	4 half start off	re-routed	MRS 4 5 6 7 8

60	MINER MOVE TIME	41,109	Feeder CO= 0	ND2= 0	NO= 0
25	TRAVEL OUT		Return CO= 0	ND2= 0	NO= 0
235	DISTANCE FROM FEEDER TO FACE				

ENTRY	1	2	3	4	5	6	7	8	9	EQUIP #	Washed	Serviced	Floor Needs Repairs
START PLUS										4978			Need light left cat
END PLUS													
X-OUT PLUS										12-9			Need condenser switch
START PLUS													Trams directional
END PLUS													Need more log bolts adjust

CM OPERATOR	Manuel Sanchez	RB OPERATOR	Carlos Poylan	CONV. RUN TIME	
CM OPERATOR		RB OPERATOR	Arlene Acosta	MINER #	14979
RC OPERATOR	Van Erickson	RB OPERATOR		START	21162
RC OPERATOR	Keray Alford	RB OPERATOR		END	2194
RC OPERATOR		UTILITY		TOTAL	7.1
SCOOP		MECHANIC	Jamason Ward	MANTRIP	12.6
Rampcars	#1-9 #3				
# Loaded	33				

Verifying Information (Shift Foreman)

Signature Benny Alford

V16 GDS 1025/05

Exhibit 71

3107

Graveyard

Main West Ran real steady. Had a cave that damaged stoppings at 146 & 145. Repaired both of them. Belts off for a short time. Silo belt froze. Cleaned F.B. Moved oil station & shop car out by. Set breaker rows & some trees by last stoppings trying to help hold them. Worked on changing hoses & stuff to help make the compressor run. Changed some fittings at the end of 4" water line to stop some leaks. #4 belt went off 4:30 AM. Back up at 5:30 AM

Safety meeting after shift

Gen Mine Pre-shifted twice. Finished building stopping return side at 104. Blew out by cave. Repaired material doors at 104. Hand dust #5 belt to clear it out of books. Brought 2 hard-ware trailers to X cut 100 & unloaded & stacked. Silo belt froze down. Got it going and done some ice chipping and anti freezing. Cleaned hen house of ice & slush. * Safety meeting end of shift

3-1-07 DAYS

* MAIN WEST. SLOW START, WAITING FOR DUST TO CLEAR OFF INTAKE, DRUG BACK MINER SLACK & TIGHTEN CATS BEFORE MINING, HAD TOP ROCK FALL ON MINER IN #24 PILLAR GOT US STUCK, HAD TO SET UP EXTRACTOR TO GET IT OUT, 11:00 TO 2:30, RAN GOOD REST OF SHIFT, DRUG BELT DOWN TO WINDER, MOVED BELT SPLICING TOOLS, ANCHOR PINS, TURNBUCKLES UP TO X-CUT 139 FOR NEXT MOVE, "NEED SPLICE KIT & SPINDLES" 108 CMTS 1080 ~~TONS~~ ^{TONS}

* SET SOME TIMBER AT X-CUT 81 ON INTAKE, SHOVELLED ON #5 AND #7 BELT, CHIPPED ICE ON SILO BELT. DRUG TERRA P... ..

Exhibit 72

CC Main West

Crandall Canyon Mine

CC Main West

DATE	03-2-07	CREW	D	CARS LOADED		FT. ADV.	731	Uptime Minutes	525	FT per Uptime Minute	4	TONS	
SECTION MANAGER	Bobby Alford	SHIFT MANAGER	Gale Riddison	MAINTENANCE MANAGER	Larry Ruffell	ARRIVE SECTION	6:25 AM	LEAVE SECTION	5:30 AM	ARRIVE PORTAL	6:55 PM		
LEAVE PORTAL	6:00 PM												
LOAD LAST CAR	5:15 AM												

CUT #	1	2	3	4	5	6	7	8	9	10	TOTALS
PLACE	225	225	225	226	225	226	225	225	226		9
DEPTH / WIDTH											
or LITS											
Bolts											
Screens											
Cable Bolts											

XC	C	XC	1	XC	2	XC	3	XC	4	XC	5	XC	6	XC	7	XC
DELAY CODE	EQUIP ID	STOP	START	DELAY MIN	TRAVEL IN	EXPLANATION OF DELAYS (mine No. 6 - (WTG))										

XC	C	XC	1	XC	2	XC	3	XC	4	XC	5	XC	6	XC	7	XC
DELAY CODE	EQUIP ID	STOP	START	DELAY MIN	TRAVEL IN	EXPLANATION OF DELAYS (mine No. 6 - (WTG))										

CM OPERATOR	Maxwell	Sanchez	RB OPERATOR		CONV. RUN TIME		CHARGER	
CM OPERATOR			RB OPERATOR		MINER #		FEDER	
RC OPERATOR	Don Feickman		RB OPERATOR		START		FEDER	
RC OPERATOR	Kerry Hined		RB OPERATOR		END		SCOOP	
SCOOP			UTILITY		TOTAL		SCOOP	
Rampcars	#12	#3	MECHANIC				MANRIP	
# Loaded	12	31						

ENTRY	1	2	3	4	5	6	7	8	9									
START PLUS																		
END PLUS																		
X-OUT PLUS																		
START PLUS																		
END PLUS																		

Veridex Information (Shift Percentage)

Signature *Bernie Alford*

V16 GDS 1025405

Exhibit 73

Exhibit 74

3-5-07

Main West

Finished Mining in #2 entry, Moved belt had a little trouble with scoop (Bad Trum motor) Mined good after we got going, had some down time with 5 belt (Fire suppression) 118 cars moved bolter outby and shop end oil car.

Outby - belts

Cleared books shoveled 56 and 2 head rollers Changed bad roller on belt list, headed in with 636 brakes locked up brought it back outside

BRIM ALLEN off Peo

3-5-07 Weekend crew DAYS

Took 636 & Genset to West main started to Bring miner out -

1 man helped on crusher at Tipple

1 man - cleaned ~~work~~ shop for meeting helped on Proshifting

Took extra set of Batteries to South mains

3-5-07 DAYS

STEVE WILSON - PERSONAL

* MAIN WEST - GOT A FAIRLY GOOD START THIS MORNING, RAN STEADY UNTIL AROUND 3:00PM, HAD A COUPLE HARD BOUNCES THAT KNOCKED ~~THE~~ TOP COAL LOOSE IN #2, SHUT DOWN MINING & STARTED GETTING BOLTER SET UP TO REBOLT WITH 8' - BOLTS, CUT & SET BREAKER ROW IN RETURN AT #140, MOVED ROCK OUT OF X-CUT BETWEEN 1 & 2 ENTRY, GOT MOTOR CHANGED ON SCOOP, WASHED TAILPIECE & FEEDER, WATERED ROAMS

* OVERBY - DUSTED #2 - BELTLINE, SHOVELED & DUSTED BELTS TO CLEAR BOOKS

Exhibit 75

Exhibit 76

**Redacted:
Not Responsive**

4. Gary Peacock reported on Crandall Canyon Mine.
 - a. There was an incident with an electrical contractor cutting his arm while moving the Conspec system.
 - b. There was a bounce last night that hit Carlos Payon in the cheek with a lump of coal, but it was not serious enough for him to need medical attention.
 - c. There have been no injuries this month.
 - d. Production in March has been [REDACTED] tons versus budget of [REDACTED]. conditions are more challenging as they are under 2,000 feet of cover. 18 rows have been pulled; they are at xc-139 today. Should be done pillaring by the end of this month. Had a lump get caught in the belt and tear 150 feet of belting.
 - e. There have been no violations this month.
 - f. Identified new Gehl loader that they would like to replace the existing Gehl.
 - g. Getting the area cleaned out for the South development.
 - h. Short a Conspec person.
 - i. Gary needs to get Conveyor Services scheduled to re-lag the silo head roller on Good Friday.
 - j. Fully staffed as of today.
 - k. Awareness meetings yesterday went well.

Exhibit 77

3-8-07 DAYS

*MAIN WEST - HAD SAFETY MEETING THIS MORNING, FINISHED A LIFT ON 39-40 PILLARS BEFORE MOVING BELT, MOVED BELT 9:00 - 11:30, HAD SOME TROUBLE WITH SEQUENCE ON FEEDER, HAD TO TAKE 4" WATER LINE APART & MOVE OUT OF ROADWAY - TOO LOW FOR SHUTTLE CAR CAB TO CLEAR, KINDA SLOW AFTERNOON, RE-ROUTING MRS'S & S/C'S, SETTING BREAKER ROW, RAN GOOD LAST PART OF SHIFT, STARTING TO LOAD UP & BOUNCING PRETTY HARD IN THE #40 PILLAR, DROG BELT DOWN TO WINDER, 92 CARS

*WORKED ON CLEARING BELT PRE-SHIFT BOOK
RE-SET BLEEDER PUMPS, PUT 636 - BACK ON CHARGE

3907

Kerry Ahmed - Vac

Main West Slow start. #6 belt drive had a blown Dodge coupler we had to replace. Got mining & got beat up by bounces real bad. Scoop was down for a good while electrically & we had to haul timbers up with S.C. Gehl is also down. #6 Drive went down again with bare lead in junction box on motor. Got it taped up & going again. Gathered up load of 4" pipe out of section & put on pipe trailer. Gathered up Kenedy panels out of section & put in trailer.

Gen Mine Pre shifted twice. Shoveled #7 belt from 120 to 126 to clear the books. Went down to load out & shoveled crusher out for hours to get it going. It was plugged.

Exhibit 78

Exhibit 79

3-10-07 DAYS

main West Tail piece came out - down most of morning
resetting - making splice - it was wrapped around bearing.
Had bad bounce filled enteys with coal had to
clean - scoop was covered so much had to pull
out - Roadways had to be cleaned -

out by

cleared Books on Acc at drives, & Tail pieces
Rolled up 3 Rolls of Belt
moved Batterys at #110
moved Take up clusters Stern #110 To #72
checked Silo Belt splice showing a little more wear
had piece of metal stuck in Silo Tail Roller
got it out

3-11-07

Main West

Fixed stoppings, cleaned roadways, set
roadway timbers all shift.

out by - belts

cleaned x cuts at 108, 109, 110 and 116, pulled take-up
to x cut 74, pulled cans and conveyor chain out by
still have some pipe cable and I beams, trammed
pinner to x cut 111, pumped ~~the~~ water holes in main
haulage, cleared pre-shift books,

Exhibit 80

3-9-07 DAYS

MAIN WEST

Moved Belt of Power set cribs (3 in each entry)
Before mining -
drag belt to Belt winder -

out by worked on Belts - changed Rollers - made splice
cleared Books

Brought lots of cribs in from outside

Used New Anchors
for Tailpiece

3-10-07

Main West

had trouble with MRS (#2 Solenoid), tightened
conveyor chain on Feeder, re-routed equipment
~~and~~ pushed roadways, #2 and 3 and 3 to 2, ran
pretty steady still bouncing pretty hard.

Outby - Belts

Unloaded Material From belt moves and
pulled trailers back into section, shoveled acc.
at #5 6 and 7 headrollers, Fixed scraper on #6,
Pulled Genset 1X cut out by bolter, pulled empty
high voltage skid at 110 outby, cleaned X cut at
24 to put take up in that is sitting at 110, couldn't
get 636 to run to pull take-up out. cleared books
dusted #3 belt from 64 to 54. dusted #1 belt,
spotted rollers on belt list, 6 and 7 headrollers have
an air leak on scrapers (need to be fixed)

Exhibit 81

Exhibit 82

From: Hill, Bruce
Sent: Friday, February 23, 2007 9:28 PM
To: Laine, Adair
Subject: RE: Crandall pillar section

Great news. Do we continue to lose cover the rest of the way out of the panel?

From: Laine, Adair
Sent: Friday, February 23, 2007 2:25 PM
To: Hill, Bruce
Subject: Crandall pillar section

Bruce

The ground conditions in the Crandall pillar section are very good. They have retreated 6 rows of pillars and are now under about 1,600' of cover.

Laine

Exhibit 83

Inspector comment sheet

DATE	LOCATION	CONDITION, COMMENTS, VIOLATIONS
1/02/07	Main West	# 1 entry looks good need to watch the roof bolt spacing on the left side pins 2 and 3 are real close need to make sure we tie all the mesh together the spots that we skip is falling in.
		# 2 entry need to spot bolt the bottom rib all the way to the face and tie the mesh together.
		# 3 entry looked good.
		Roof bolter had lots of oil accumulations in the pump motor compartment and by the hydraulic tank. The roof bolter needs wash every shift especially day shift Following service men.
	# 7 Belt	This belt looks a lot better but needs some fine tuning to finish the job
	# 7 Belt	Need to dust from 128 to 129, 124 to 125, 118 to 119
	# 7 Belt	Need to shovel ant hills 126 to 128, 115 to 116
	# 7 Belt	Coal accumulations out-by end of drive and inside head roller.
	# 7 Belt	x-c # 3 has two pieced of scrap belt
	# 7 Belt	Off walk way side of head roller needs guarded.
	# 7 Belt	Inconsistent D.T.I on the book at # 6 tail this is defiantly grounds for and inadequate pre- shift.
	# 6 Belt	Ant hills from head to tail mostly from x-c 3 to 4
	# 6 Belt	Need to get some dust in the common entry next to the belt.
	# 5 Belt	Coal accumulations at the tailpiece and in the tail roller
	# 5 Belt	Need more shoveling done at x-c 109-110 in order to terminate citation. Look at building a dam at 108 and funneling the water to 107 into a pipe And onto the belt ?
	# 5 Belt	Ant hill @ x-c 107 to 108
	# 5 Belt	x-c 106 3 frozen top rollers all together
	# 5 Belt	x-c 105 top roller with a blowed middle barrel (Pulled out of service)
	# 5 Belt	Accumulation on the scrapper in-by 5 drive. Lots of accumulation going into 5 drive
	# 4 Belt	Accumulation at tail piece.
	# 4 Belt	Accumulations from 100 to 103 there is a big pile at 100
	# 4 Belt	x-c 100 needs a bottom roller
	# 4 Belt	x-c 101 to 102 needs a bottom roller belt is running on the frame
	# 4 Belt	x-c 101 to 102 top roller frozen (pulled roller out of service)
	# 4 Belt	X-C 97 to 98 rib rolled on the off walk way side belt is cutting into coal.
	# 4 Belt	x-c 92 to 93 bottom roller ½ dropped causing friction (Removed from service)
	# 4 Belt	x-c 92 to 93 two pieced of scrap belting in the walk way
	# 4 Belt	X-C 91 to 93 accumulations under the belt.
	# 4 Belt	X-C 90 to 91 ½ dropped bottom roller right by the cross over.
	# 4 Belt	x-c 88 coal accumulations
	# 4 Belt	X-C 83 to 84 to bottom rollers ½ drop with new rollers spotted.
	# 4 Belt	x-c 82 to 83 top cluster middle barrel frozen (flagged)
	# 4 Belt	X-C 78 to 79 bottom roller ½ dropped.
	# 4 Belt	x-c 77 to 78 frozen top roller
	# 4 Belt	X-C 72 to 73 bottom roller ½ dropped.
	# 4 Belt	x-c 72 to 73 Two strips of junk belting in the roadway
	# 4 Belt	x-c 73 cross cut is full of junk belting
	# 4 Belt	X-C 70 to 71 several strips of junk belting under the belt.
	# 4 Belt	# 4 take up power pack has oil accumulations
	# 4 Belt	# 4 Drive excessive amounts of oil accumulations in the drive motor compartments.

2MSHA13974

UEICONG000021288

Exhibit 84

715 HORIZON DRIVE
SUITE 340
GRAND JUNCTION, CO 81506
USA
VOICE 970.242.4220
www.agapito.com

CHICAGO OFFICE
630.792.1520

GOLDEN OFFICE
303.271.3750

April 18, 2007

226-20

Mr. Laine Adair
General Manager
UtahAmerican Energy, Inc.
794 North C Canyon Road
Price, UT 84501

Re: **GENWAL Crandall Canyon Mine Main West South Barrier Mining Evaluation**

Dear Laine,

Agapito Associates, Inc. (AAI) has completed the geotechnical analysis of GENWAL Resources, Inc.'s (GENWAL) plan for room-and-pillar mining in the Crandall Canyon Mine Main West south barrier. AAI recommended the use of pillars on 80-ft by 92-ft¹ centers for retreat mining in both the north and south Main West barriers based on an earlier analysis documented in our July 20, 2007, report.² The design proved successful on development in the north barrier panel under maximum cover reaching 2,200 ft deep.

The panel was successfully retreated to crosscut (XC) 138 under approximately 2,100 ft of cover when poor roof conditions motivated moving the face outby and skipping pulling pillars between XCs 135 and 138. The retreat was re-initiated by pulling the two pillars between XCs 134 and 135 in early March 2007. A large bump occurred at this point resulting in heavy damage to the entries located between XCs 133 and 139. The remaining north panel was abandoned in favor of mining the south barrier.

AAI engineers Michael Hardy and Leo Gilbride visited the bump location on March 16, 2007, under the escort of Mr. Gary Peacock, GENWAL Mine Manager and Mr. Laine Adair, General Manager, UtahAmerican Energy, Inc. GENWAL commissioned AAI to refine the pillar design for the south barrier based on the response of the north panel pillars. AAI was able to analyze the stress and convergence conditions at the time of the bump and modify the pillar design accordingly to control the potential for similar events in the south barrier. The results of the analysis and recommendations for south barrier mining are summarized in the following letter.

¹ Pillar geometry stated in terms of center dimensions; entries typically mined 17 ft wide.

² Agapito Associates, Inc. (2006), "DRAFT—GENWAL Crandall Canyon Mine Main West Barrier Pillar Mining Evaluation," prepared for Andalex Resources, Inc.

ANALYSIS

Ground conditions were simulated using the calibrated NIOSH LAMODEL³ displacement discontinuity model used in the preceding study.² The complete model area is illustrated in Figure 1. Simulated conditions at the time of the bump are shown in Figures 2, 3, and 4. Figure 2 describes the vertical stress distribution in the pillars leading up to the bump. Figures 3 and 4 show the corresponding degrees of coal yielding and roof-to-floor convergence. The figures incidentally show retreat mining in the south barrier, although this did not exist at the time of the bump. The two retreats were simulated in the same model for convenience, which is possible because the two areas are geomechanically isolated from one another in the model.

At the time of the bump, the cave was reported to be lagging inby XC 138. Also, the new start-up cave was minimally developed above the two pillars pulled between XCs 134 and 135. These lagging caves were simulated in the model by limiting load transfer through the gob, which causes higher abutment loads to be transmitted to surrounding pillars. The lagging caves can be recognized in Figure 1 by the white colored gob areas.

Model results show that high stresses were placed on the pillars from three contributing sources: (1) abutment loads from the main cave (inby XC 138), (2) abutment loads from the start-up cave (between XCs 134 and 135), and, to a lesser extent, (3) abutment loads from longwall Panel 12. Peak stresses were concentrated on the pillars located between the two caves (between XCs 135 and 138). Figure 3 shows significant yielding in these pillars indicative of overloading. Modeling suggests that the start-up cave contributed on the order of 5,000 psi additional stress to some parts of the surrounding pillars. This, coupled with the other abutment loads, is believed to have created a high stress region that allowed a localized bump in the pillars somewhere between XCs 134 and 135 to propagate to pillars over a much wider area.

Figures 2, 3, and 4 show stress, yielding, and convergence levels in the same sized pillars (80-ft by 92-ft¹) in the south barrier for ordinary retreat conditions, where no pillars are skipped. The figures show that high-stress conditions attenuate quickly away from the face and that protected conditions exist as close as one crosscut outby the face.

Figures 5, 6, and 7 illustrate the benefit of increasing pillar size from 80-ft by 92-ft¹ to 80-ft by 129-ft¹. The added 37 ft length, approximately equivalent to an extra full cut, increases the size and strength of the pillars' confined cores, which helps to isolate bumps to the face and reduce the risk of larger bumps overrunning crews in outby locations. For conservatism, a lagging cave was also assumed in the south panel. Plans are to slab the south barrier to a depth of about 40 ft. The wider span is expected to improve caving conditions compared to the north panel and reduced concentrated loads at the face.

The south barrier will be mined to about 97 ft wide (rib-to-rib) after slabbing. The slabbed barrier will be subject to side abutment loads from gob on both sides, resulting in elevated stress levels through the core. Model results indicate that the barrier will yield to a

³ Heasley, K.A. (1998), *Numerical Modeling of Coal Mines with a Laminated Displacement-Discontinuity Code*, Ph.D. Thesis, Colorado School of Mines, 187 p.

Mr. Laine Adair
April 18, 2007
Page 3

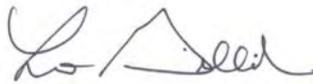
depth of about 20 ft along the ribs, but that the core will remain competent. This is likely to result in some bumping in the gob, but is not considered to pose unusual risk to crews working at the face.

RECOMMENDATIONS

Based on the evidence from the Main West north barrier retreat and results of numerical modeling, we recommend mining with 80-ft by 129-ft¹ pillars, or similar, in the south barrier. This size of pillar is expected to provide a reliable level of protection against problematic bumping for retreat mining under cover reaching 2,200 ft. Pillars should be robbed as completely as is safe to promote good caving. Slabbing the south-side barrier is expected to benefit caving. Skipping pillars should be avoided in the south barrier, particularly under the deepest cover.

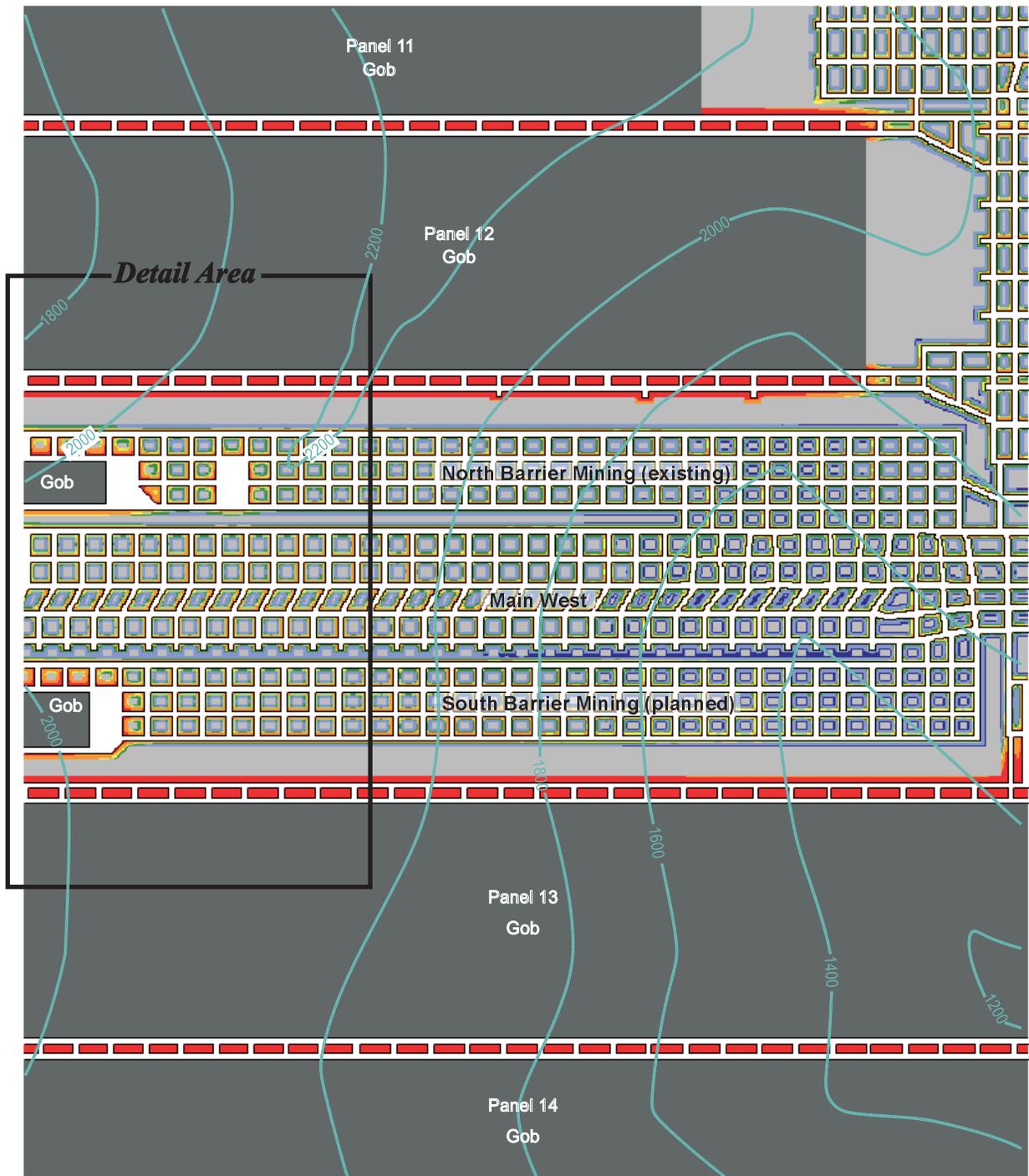
Please contact me to discuss these results, at your convenience, or if you have any questions.

Sincerely,



Leo Gilbride
Principal
gilbride@agapito.com

LG/smvf:klg
Attachments(7): Figures 1-7



— 2200 — Depth of Cover Contour (ft)
Hiawatha Seam

Figure 1. Geometry of LAMODEL Model

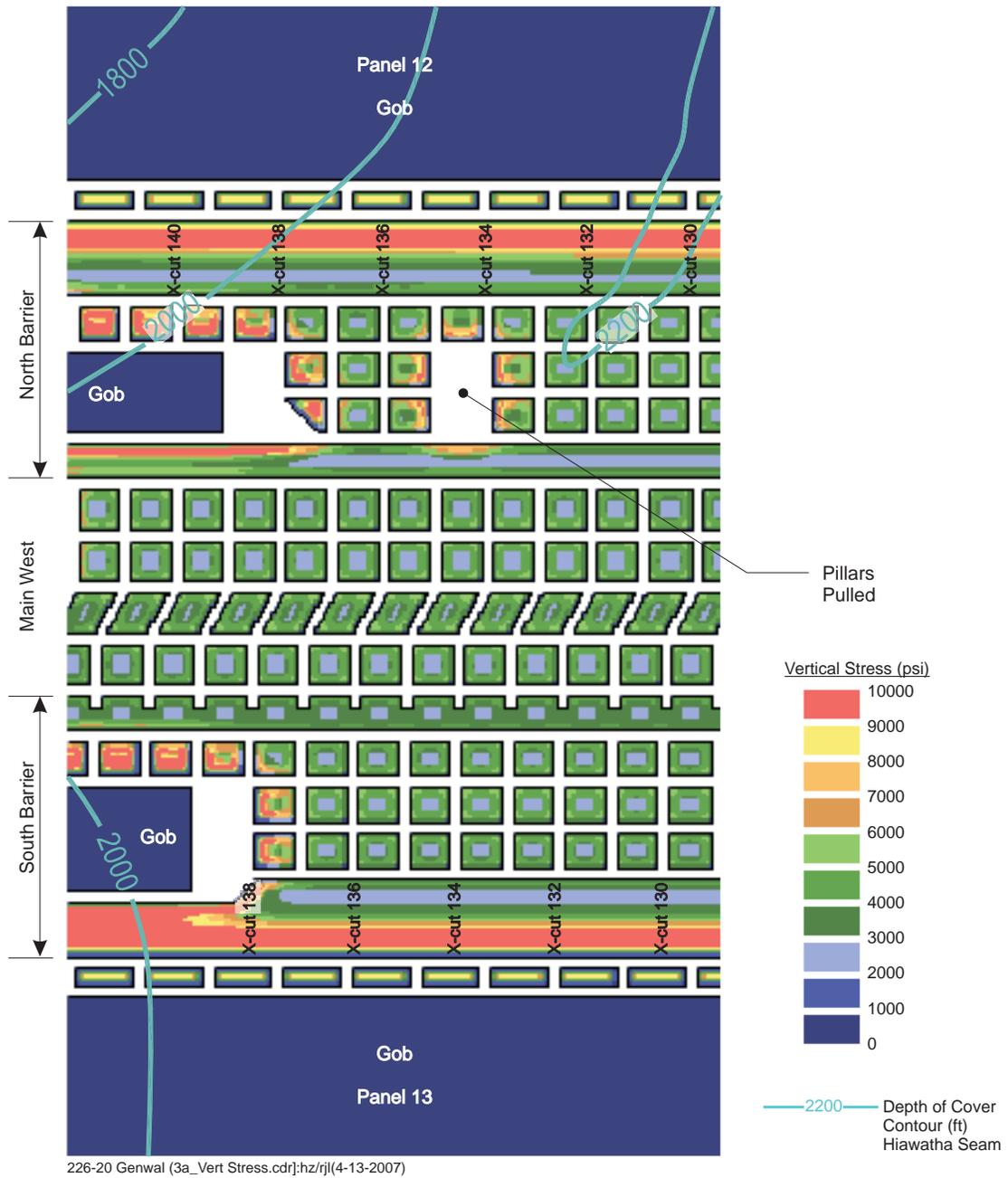


Figure 2. Modeled Vertical Stress—Existing Mining in the North Barrier and Optional Mining with 80-ft by 92-ft Pillars in the South Barrier

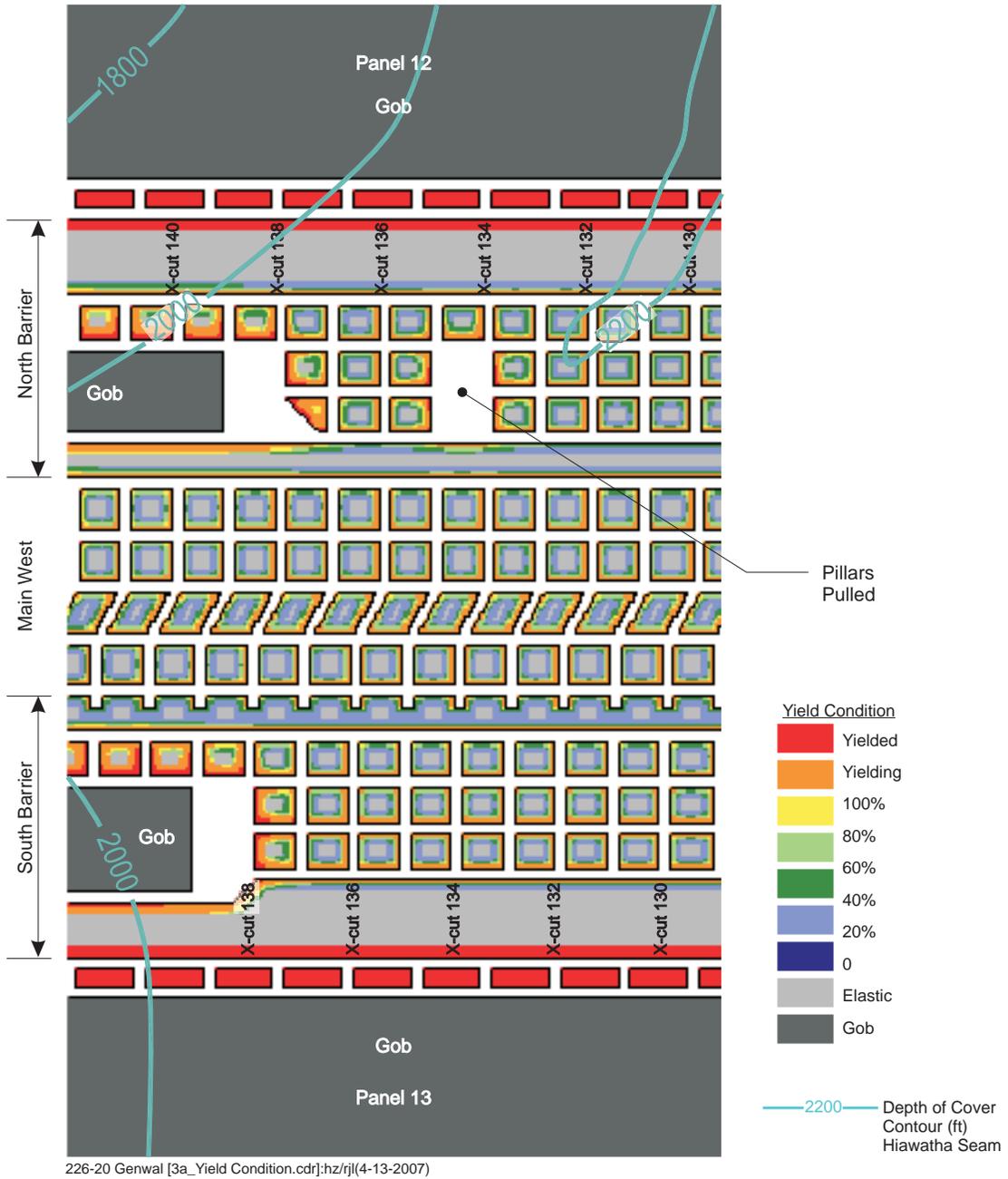


Figure 3. Modeled Coal Yielding—Existing Mining in the North Barrier and Optional Mining with 80-ft by 92-ft Pillars in the South Barrier

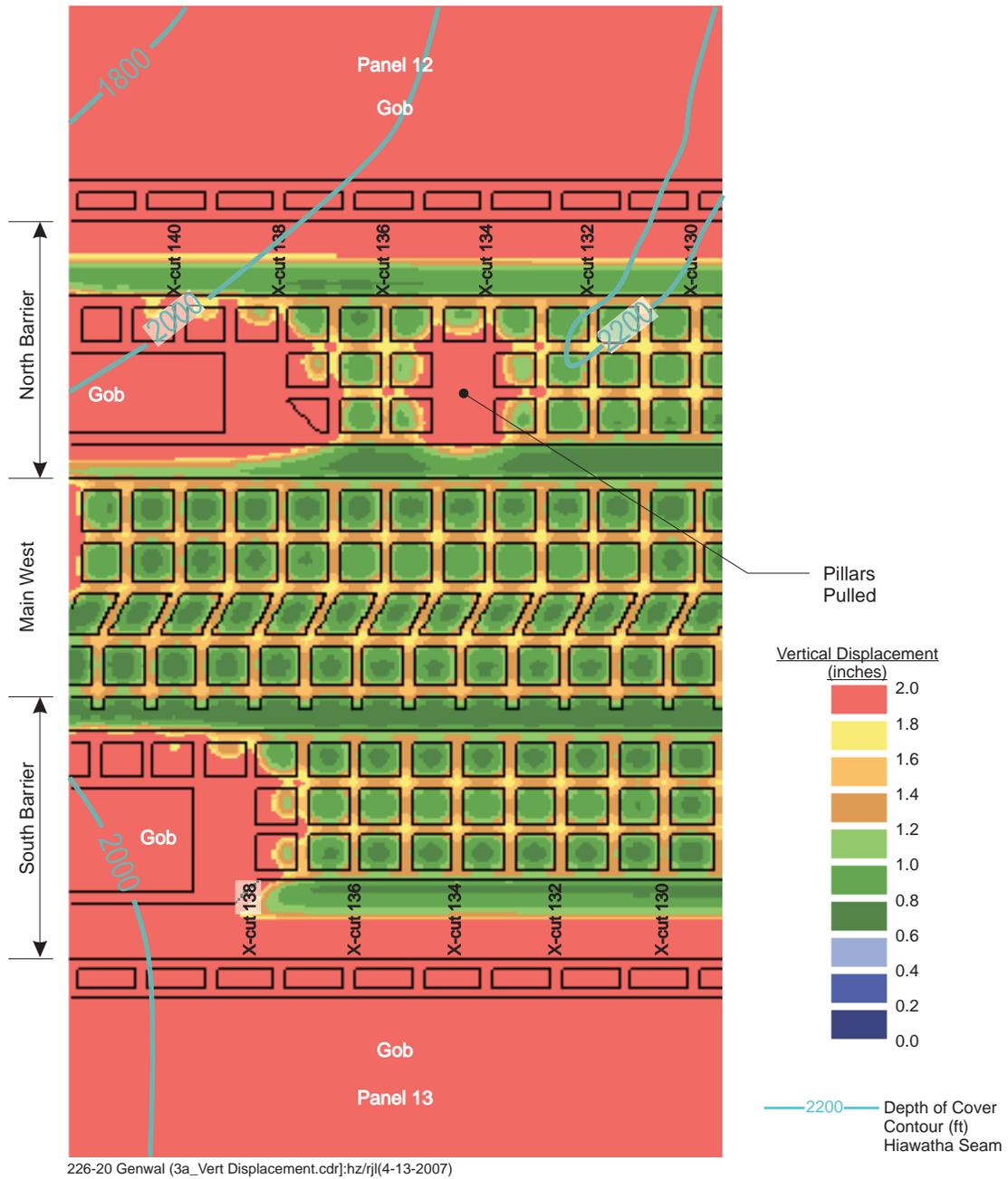


Figure 4. Modeled Roof-to-Floor Convergence—Existing Mining in the North Barrier and Optional Mining with 80-ft by 92-ft Pillars in the South Barrier

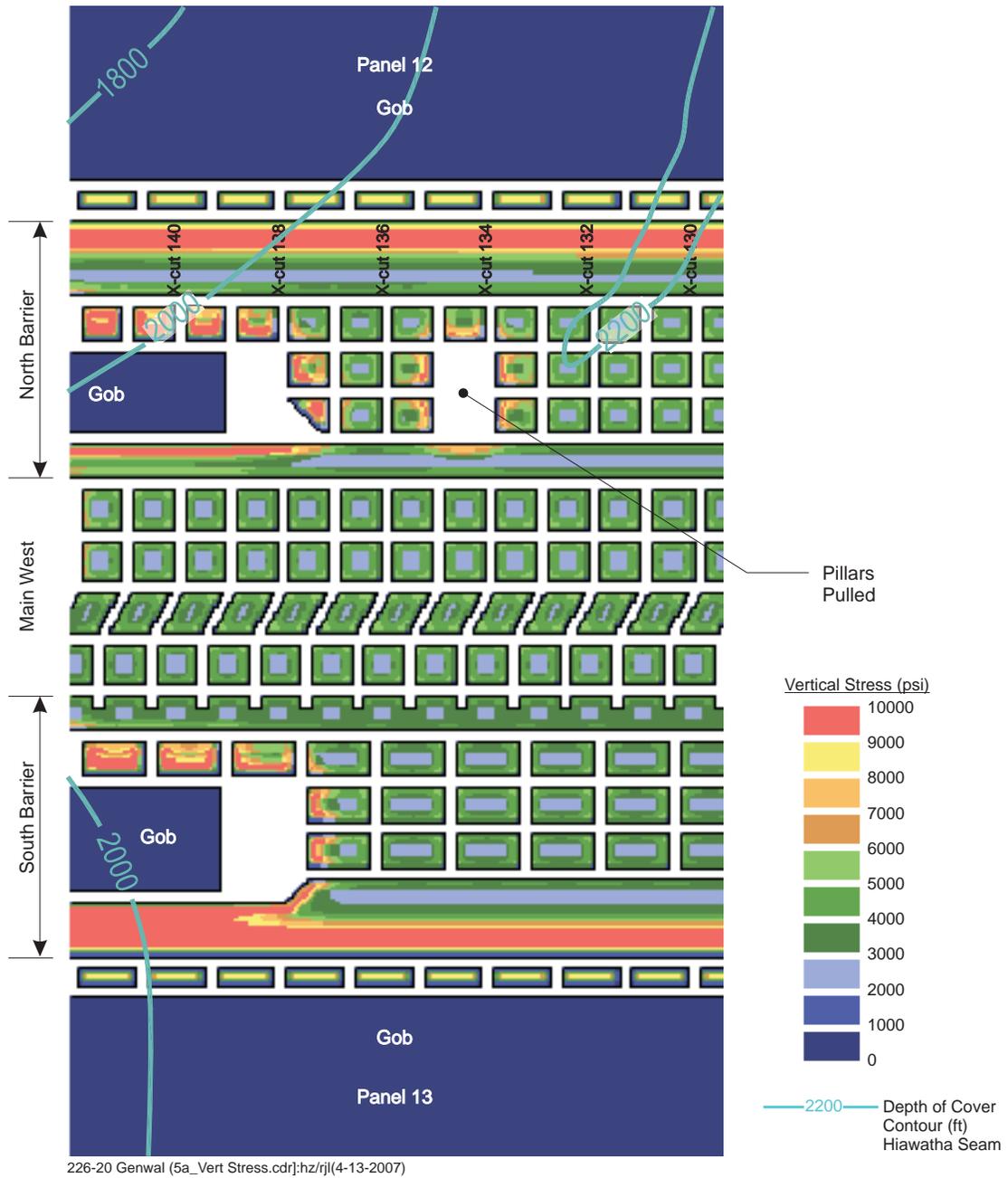


Figure 5. Modeled Vertical Stress—Existing Mining in the North Barrier and Optional Mining with 80-ft by 129-ft Pillars in the South Barrier

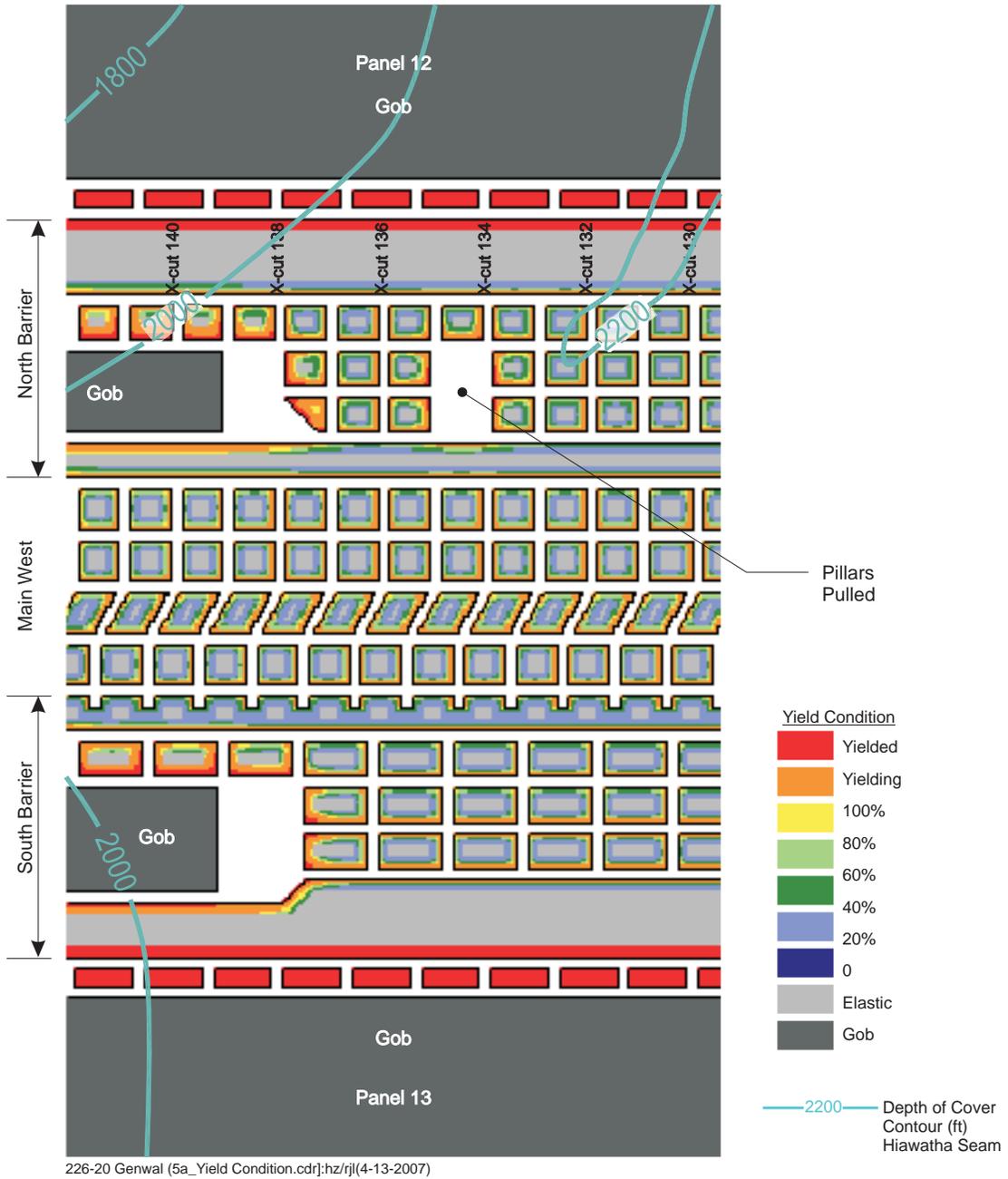


Figure 6. Modeled Coal Yielding—Existing Mining in the North Barrier and Optional Mining with 80-ft by 129-ft Pillars in the South Barrier

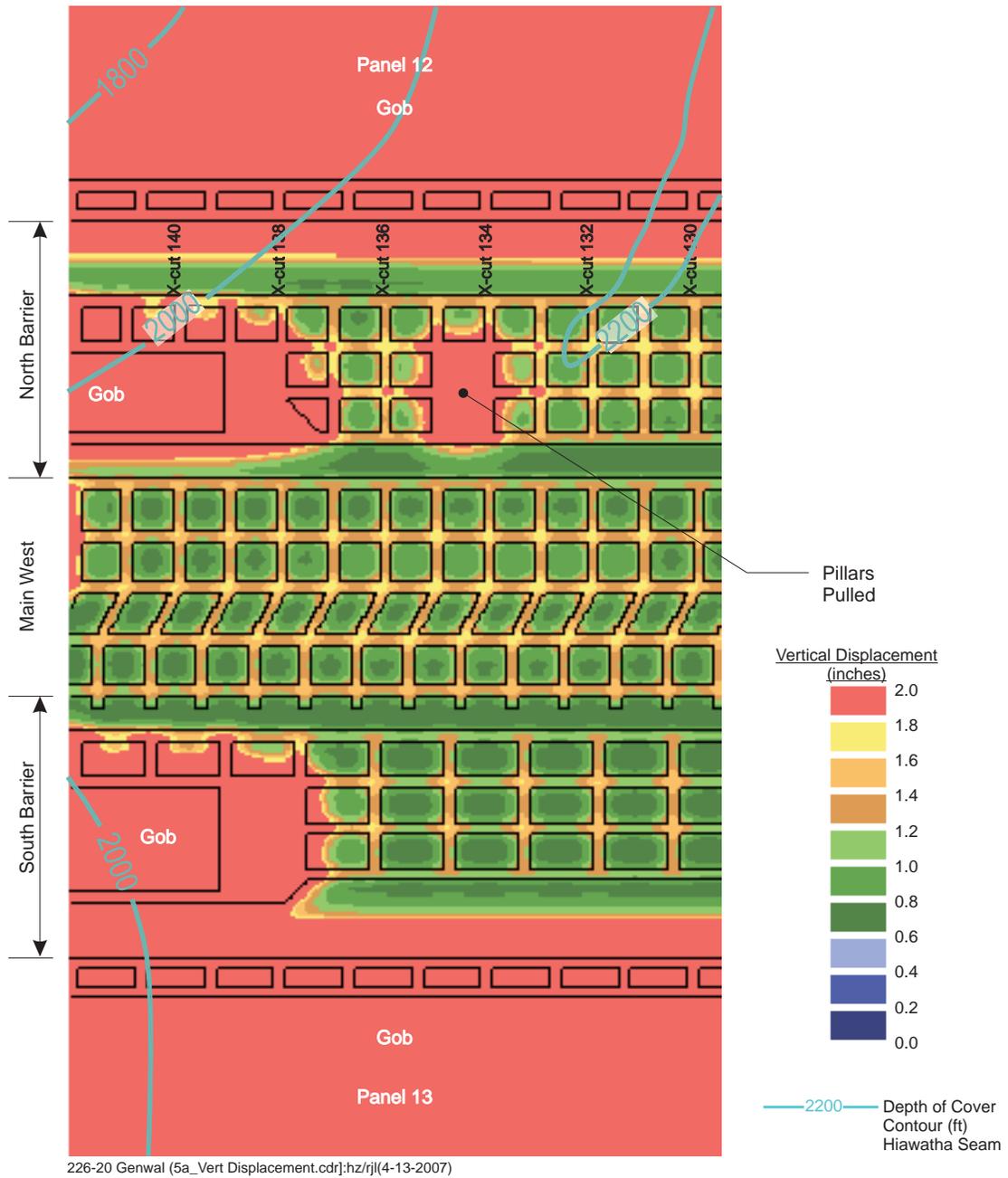


Figure 7. Modeled Roof-to-Floor Convergence—Existing Mining in the North Barrier and Optional Mining with 80-ft by 129-ft Pillars in the South Barrier

Exhibit 85

From: Peacock, Gary
Sent: Sunday, March 11, 2007 2:50 PM
To: Laine, Adair; Hill, Bruce
Subject: crandall section move

Conditions in the pillar section have deteriorated to the point that I don't think it is safe to mine in there any longer. We are pulling the equipment out and setting up to mine south. The bad conditions consist of some huge bounces and the stopping line is no longer intact back in the bleeder entry. It is not safe to have people in there repairing the stoppings. I talked to Dave Hibbs this morning, he is looking into the possibility of not needing a new MSHA plan to mine south until we go past the seals. I realize pulling out early could change the way MSHA views the plan on the south side. I also realize we have used all the tricks we know of to pull these pillars and I no longer feel comfortable we can do it without unacceptable risk.

Exhibit 86

Re: Crandall Month End March, 2007.

To: Laine Adair

From: Gary Peacock

The total production for March was [REDACTED] tons. This was [REDACTED] tons short of our projection. The low tonnage was because we were forced out of the pillar section on the 11th due to some significant bouncing. From the first of the month to the 9th the conditions in the pillar section were very good. The conditions from that point forward changed dramatically. This was due to a combination of things, first we were going under 2,000' of cover, second we had left some larger stumps to keep up the initial roof, thus causing the top to hang up and third our roof was very dense sandstone. When the bouncing first started we pulled back two rows. This did not help and the bouncing intensified to the point that it was no longer safe to continue mining. We had started the month at xc-147, we pulled out at xc-133. We left 134 and 135. We mined [REDACTED] tons in the pillar section in March.

**Redacted:
Not Responsive**

Exhibit 87

UtahAmerican Energy, Inc.



Crandall Canyon Mine
a subsidiary

Hwy31 MP 33, Huntington, UT 84528

PO Box 1077, Price, UT 84501

Phone: (435) 888-4000

Fax: (435) 888-4002

March 12, 2007

US Department of Interior
Bureau of Land Management
Utah State Office
440 West 200 South, Suite 500
PO Box 45155
Salt Lake City, Utah 84145-0155

Attn: Stan Perkes

Re: Resource Recovery and Protection Plan (R2P2) Crandall Canyon Mine

Dear Mr. Perkes,

GENWAL Resources, Inc. has experienced difficulty in the North Mains of the Main West section as described in the attached R2P2 change template and plate. As you are aware, GENWAL's objective is to achieve Maximum Economic Recovery (MER) of the resource in this area; while maintaining safety of all employees.

Steve Falk of your Price Coal office has been notified of this change.

Please call either David Hibbs or myself with any questions

Sincerely,

A handwritten signature in cursive script that reads "Tom Hurst".

Tom Hurst
Mining Engineer

cc: Steve Falk, BLM Price
David Hibbs

Request
For
R2P2 (Resource Recovery and Protection Plan) Modification
(One Mining Area)

Today's Date: 3/12/2007

Proposed Implementation Date: 3/12/2007

Mine Name: Crandall Canyon Mine

Lease Number(s): UTU-68082

Suggested BLM Inspection date and time: Open

Major Undesirable event: Heavy Ground

Describe Situation Leading to Request:

Coal Seam: Hiawatha

Mining Area (Section): Main West North Barrier

Current Approved R2P2 Plan (current plan that the plan shows mining to xc number __ etc):

Extract coal in mains and barriers as long as production is safe and economical.

Requested Change in the Approved R2P2:

Development in barrier was successful up to crosscut 158, short of the goal of crosscut 163. Pillaring began at this point. Extraction of pillars, with the northern entry as the bleeder, was successful until crosscut 137. At crosscut 137 ground control became problematic. Two rows of pillars were left, and pillar extraction began again at crosscut 135. After 2 pillars were extracted, a bounce occurred, compromising the bleeder ventilation system. Ground conditions in the area prevent economic recovery of the remaining pillars in the North Barrier of Main West inby crosscut 118.

Proposed Plan (Including effect on coal recovery): Reduction of marginal coal reserve

Plan is to abandon the North Barrier of Main West. Area will be ventilated until seals for the area can be approved through MSHA and approval to abandon is received from the BLM. The section equipment and manpower will relocate to the South Barrier of Main West.

Enclosures: Area Map

Exhibit 88

Inspection Report - Special

Printed On: 8/13/2007

Period

Period End Date:

2nd Qr FY 2007

7/31/07

Inspection Number: SWF031507

Fiscal Year: 2007

Mine Name: Genwal

Period Type: Quarterly

Mine Owner: Andalex/IPA

Inspector: Steve Falk

Active Faces: 1

Operator: Genwal

Accompanied By:

Operator Rep:

Finalize Date: 8/13/2007

Remarks: On Thursday, March 15, 2007, I (Stephen Falk) made a special inspection of the Crandall Canyon Mine to observed adverse conditions in the pillar section. Tom Hurst, Mine Engineer of Genwal, was my company rep.

Tom had called me earlier in the week and informed me of some tough conditions in the one continuous miner section in the North Barrier off Main West. I informed him I would be up on Thursday and look at the section. Upon arrival, we went to the section and I noted conditions.

Recap of events and last inspection.

After UtahAmerican obtained the property in August 06 and withdrew the longwall out of South Crandall along with the development section, the only section left was the section pulling pillars coming out of South Mains. They finished up in October 2006 and moved right up to the North Barrier of West Mains. They drove out four entries all the way out to crosscut 158 where they encountered too great of water inflow that pumps could not control. This was about 400 feet short of the maximum length before running into the extra north entries up from West Mains along the Joe's Valley Fault. They started to extract two of the three pillars in retreat pillar mining with a MSHA approved pillar plan to leave the top pillar and use the top or north entry as the return. They started right at crosscut 158 which is at about 1200 to 1400 foot depth. The 1st quarter FY 2007 inspection, made in mid December had the crew developing out the four entries at crosscut 129 (see SWF121406). At the end of January, Hurst called me to inform me that the section did not go all the way out parallel to Main West in this North Barrier entries as they encountered fractures that had water inflows much greater than available pumping facilities. This was at crosscut 158 which was about 400 feet short of the back end of Main West next to Joe's Valley Fault. I informed them that that was far enough after confirming with MSHA about the water and to go ahead and start pillar retreat as per their MSHA pillar plan for this section. My next inspection on Feb. 27 had them retreat pillar pulling back to crosscut 149 (see SWF022707). This was the last inspection up to this report.

North Barrier Section, West Mains, Hiawatha Seam, Federal Lease UTU-68082

I arrived at the section and was able to get to between 133 and 132 crosscut where there was a dangerous off tape across the bottom 3 entries. A map of the aftermath with some of my notes written on the map is attached. It shows where pillar coal has spalled out into the entry and the condition of the stoppings along the north entry. I traveled down the north bleeder entry well in by the dangerous off area and verified the items on the map. The situation at this section is clear. The section pulling the two bottom pillars on retreat out of this area was experiencing greater stresses on the pillars. This is coinciding with an increase of overburden from about 1400 feet depth back at crosscut 158 to now at crosscuts 137 - 133 where it is about 2000 feet deep. Pillar bumps were increasing and some damage to the stopping to the north bleeder entry were occurring. Genwal tried to stop the stress override and left two rows of pillars at 137 to 135 and then started up again with the south pillar at 134 - 135 crosscuts. Hurst reported that a few large bounces occurred on off shift soon after start up of pillar mining which did most of the damage. Entry ways out by two breaks from the face had extensive rib coal thrown into the entry way. **Stress overrides out by the face were very concerning.** The bounces had either knocked out or damaged all the stoppings to the north bleeder entry from crosscut 132 in by to crosscut 149. I could only travel the north entry to 143, but the **observed conditions were severe.** The weight of the area will only be the same or worse as this is under the ridge top on the surface. If Genwal was to try again, they must under law repair all damaged stopping along the north bleeder entry. They would also need to drop back out by the affected area at least 3 crosscuts and build seals that meet standards that are not yet established as a result of the Sego Mine explosion back east. Hurst said the risks are too great that this event will happen again out by should they try pillar pulling again and they can't justify all the extra expensive to repair and establish new seals. I gave them verbal approval to stop retreat mining for the rest of the section. Tom will send a modification to leave the rest of North Barrier and start on the south barrier. I gave them an ok to start on the south barrier as the boundary between UTU-68082 and the state lease runs down the barrier so that only the top or north most entry will be on federal. **I asked how they would mine the south barrier and Tom said they are working on the MSHA roof control and ventilation plan amendment for the south barrier but was not sure if Genwal is asking to pull pillars after what they have seen in north barrier.** The conditions noted in

North Barrier were adverse and as depicted on the mine map. Prudence dictates that any further mining of this area would result in more of the same and leaving the remaining coal is necessary. We will act on the written request when received for the official record.

Leases

Lease Number	Lessee	Assignee	Status
ROW-UTU-6683			Terminated
ROW-UTU-7797			Terminated
SL-062648	Intermountain Power Agency &	Genwal	Active Mine Works
State ML-21568			Producing
State ML-21569			Active Mine Works
U-54762	Andalex	Genwal	Active Mine Works
UTU-68082	Andalex	Genwal	Producing
UTU-78953	Andalex	Genwal	Producing

subrptImages

Exhibit 89

Exhibit 90



United States Department of the Interior



BUREAU OF LAND MANAGEMENT

Utah State Office

P.O. Box 45155

Salt Lake City, UT 84145-0155

<http://www.blm.gov>

IN REPLY PLEASE REFER TO:

3482

SL-062648

UTU-68082

(UT-923)

AUG 20 2007

Certified Mail--Return Receipt Requested
Certificate No.

Mr. David Hibbs
Manager of Engineering
UtahAmerican Energy, Inc.
P. O. Box 1077
Price, Utah 84501

Re: Minor Modification, Resource Recovery and Protection Plan (R2P2), Cessation of Pillar Recovery from the Main West North Barrier Pillar Area, Crandall Canyon Mine

Dear Mr. Hibbs:

Background: The Bureau of Land Management (BLM) has received a request from UtahAmerican Energy, Inc. (UtahAmerican) to modify the subject R2P2. The proposed modification requests the cessation of pillar recovery in the North Barrier pillar in the Main West area of the Crandall Canyon Mine. The North Barrier pillar and part of the South Barrier pillar are located on Federal coal lease UTU-68082.

Affected Leases: The following Federal coal lease is affected by this action: UTU-68082.

Proposal: UtahAmerican proposes the discontinuance of retreat pillar extraction in the Main West North Barrier pillar at crosscut 134 and the sealing of the section at crosscut 118. UtahAmerican reports adverse ground conditions with damaging bounces as justification for leaving the rest of the pillars. After sealing the North Barrier section, mining of the South Barrier will proceed.

Review of Past Mining Activities: The Main West entries were mined years ago under a previous mine owner (Genwal Resources) to access the western portion of the property up to the west lease boundary which coincides with the Joe's Valley Fault. Longwall mining blocks were established on both sides of the mains with 450 foot

barrier pillars to protect the long term use of the mains. Longwall mining proceeded from 1997 through 2003, with the West Mains providing access to the back end of the panels and bleeder return air courses. In 2004, Genwal requested and received approval to seal the Main West entries back at crosscut 118. The pillars in Main West were showing major abutment loading which was causing pillar and roof deterioration along with damage to ventilation structures. Any final pillar recovery in main entries was addressed in the R2P2 with a general statement calling for the mining of coal in the remaining pillars if both economic and mining conditions warranted. Entries were driven into the barrier pillar, and second mining of barrier pillar coal commenced in February 2007.

Inspection: The BLM was notified of the adverse conditions, and conditions were then verified on March 15, 2007. BLM provided verbal plan modification approval on March 15, 2007 and this letter documents that approval.

Approval: UtahAmerican was verbally authorized to cease mining in the North Barrier of Main West and to seal off the section at crosscut 118. The mining of Federal coal (one entry) of the South Barrier of Main West was also authorized. This written approval confirms verbal approval given previously. An approved mine map is included as Enclosure 1.

In summary, the BLM agrees with UtahAmerican's position to discontinue pillar extraction in the Main West North Barrier. Excessive pillar loading at this depth of mining (approximately 2000 ft) has resulted in several bounces, leaving an unsafe area with no chance of continuing safe pillar extraction. Further attempts at pillar recovery outby the bounce area cannot be safely attempted. There is no assurance that the loading conditions will improve. The costs of mandatory repairs and rehabilitation of the area would make any further coal recovery uneconomic.

Recommendations: With regards to the plan for the south barrier, only one entry of the planned four entries is on Federal lease UTU-68082 with the rest of the entries on State lease ML-21568. The BLM recommends you contact the State Institutional Trust Lands Administration (SITLA) to inform them of this action on the State lease.

Maximum Economic Recovery (MER): This R2P2 modification will enable the Maximum Economic Recovery (MER) of the Federal coal. MER includes safety considerations as the primary requirement.

Recoverable Reserve Base: Recoverable coal tonnage in the mains pillars and barrier pillars was never included in the recoverable reserve base for the lease. This R2P2 modification will impact the existing recoverable coal reserve base for both the LMU and the Federal coal lease. UtahAmerican is required to provide an updated recoverable coal base tonnage within 30 days of the date of this letter. The recoverable coal reserve base will be updated to reflect the past and projected production from mains pillars and barrier pillars.

We have noted that the existing (as-mined) development in the south barrier pillar differs from the plan as submitted and approved previously by BLM (approval documented by this letter).

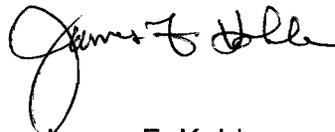
UtahAmerican is required, within 30 days of the date of this letter, to provide a mine plan reflecting all actual mining development and extraction since the date of the BLM approval provided on March 15, 2007. This mine plan is to include the approved MSHA roof control and ventilation plans and all geotechnical and other mining assessments of the mining plan including those internal to UtahAmerican and all third parties.

National Environmental Policy Act (NEPA): This approval of a minor modification to an approved R2P2 of an existing underground coal mine is Categorically Excluded from NEPA analysis, as explained in the Department Manual (5 DM Part 516 11.5 (F) (8)).

UtahAmerican's approved modification to the R2P2 complies with the Mineral Leasing Act of 1920, as amended, the regulations at 43 CFR 3480, and the lease terms and conditions.

If you have any questions, please contact Stephen Falk in Price at (435) 636-3605 or Jeff McKenzie of my staff at (801) 539-4038.

Sincerely,



James F. Kohler
Chief, Solid Minerals Group

Enclosure: Approved Mine Map

cc: Price Field Office, Utah (UT-070) (w/ Enclosures 1 & 2)
Dave Shaver (w/ Enclosures 1 & 2)
Land Manager/Geologist
Utah American Energy, Inc.
P. O. Box 1077
Price, Utah 84501
Utah Division of Oil Gas and Mining (w/ Enclosure 1)
1594 West North Temple, Suite 1210
Salt Lake City, Utah 84114-5801
School and Institutional Trust Land Administration (w/ Enclosure 1)
675 East 500 South, Suite 500
Salt Lake City, Utah 84102

Exhibit 91

From: Hill, Bruce
Sent: Monday, March 12, 2007 5:16 AM
To: Murray, Bob; Moore, Robert
Subject: Crandall

Mr. Murray,

As you know, Crandall has been pulling pillars in excess of 2,000 feet cover. Regular bumping has been occurring, but the pillar integrity was adequate for continued operations. Today, the section suffered a significant bump (no one was hurt) and the stopping line inby the face was destroyed. The conditions are too unstable to send men in to correct the problem without a massive, expensive effort. Consequently, the section is being pulled and moved to the south side of the mains. The section should be operating by the second shift on Monday. In total, we lost 11 crosscuts of pillaring. .

Exhibit 92

Regular monthly IPA Co-Owners meeting, March 21, 2007, in IPA offices in South Jordan, UT.

In South Jordan: Reed Searle (RS), Lance Lee (LL), Bill Engels (BE), Bruce Hill (BH), BJ Cornelius (BJC), Karl Yoder (KY), Alden Whitehead (AW), Doug Johnson (DJ)

By phone: Bob Murray (BM), Rob Moore (RM), Eric Tharp (ET)

1. UEI presented information regarding operations and sales from Crandall Mine.
 - a. There are about [REDACTED] sales tied to Crandall for the year. Some are not being shipped because of ash. There are about [REDACTED] sales outside of what IPA is scheduled to take.
 - b. Earlier in the month the mine was pulling pillars in the panel on the north side of the West Mains. The mine started taking bounces and had to retreat the equipment very quickly. There were no injuries and all equipment was recovered out of the area. However, the mine lost the ability to walk the aircourse on the north side to the back of the panel, and we could no longer mine on north side of mains.
 - c. The mine is now operating in the 3 North section which is back closer to the mine portals. The new area started off about 4.5 feet high, but the seam is now up to about 6 feet high. In the 3 North area the T250 is not as good as it was in the West Mains, but the ash is lower.
 - d. The mine has to build seals before beginning mining on south side of the West Mains. When we move to the south side of the West Mains in about three weeks, production should pick up, and the ash should decrease.
 - e. The ash is running just over [REDACTED] ash right now, but is expected go to just under [REDACTED] when we move back to the West Mains.
 - f. All shipped coal is planned to go into a separate stockpile at Savage right now. Savage wants [REDACTED] per ton for storage. We will only be able to stockpile [REDACTED] to [REDACTED] tons of Crandall coal because of the ash content. About [REDACTED] tons of this year's Crandall coal, up to [REDACTED] tons as the best case, can be placed without blending, but the remainder will need Tower coal blended with it to bring the ash down to an acceptable level..
 - g. In order to keep Crandall going to July when IPA starts taking coal, we need to place about [REDACTED] tons per month. LL asked what happens beyond July, to which BJC responded we still need the three trains per month scheduled after July. Production will be [REDACTED] per month. BJ thinks other sales will not materialize for Crandall until 2008. LL said that if IPA cancelled coal scheduled on their Arch contract, IPA would still have to pay Arch. The stockpile at the plant will hit [REDACTED] late this summer, which is an historic high. This causes IPA some budget problems. In addition, their train schedule is full already.
 - h. BJC said that UEI has [REDACTED] tons of Crandall coal on the ground already. LL suggested they can look at working with Arch to try to shift tons from 2007 to 2008. BJC said that UEI can't guarantee things will be better after July, but he thinks they will be. BH said we are relying on the three trains per month after July.

Exhibit 93

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SHOW: Day to Day 4:00 PM EST

August 16, 2007 Thursday

LENGTH: 829 words

HEADLINE: Utah Mine Owner Discusses Rescue Effort

ANCHORS: MADELEINE BRAND, JAMES HATTORI

BODY:

MADELEINE BRAND, host:

This is DAY TO DAY. I'm Madeleine Brand.

JAMES HATTORI, host:

And I'm James Hattori.

It's been 10 days since the collapse of Utah's Crandall Canyon Mine. Yesterday, rescuers searching for the six-trapped miners got a bit of good news.

BRAND: Electronic receivers picked up some faint sounds from below, and video showed an undamaged area where the men could possibly have taken refuge. But the sounds were not the standard three thuds miners used to communicate after a collapse.

HATTORI: The chief executive of Murray Energy, Robert Murray, joins us now from the Crandall Canyon Mine. Mr. Murray, I know this is a difficult time for everyone there. Thank you for taking a few minutes for us.

Mr. ROBERT MURRAY (Part Owner, Crandall Canyon Mine): Yes, sir, James, we're please to do so.

HATTORI: First, can you bring us up to date? You've got some new video images and there were some sounds detected down in the mine. Any hint of the six miners?

Mr. MURRAY: Well, we did pick up sounds on the number three bore hole. That was fourteen hundred and fifteen feet deep. There were - lasted for about five minutes, and there were intermittent at about one a half seconds each. We have no idea whether that is the sound of a human signaling us or what the sound is because the geo phones will pick up elk, they'll pick up thunder, they'll pick up a lot of noises.

But we are hopeful enough that it might have been one of the trapped miners signaling us that we are now drilling at that location where we think the sounds emanated from. But I want to say this to you, James. The real important part here, while we're drilling our fourth hole on a very rugged steep mountain, the real effort is underground to try to recover the miners underground, and that has been very disappointing.

It's been very difficult because we've been having seismic activity every day. We had one here in the night. We have advanced about 800 feet, and we feel we have about 1200 feet to go to where we think the miners are. Eventually, through the underground recovery, that's how we'll have to recover the men.

James, there's one other important part of this, the families. They have been so patient. Indeed, James, they have given me strength through this whole tragedy.

HATTORI: I know this must be a very tough time. What are you telling the families? Obviously, you want to be optimistic, but it's been 10 days. Are you trying to be somewhat realistic as well?

Mr. MURRAY: Oh yes. What I did is I found out early last week that the son of one of the trapped miners is a miner himself, and another is an experienced mining brother of one of the trapped miners. So I asked them to go with

me underground, and I've been going underground most days. And they come out and give the reports to the family, and they do a better job than I could.

HATTORI: Mr. Murray, mining is a dangerous business. We all know that, but you must be aware of this memo that came out that indicated that there was a weakened section of that mine last March, just 900 feet away from this existing collapsed site, that experienced a bump or a bounce in which the support pillars actually collapsed. And you had to stop mining in that area temporarily. Is that true?

Mr. MURRAY: I don't know. I don't know that. I'm hearing it for the first time. I can tell you that seismic activity, tectonic activity, rock mechanic activity underground occurs every day. They're not dangerous if you know how to do it, and we do it every day. I can tell you that the mine is in compliance with the law and approved by the Federal Mine Safety and Health Administration.

HATTORI: Well, let me clarify another point, and that is were these miners engaged in so-called retreat mining where...

Mr. MURRAY: No, they were not. There are eight solid firm pillars around the miners where they were mining. They had previously been involved in retreat mining, which is approved by the government and the engineering firms that we use. But we were not doing retreat mining at the time of the accident.

HATTORI: Was the retreat mining not being done because of the structure down there not being...

Mr. MURRAY: No, we had stopped retreat mining. And in this area, we're just doing a first mining only. This mountain has been mined for decades and the forces that have caused this came thousands of feet away and over road where the mining men were mining.

HATTORI: Do you still believe then that it was an earthquake that caused this, even though seismologists and other mining experts believe it was the collapse that...

Mr. MURRAY: You can't simplify it that way. The original forces that caused this - that I said caused it - the report and investigations already show that I was correct. That we can deal with later. I am focused right now on getting these trapped miners out alive and dealing with their families.

HATTORI: Robert Murray, chief executive of Murray Energy. Thank you very much and good luck out there.

Mr. MURRAY: Thank you, James.

Exhibit 94

From: Owens, Billy D - MSHA
Sent: Thursday, September 06, 2007 9:12 AM
To: Friend, Robert M - MSHA
Subject: RE: Daily Labor Report - Senate Panel Presses MSHA's Stickler.htm

Bob, The following is part of an email that I sent to Pat Silvey. In addition to the conversation with Bill Reitze noted below, the mine called me on March 12 to report:

"They were mining at 2000 feet of cover and the pillar started bouncing, two feet of roof was coming down and bagging in the wire mesh. The single bleeder entry looked good to the back. Sunday [3/11] morning there was more bouncing and the single bleeder to the back was pretty well beaten up. The mining crew decided there was too much bouncing during mining of the pillar and they moving out of the area."

The mine officials did not report there was a major bounce or indicate the event was a reportable accident. In discussions with the operator the statements were made that if they experienced stability problems that they would skip pillars and back out to a more stable area. I took this conversation to indicate that the mine had made a reasonable judgment to back away from an area where they were having stability problems.

Billy Owens

EMAIL TO PAT S.

After reviewing our records, we do not have a report of a bounce or of a complaint filed regarding mining in the north Main West barrier.

On March 13, 2007, William Reitze, Ventilation Supervisor, had a discussion with management at Crandall Canyon Mine regarding a request to move the bleeder MPL from approximately XC 148 outby to XC 133. The retreating section face was at XC 133. The mine stated that a bounce had occurred and the bleeder entry inby the face was not safe to travel.

Mr. Reitze correctly informed the mine that they were required to travel the bleeder entry in its entirety. The mine then stated that they would prefer to seal the north Main West barrier entries rather than travel the bleeder.

In an email, Allyn Davis, District Manager, requested that Tech Support expedite the seal approval for Crandall Canyon Mine because a bounce had occurred in the section and sealing

the section would be safer than traveling the bleeder.

The mine did comply with the required examinations with regard to the bleeder entry.

The April 18th- Agapito report stated the bounce damaged the entries located between XC's 133 and 139. This area was in by the retreating face and the only entry in this area was the number 4 entry, the bleeder entry.

From: Friend, Robert M - MSHA
Sent: Thursday, September 06, 2007 8:46 AM
To: Owens, Billy D - MSHA
Cc: Stricklin, Kevin G - MSHA
Subject: RE: Daily Labor Report - Senate Panel Presses MSHA's Stickler.htm

Thank you. There also is confusion about whether or not we were informed of the March bounce. Exactly when did the district or FO learn about the March bounce, who knew it, and from who did we learn. We are getting the records of calls made to our call center. I am being told that there are e-mails in March between Al Davis and someone(?) about the bounce and sealing that section of the mine. It is most important that we know what was, or was not, reported to us. If the company did not report the bounce, what reason did they give us for pulling out?

From: Owens, Billy D - MSHA
Sent: Thursday, September 06, 2007 10:32 AM
To: Friend, Robert M - MSHA
Subject: RE: Daily Labor Report - Senate Panel Presses MSHA's Stickler.htm

Mr. McAteer is incorrect. I had a trainee engineer run an analysis in September and October 2006. The young engineer noted some deficiencies with the Agapito analysis. District 9 sent a letter to the GENWAL requesting information and clarification on the noted deficiencies. I discussed the letter with GENWAL in December 2006. MSHA made some incorrect assumptions in our analysis. When these items were clarified, the Agapito report and findings was determined to be acceptable. The stability factor for the North Barrier retreat mining was higher than the stability factor where GENWAL had previously retreat mined. I and the trainee made a site visit to the Crandall Canyon Mine before the retreat mining plan was approved.

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Sent: Thursday, September 06, 2007 6:57 AM
To: Owens, Billy D - MSHA
Subject: FW: Daily Labor Report - Senate Panel Presses MSHA's Stickler.htm

Billy,

Is Davitt accurate in his testimony that MSHA did not use the ARPM until after the bounce, and that when it was run, it proved that the plan was inadequate?

Bob

From: Green, Deborah K - MSHA
Sent: Thursday, September 06, 2007 7:41 AM
To: Friend, Robert M - MSHA
Subject: Daily Labor Report - Senate Panel Presses MSHA's Stickler.htm

Exhibit 95

From: Owens, Billy D - MSHA
Sent: Friday, August 31, 2007 6:10 PM
To: Silvey, Patricia - MSHA; Pallasch, John - MSHA
Cc: Pon, Melinda - MSHA; Knepp, William P - MSHA; Davis, Allyn C - MSHA; Reitze, William P - MSHA
Subject: March 11
Importance: High

Pat,

After reviewing our records, we do not have a report of a bounce or of a complaint filed regarding mining in the north Main West barrier.

On March 13, 2007, William Reitze, Ventilation Supervisor, had a discussion with management at Crandall Canyon Mine regarding a request to move the bleeder MPL from approximately XC 148 outby to XC 133. The retreating section face was at XC 133. The mine stated that a bounce had occurred and the bleeder entry inby the face was not safe to travel.

Mr. Reitze correctly informed the mine that they were required the travel the bleeder entry in its entirety. The mine then stated that they would prefer to seal the north Main West barrier entries rather than travel the bleeder.

In an email, Allyn Davis, District Manager, requested that Tech Support expedite the seal approval for Crandall Canyon Mine because a bounce had occurred in the section and sealing the section would be safer than traveling the bleeder.

The mine did comply with the required examinations with regard to the bleeder entry.

The April 18th- Agapito report stated the bounce damaged the entries located between XC's 133 and 139. This area was inby the retreating face and the only entry in this area was the number 4 entry, the bleeder entry.

If the mine had been allowed to move the MPL outby to XC 133, they would have continued to retreat mine the north Main West barrier. The reason that the mine stopped mining was their belief that requiring a person to travel in the bleeder entry to back of the bleeder was unsafe. This is consistent with the discussions between the myself and mine management.

Please contact me if there are more questions regarding this issue.

2/15/2008

Billy D. Owens
Roof Control Supervisor



Exhibit 96

WEEKLY EXAMINATION

WEEK ENDING 3-17-07

ALL AREAS OF THE MINE MUST BE EXAMINED EVERY 7 DAYS, THESE AREAS INCLUDE: INTAKE AND RETURN AIR COURSES, ESCAPEWAYS TRAVELED IN THEIR ENTIRETY; PILLARS FALLS, SEALS, BLEEDER ENTRIES, AND WORKED OUT AREAS.

WEEKLY

AIR READINGS															
LOCATION	INTAKE	RETURN	M.P.S	LOX	TRA VEL INT. RET.	AIR FLOW	CH4 IN %	O2	CO PPM	PUMPS	SEALS	HAZARDS NOTED	ACTION	DATE	INTLS
1st South		6115a			✓	OK	0	20.7	0	✓		none observed		3-12-07	FM
MP1			1964			outby	0	20.6	0					3-12-07	FM
MP2			2133			outby	0	20.6	0					3-12-07	FM
MP3			11462			outby	0	20.4	0					3-12-07	FM
MP4			13485			outby	0	20.7	0					3-12-07	FM
1st West MP1			2684		✓	outby	0	20.6	0	✓		none observed		3-12-07	FM
MP2			902			inby	0	20.6	0					3-12-07	FM
MP3			4766			inby	0	20.7	0					3-12-07	FM
MP4			6667		✓	inby	0	20.7	0	✓		none observed		3-12-07	FM
MP2			3157			inby	0	20.7	0					3-12-07	FM
MP3			3608			inby	0	20.8	0					3-12-07	FM
MP4			8511			inby	0	20.8	0					3-12-07	FM
MP5			623		✓	inby	0	20.8	0	✓		none observed		3-12-07	FM
3 1/4 east return regular		19150			✓	OK	0	20.5	0	✓		none observed		3-12-07	FM
Main east MP2			783			outby	0	20.7	0					3-12-07	FM
3 1/2 east return		38250			✓	OK	0	20.8	0	✓		none observed		3-12-07	FM
3 1/2 east MP1			5137			outby	0	20.8	0					3-12-07	FM
4 1/2 east MP2			9730			outby	0	20.8	0					3-12-07	FM
Main West X-128 to 148	44374	58230			✓	OK	0	19.8	1			Areas from 128 in by not safe to haul	Dangered off 3-13-07	6P	
Main West Breaker row 128 to 30		59875			✓	OK	0	20.9	4			Stopping Leaking #25-124-3	STOPPING LEAKING #25-124-3	3-14-07	FM
South mains and pillar line	59336	3019			✓	OK	0	20.9	0			None observed	None of 3-14-07		
Main west 45-46	6370	6777			✓	OK	0	20.9	0	✓		none observed		3-14-07	FM
Main west seals #118						OK	0	20.9	2		✓			3-14-07	FM
Main west 107 1st right seals						OK	0	20.6	4		✓			3-14-07	FM
1st North seals						OK	0	20.4	1		✓			3-14-07	FM
# 5 Belt		4252				inby	0	20.9	0					3-14-07	FM
# 4 & #3 Belts		4847				inby	0	20.9	0					3-14-07	FM
# 1 & #2 Belts		6111				inby	0	20.9	0					3-14-07	FM

ACTION TAKEN / NOTES: #4 entry main west from X-128 to 148 in by not safe to travel, stoppings damaged from 131 to 197. 4x4x5 edge is at X-128. On 20.8 to 20.3 except last 150' dropped to 19.8. 20' of wet. Dangered off with breaker for at X-128.

EXAMINER: John McCutcheon SIGNATURE: John McCutcheon DATE: 3-12-07 CERT # 8297

EXAMINER: John McCutcheon SIGNATURE: John McCutcheon DATE: 3-14-07 CERT # 8297

EXAMINER: Mary Paroch SIGNATURE: Mary Paroch DATE: 3-13-07 CERT # 8356

COUNTER SIGNATURE: John McCutcheon DATE: 3-12-07 CERT # 8297

COUNTER SIGNATURE: John McCutcheon DATE: 3-14-07 CERT # 8297

COUNTER SIGNATURE: John McCutcheon DATE: 3-13-07 CERT # 8356

Exhibit 97

From: Owens, Billy D - MSHA
Sent: Thursday, September 06, 2007 9:12 AM
To: Friend, Robert M - MSHA
Subject: RE: Daily Labor Report - Senate Panel Presses MSHA's Stickler.htm

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Subject: Daily Labor Report - Senate Panel Presses MSHA's Stickler.htm

Exhibit 98



JAN 04 2008

**QFR responses to Senate Committee on Health,
Education, Labor and Pensions
From Kevin Stricklin,
MSHA Administrator for Coal Mining and Health**

FROM SENATOR EDWARD M. KENNEDY, CHAIRMAN

1. Has MSHA reached any conclusions about whether the March seismic incident in the North block/barrier pillar area of Main West was reportable under the law?

No. Based on the information presented to MSHA at the time of the incident, the incident was not considered reportable. However, the accident investigation team will address this in their accident investigation report.

2. Why was the March seismic incident not reported in the inspection report of Randy Gunderson, even though inspection records show Mr. Gunderson was at the mine three days after the bounce occurred?

Inspector Gunderson stated that he was not told of, nor made aware of, the March seismic incident when he continued his inspection of the mine three days after the bounce occurred. Because of this, it was not noted in his inspection report.

Prior to the bounce, he had already completed his inspection activities on the North Barrier section where the bounce occurred and was inspecting where the North Barrier seals were being constructed.

3. Are you aware of any conversations, communications or correspondence between MSHA officials and Robert Murray in which Mr. Murray told MSHA that his company would only be willing to pay for a certain number of boreholes to be drilled during the rescue effort at Crandall Canyon? If so, please describe these conversations, communications or correspondence in detail, including dates, times, places and substance.

No. I personally was not aware of any conversations, communications or correspondence between MSHA officials and Robert Murray in which Mr. Murray told MSHA that his company would only be willing to pay for a certain number of boreholes to be drilled during the rescue effort at Crandall Canyon.

Exhibit 99

Pre-disaster Events and Conditions Contributing to
the Crandall Canyon Coal Mine Disaster of August 6, 2007

Prepared for
Committee on Health, Education, Labor and Pensions
United States Senate
Washington, D.C. 20510-6300

Prepared by:
Robert L. Ferriter, EM, PE, CMSP
and
Nick Kripakov, MSME, PE
Colorado School of Mines
Golden, CO 80401-1887

September 28, 2007

Statement of
Robert L. Ferriter, Director of Mine Safety and Health Program
Colorado School of Mines, Golden, Colorado
Before the
United States Senate
Committee on Health, Education, Labor and Pensions
October 2, 2007

Good morning Mr. Chairman and other distinguished members of the Committee. My name is Robert Ferriter. I am the Director of the Mine Safety and Health Program at the Colorado School of Mines in Golden, Colorado. I very much appreciate the opportunity to address the Committee today to present my views on the events and conditions which led to the disaster at the Crandall Canyon Mine, and the actions of both the operator and the Mine Safety and Health Administration (MSHA) during the failed rescue attempt. Based on my observations of the recent disaster, my experience as a mining engineer, an MSHA employee (27 years) and supervisor (17 years), and frequent evaluator of underground mining practice in the Utah coal fields, I believe there is much that needs to be done to improve safety and workplace conditions in western underground coal mines to protect our nation's most valuable resource --- the *miner*.

To offer my views in an orderly fashion, I will briefly revisit the Crandall Canyon disaster in chronological order, adding pertinent geologic information, explanation, historical safe mining practices, and applicable MSHA safety regulations and contributing events which framed the disastrous event of August 6, 2007.

A. First Reports.

a) Earthquakes. On the morning of August 6, 2007, the company reported to the news media that a seismic event, or earthquake, caused a major underground mine collapse at the Crandall Canyon Mine located in Carbon County near Huntington, Utah. These reports were immediately challenged by various mining experts who had studied the coal mine bump phenomena in the Wasatch Plateau and Book Cliff coal fields in east-central Utah. By Tuesday, August 7, 2007, the very next day, seismologists and the U.S. Geological Survey's National Earthquake Center in Golden, Colorado established that the August 6, 2007 event recorded on various seismographs throughout the west was indeed an implosion, or mine collapse located at the Crandall Canyon Mine. There is no debate among professionals that this was a mining-induced seismic event (coal mine bump).

b) Coal Mine Bumps. Coal mine bumps have presented serious mining problems in the United States throughout the 20th century to the present day. Fatalities and injuries have resulted when these destructive events occurred at the working face of the mine. Persistent bump problems have caused numerous fatalities and serious injuries, the abandonment of large coal reserves, and premature mine closure and loss of coal reserves. Bumps are characterized as releases of energy associated with unstable yielding that occurs with progressive mining. An unstable release of energy occurs when the coal and rock is not able to absorb the excess energy released by the surrounding rock during the yielding process. Holland (BuMines Bulletin 535, 1954) defined a bump as a sudden

and explosive-like failure of a single pillar, part of a pillar, or several pillars with varying degrees of violence accompanied by a very loud noise.

Through the years, a variety of techniques were proposed and implemented to mitigate bumps. Mining history is rich with examples of innovative proposals that, at best, temporarily alleviated this complex problem. From the 1930's to the present, NIOSH (former USBM) has conducted fundamental research on the geologic environments and failure mechanisms responsible for coal mine bumps and on methods to control them.

During the 1930's, USBM research indicated that both geology and mining practice (geometry and sequence) play key functions in bump occurrence. Strong, stiff roof and floor strata not prone to failing or heaving were cited as contributing factors when combined with deep overburden. Various poor mining practices that tended to concentrate stresses near the working face were identified and discouraged. Although such qualitative geologic descriptions and design rules-of-thumb have persisted through the years, the need to better quantify bump-prone conditions remains.

Mine operators take little comfort in generalities when they have experienced a bump and must determine if another is imminent. Specific questions about the influence of individual factors and the interaction among factors arise but are often difficult to answer owing to the limited experience at a given mine. Often, many parameters change simultaneously, i.e. strength and stiffness of roof and floor, proximity of strong lithologic units in a coal bed, depth of overburden, mine geometry, and mining rate. (Above discussion referenced from – Occurrence and Remediation of Coal Mine Bumps, by Iannacchione and Zelanko, 1995.)

B. Geologic Conditions Which Cause Bumps.

a) Strong Roof and Floor Strata. Strong floor strata immediately below the coal seam and strong roof strata within 30 to 50 feet of the seam have long been recognized as major contributors to coal bumps (Holland and Thomas, 1954; Iannacchione and DeMarco, 1992; Peparakis, 1958). In fact, the confinement offered to the coal seam by these stronger, stiffer strata appears necessary to generate levels of stored energy sufficient to cause bumps within and immediate to the coal seam structure (Babcock, 1984).

b) Sandstone Channels in Immediate Roof. Sandstone channels are stress-concentrating structures that are directly related to bumping along longwall panels nationwide. The massive nature of many of these units appears to be the major factor affecting bump initiation immediate to these features.

c) Strong Coal Seams. While it has been shown that most U.S. coals can be made to bump under the right combination of confinement and loading conditions (Babcock, 1984), it is worthwhile to mention the seam characteristics in some Western operations that appear to influence bumps. The two most prominent contributors are (1) randomly changing coal cleating, and (2) the presence of strong rock splits in the mid-to-upper portion of the seam. While it is not necessary for these conditions to be present for bumps

to occur, they have been linked to some of the worst bump conditions documented in Western mining.

d) Fault and Shear Zone Structures. Investigations of fault and shear zone structures in the central Utah coalfields point to basic concerns: (1) the effect of significant changes in the stress field in the vicinity of these discontinuities, and (2) the loading potential of isolated blocks of strata above the seam. Whether strike-slip movement along fault structures is responsible for dynamic load changes has yet to be more thoroughly determined (Boler, 1994), but changes in loading conditions have been noted as major contributors to bumping when mining approaches a discontinuity (Iannacchione and DeMarco, 1992; Peparakis, 1958).

e) My personal experience in dealing with coal mine bump problems in the Utah coal fields have indicated that one should always anticipate bumping when mining deeper than about 1,200 feet, and develop the mining plan accordingly.

C. Mining Techniques to Reduce Bump Occurrences.

a) Mine Design. To mitigate the frequency of gate road pillar bumps, over the years mine operators in the Wasatch-Book Cliffs coalfields have implemented the use of two-entry, yielding-pillar gate road configurations. (Gateroads are the entries which are developed to access the coal extraction area of a longwall panel. Mine crews, supplies, ventilation air and extracted coal are moved through these entries.) This approach attempts to soften the ground around the gateroad system, thereby restricting bump-inducing stresses to deep within the confines of the adjacent panel abutment. In general, the approach has been very successful when employed correctly. Problems arise, however, where pillar sizes are too small or too large. These improperly sized pillars are termed “critical pillars” and their use can result in the most extreme hazard possible.

b) Destressing. Coal, or in some instances roof and/or floor rock, is intentionally fractured and made to fail. As a result, high stress accumulations can not occur in the fractured part of the mine structure. Unfortunately, destressing can occasionally trigger a bump in another section of the mine.

c) Volley Firing. Destressing by volley firing has successfully reduced the number of bumps in several Western coal mines. In this method, explosives are used to fracture the coal face to a certain depth before mining. The method is used prior to face advance or entry development to advance the high stress zone away from the working face.

d) Hydraulic Fracturing. This method involves the injection of fluid under pressure to cause material failure by creating fractures or fracture systems. Hydraulic fracturing is most effective in the roof and coal seam ahead of the longwall face.

e) Recent Publications.

Special Publication 01-95, U.S. Bureau of Mines (BOM)(Function transferred to NIOSH).

Papers presented at a BOM technology transfer seminar describes the causes of violent material failure in U.S. mines, measurement techniques for monitoring events that result in violent failure, and mitigation techniques for controlling failure. The BOM looked at 16 mines – both coal and hard rock – and analyzed 172 bumps or mining-induced seismic events. The BOM publication describes new monitoring and analysis techniques developed as tools for assessing violent failure; and seismic methods for determining source locations, calculating energy release, and determining source mechanisms are described. USBM studies identified the advantages using both yielding and stable pillars for coal bump control. A computer program has been developed as an aid for selecting room-and-pillar layouts. Additional available references include:

Deep Cover Pillar Extraction in the U.S. Coal Fields (see NIOSH Web Site).

Preventing Massive Pillar Collapses in Coal Mines (see NIOSH Web Site).

f) Modeling Programs

NIOSH (former BOM) has developed three computer-based technologies for use by the mining industry to evaluate proposed mine designs. The programs are called LAMODEL, ALPS and ARMPS. These technologies were developed, documented, and have been distributed freely as engineering design tools to assist both longwall and room-and-pillar coal operators in their daily decision making process. The tools are particularly useful during 1) the planning stage (pillar design and layout), and 2) retreat mining, as an early warning of potential impending failure.

g) Physical Property Testing

NIOSH (formerly BOM) created a comprehensive data base that includes more than 4,000 compressive strength test results from more than 60 coal seams. These data were compared with 100 case studies of in-mine pillar performance from the Analysis of Retreat Mining Pillar Stability (ARMPS) data base.

There is also evidence showing why laboratory strength does not always correlate with pillar strength. The data showed clearly that the “size effect” observed in laboratory testing is related to coal structure. Laboratory tests do not account for large-scale discontinuities, such as roof and floor interfaces, which apparently have more effect on pillar strength than a small-scale laboratory mining structure.

D. Evaluation of Mining Plan

a) Pre-pillar mining configuration. Prior to the practice of retreat mining in the Crandall Canyon Mine, previous mine development by Andalex Mining Co. had left a five-entry

primary ventilation, belt conveyor, and services conduit known as Mains West. This primary access to the mine was protected on both the north and south sides by a massive “barrier pillar” of solid coal approximately 500-ft-wide. Longwall extraction panels had been extracted both to the north and south of Mains West barrier pillars. Apparently, this configuration was stable, as no indication of bumping or roof falls were recorded in the area of planned retreat pillar mining. In several areas, both the North and South barrier pillars lie beneath approximately 1,700 to 2,200 feet of massive sandstone and various sedimentary strata.

In the pre-pillar mining configuration, both barrier pillars are subjected to loading and stress buildup from: 1) the adjacent longwall gob areas, 2) naturally occurring overburden above the coal seam (1,700 to 2,200 ft), and 3) loading created by the planned cave in-by the extracted pillars. Therefore, the pillars to be extracted are subjected to the combined loading from these three separate sources, which create high stress levels in the pillars and increase the probability of bumping. The geologic environment in the mining area is known to be conducive to the occurrence of coal mine bumps. In spite of these known conditions, the complete removal of all the weight bearing pillars was planned.

b) Mining of North barrier pillar. As the North barrier pillar was mined and the coal pillars removed, a cave developed in-by the pillar line. Apparently, bumping problems occurred about x-cut 137 and two rows of pillars were left to alleviate the bumping. However, weight transfer overrode these pillars and major bumping occurred when the three pillars at x-cuts 133 thru 135 were mined. This forced abandonment of coal extraction in the North barrier pillar near the end of March 2007 and movement of the extraction process to the South barrier. One should note that the overburden in both mining areas is 1,700 plus feet in thickness indicating that very high static ground pressures existed in both mining areas.

c) Mining of South barrier. Pillar extraction was initiated in the South barrier sometime in May 2007. Extraction pillars were increased in size from 80-ft by 92-ft to 80-ft by 129-ft. This increase was intended to isolate bumps to the face area and reduce the risk of larger bumps over-running the crews in out-by locations. The South barrier was also slabbed to a depth of about 40 feet to improve caving conditions and reduce concentrated loads at the face. (To slab in mining means to remove additional coal from the barrier pillar, thereby reducing the effective width of the barrier.) Again, it is noted that the geologic environment in the North and South barrier pillars is similar. Minor changes to the pillar sizes were made to reduce bumping at the face; however, basically a similar mining plan was in effect. Considering the similarities in geologic conditions, the similar pillar extraction plans with only minor modification, the history of bumping in the immediate mining area, and the development of an active cave in-by pillar extraction mining, one could reasonably anticipate the occurrence of additional coal mine bumps. The risk was quite clear.

MSHA accident files do not document any reported bumps in the South barrier area during the months of May, June and July, 2007. However, my experience tells me that bumping to some degree most likely occurred, even though it is not documented.

Interviews with miners who worked in the South barrier pillar area will either confirm or contradict my opinion. Miner interviews should also be conducted to validate if visual signs of excessive pillar loading and stress buildup (pillar “hour-glassing”, floor heave, unstable roof, abnormal breaking of pillars, roof and/or floor) were observed. These are all common visual expressions of stress build-up which should be evaluated by competent technical personnel.

d) Post-Seismic Event Observations

Two observations of interest are readily apparent from the August 6, 2007 MSHA website postings and seismic event records: 1) the reported elapsed time of seismic event is approximately four (4) minutes. Based on my experience in similar investigations, this means that the event was initiated in one or more pillars (probably in the active pillar extraction area) at some location in the mine, and that not all pillars bumped at the same time. Rather, after the initial pillar(s) disintegrated, a weight transfer occurred, overloading adjacent pillar(s), which then disintegrated and transferred their load to successive pillar(s), in effect creating a domino effect, or “cascading pillar failure.” This would account for the extraordinarily long run of the bump; and 2) all the pillars that failed appeared to be located under approximately 1,700 feet or more of overburden. In my opinion, this indicates that all pillars under 1,700 feet or more of cover were subjected to combined loads (as previously explained) which created stress levels somewhat under the failure level for the pillar. As the “domino effect” of the failure mechanism occurred, the weight transfer from the failed pillars to the adjacent pillar(s) increased the stress level of the receiving pillar(s) to the failure level, etc. Pillar(s) under less than 1,700 ft of cover had lower initial stress levels and, therefore, were able to accept the weight transfer without reaching unacceptable (failure) stress levels.

E. Continuing Erosion of Coal Mine Bump Expertise in the West.

a) Wilberg Mine Disaster (1984)

Although not caused by a bump, the Wilberg Mine disaster (mine fire in December, 1984) focused significant attention on the geologic environs of the Utah coal deposits, their depths, bump occurrence, and the stability of deep (2,000 ft) underground coal mine entries.

In the Wilberg disaster, 27 miners lost their lives due to carbon monoxide poisoning. An underground compressor overheated, igniting and setting fire to the surrounding coal bed which burned for nearly one year before it could be extinguished. The miners underground at the time were trapped, unable to escape and died from poisonous gases.

The mine used the two-entry retreat longwall mining method for removing coal. Access to the longwall panels was by what is known as the two-entry longwall gateroad access system. This system requires MSHA approval of an operator initiated 101 (c) Petition for Modification to use two-entry gateroads rather than three entries (one for intake air, one for return air, and one for the conveyor belt to remove coal from the longwall face). With

only two-entries, the conveyor belt must be placed in either an intake or a return entry. Either case is a violation of current MSHA regulations, mandating approval of a 101 (c) Petition to use only two access entries.

b) MSHA's Two-Entry Longwall Task Force (1985)

Immediately following the Wilberg mine disaster, the United Mine Workers of America (UMWA) began criticizing the use of the two-entry longwall mining system. The basis for their criticism was that with only two entries available for escape, the Wilberg miners were trapped, and that only three-entry longwall gateroad systems should be allowed by MSHA. Stung by this criticism and lacking any technical study to rebut the UMWA's charges, MSHA, in partnership with the U.S. Bureau of Mines, convened its Two-Entry Longwall Task Force to study all aspects of the Two-Entry system including, but not limited to: ground control, ventilation, fire prevention, electrical, dust control, escapeways, etc. The resulting report overwhelmingly endorsed the two-entry system because of its proven ability to reduce the occurrence of devastating coal mine bumps in western deep coal mines. The report, however, recognized the reduction in escapeways from face areas of the mines, and compensated for this reduction by recommending numerous safeguards, in addition to those required by MSHA regulations. The two-entry longwall gateroad system is now commonly used by Utah mine operators developing longwall extraction panels under more than 1,000 feet of overburden.

c) Elimination of U.S. Bureau of Mines (1995)

In 1995, the Secretary of Interior disbanded the U.S. Bureau of Mines. All research centers were closed with the exception of the Spokane Research Center and the Pittsburgh Research Center. The effect on western coal mines was significant with the closing of the Denver Research Center and the termination of much of the research effort focused on coal mine bump prevention and multi-seam mining in western coal mines. Although a few new modeling programs have been written in the intervening years, significant new research efforts in bump prevention have not been undertaken.

d) Closing of MSHA's Denver Safety and Health Technology Center and transfer of all positions to eastern centers.

Arguably the most significant negative impact on western coal mine bump remediation occurred when MSHA closed its Denver Safety and Health Technology Center. With the transfer of approximately all 50 technical positions to West Virginia and Pennsylvania when the closure was announced, the western mining community lost easy access to technical experts in ventilation, ground and roof control, bump prevention, industrial hygiene, hoisting, and practically all technical disciplines found in western coal mining. Of the 50 employees at the Denver Center, only approximately four (4) employees elected to transfer to West Virginia and Pennsylvania. Included in loss of technical expertise was a small group of six (6) highly qualified mining engineers and geologists who had been engaged in western coal mine bump evaluation for 15 to 20 years. This group regularly reviewed roof control plans for MSHA's Coal Mine District 9, ran

computer simulations, and investigated bump occurrences and roof falls in western mines. Unfortunately, with the closure of the Denver Technology Center, all but one member of the group left MSHA. In my opinion, if this group or a similarly qualified group had reviewed the Crandall Canyon roof control plan, the disaster would not have occurred.

e) Summation – Are Western miners less valuable than Eastern miners?

Ever since the Wilberg Mine Disaster in 1984, and the resulting Two-Entry Task Force Study, MSHA has known that western deep mines are highly susceptible to explosive-like disintegration of coal pillars. Apparently MSHA's technical capability to analyze roof control plans for conditions and mining practices which would encourage bump occurrence has deteriorated to an unacceptable level. Does MSHA have any plans to reinvigorate its western technical expertise? With western coal mines reaching deeper into the earth for their resources (3,000 feet below the surface) (the shallow, easy to mine resources have already been mined), more hazardous mining conditions will be encountered. Western miners are as valuable as Eastern miners and deserve the same protections under the law. As Crandall Canyon has demonstrated, these protections are not being provided by MSHA.

F. The Rescue Effort

1) Initial Response. Initial public briefings were always conducted by Murray Energy Company. MSHA was noticeably in the background giving some comments later in the briefings. The message conveyed to the public was "its Robert Murray's mine, he's in charge and can do whatever he thinks is right." MSHA was not the primary communicator the first couple of days, allowing for a poor public image.

2) Reporters and T.V. Crews Filming Underground. Five reporters, including CNN, were allowed underground while the rescue was taking place. While the videos were informational, the video and photos did not in any way aid the rescue effort. In fact, another bump occurred while the reporters were underground. If one of the crew had been injured, MSHA would have had another disaster to deal with. Other non-involved mines in the Price, Utah area probably would have allowed visits for informational purposes if asked by MSHA.

3) Safety of Rescue Crews. Anyone involved with mine rescue work knows that the safety of the rescuers is of primary importance. It must be assumed that the victims may be fatalities. To risk rescuers for bodies is unacceptable. Even though Assistant Secretary Stickler stated that the rescue crews had installed steel sets every 2.5 feet, this protection proved inadequate, emphasizing the explosive-like force of a coal mine bump. A more appropriate protective device would have been pre-fabricated tunnel liners (large U-shaped steel sections) which construction crews work under when tunneling through unstable soil or rock.

MSHA standard 75.202 Protection from falls of roof, face and ribs states: *(a) The roof, face and ribs of areas where persons work or travel shall be supported or otherwise controlled to protect persons from hazards related to falls of the roof, face or ribs and coal or rock bursts.*

G. U.S. Bureau of Land Management Reports

The following excerpts from Bureau of Land Management (BLM) Inspection Reports document mining conditions in the West Mains as described by the BLM inspector. Generally the statements of the inspector describe deteriorating conditions, bumping, roof falls, etc, as mining of both the North and South barrier pillars progressed. Typically the BLM inspector was Steve Falk and the company representative was mining engineer Tom Hurst unless otherwise noted.

1. Inspection Report of November 4, 2004:

Andalex mining engineer John Lewis

Conditions were deteriorating (west portion of the West Mains) and access through the area near impossible.

The barrier planned on both sides looked like it was designed to only hold up for only a short while. The north entry was taking weight and extra roof supports and re-bolting had to be done. Now the situation is even worse.

. . . . (overburden) is about 1500 feet and rises to 2000 feet

It was apparent from traveling down the intake that the area is taking unacceptable weight.

It is apparent the pressure arches from both side gobs are sitting right down on the main entry pillars.

The situation in Main West is untenable for future pillar recovery.

No mining company in the area has ever pulled pillars in main entries with mined out sides and under 1500 feet of cover.

Genwal's thoughts and plans to try pillar recovery was wishful thinking

2. Close Out Discussion - 1/24/05:

. . . . the pillars in Main West are failing over time with greater than 1700 feet of cover.

Caves are occurring at intersections by irregular intersection dimensions.

. . . . attempts to split pillars under this depth could not hold the top and prevent pillar outbursts.

Weight on the pillars is substantial and dangerous conditions are present.

Mining any of the coal in the pillars will result in hazardous mining conditions such as pillar bursts and roof falls.

3. Inspection Report of August 1, 2006:

Genwal is continuing to pull pillars from south to north in the South Mains

Pillar pulling has been pretty good. Depth at this area is less than 1000 feet.

The crew is getting adept at this pillaring as they now had about 2 years experience.

Though Tom Hurst is new, he is not as pessimistic as the ious engineer prev

4. Inspection Report of December 2006:

The sale of Andalex is complete to Bob Murray's Utah American.

The new 3 entries in the barrier now would leave 130 foot barrier to the north gob.

5. Inspection Report of February 27, 2007 (North barrier pillar):

This section finished driving 4 entries on 92 foot entry centers and 80 foot crosscut centers.

So far no inordinate pillar stresses have been noted, though thing(s) should get interesting soon. The face is under 1600 feet of cover now and will increase to over 2000 feet by crosscut 139.

6. Close Out Discussion - March 05, 2007 (North barrier pillar):

This section is mining coal that was not considered minable in the previous plan BLM is pleased to have them try for coal that was thought unminable but warned them to beware of the depth above the ridge and mining a barrier pillar that has been sitting for a number of years. Pulling pillars will be interesting if even MSHA will OK a ventilation and roof control plan for the section.

7. Inspection Report of March 15, 2007 (North barrier pillar):

. . . . Utah American obtained the property in August 06

. . . . water inflows much greater than available pumping facilities. This was at crosscut 158 which was about 400 feet short of the back end of Main West next to Joe's Valley Fault.

The section pulling the two bottom pillars on retreat out this area (between 133 and 132 crosscut) experiencing greater stresses on the pillars.

Pillar bumps were increasing and some damage to the stoppings to the north bleeder entry were occurring.

Genwal tried to stop the stress override and left two rows of pillars at 137 to 135 and then started up again

Hurst reported that a few large bounces occurred on off shift soon after start up of pillar mining which did most of the damage.

Entry ways outby two breaks from the face has extensive rib coal thrown into the entry way.

The bounces had either knocked out or damaged all the stoppings to the north bleeder entry from crosscut 132 inby to crosscut 149.

The weight of the area will only be the same or worse as this is under the ridge top on the surface.

Hurst said the risks are too great that this event will happen again outby should they try pillar pulling again and east.

8. Inspection Report of June 13, 2007 (South barrier pillar):

They moved over to this section from the north barrier block at the end of March when pillar pulling in the north barrier block was halved about half way through due damaging bumps and outby pillar loading.

. . . . back in March when they were having the tough conditions in the North Barrier and asked to leave the rest of the pillars.

After receiving the various reports, it is obvious that mining conditions in the barrier pillars were extremely hazardous, yet the removal of coal pillars from the barrier pillars continued.

H. Recommendations

- 1) The rescue effort at the Crandall Canyon mine was severely hampered by the inability to both locate the missing miners and determine their physical condition (heartbeat, respiration, etc.). The importance of through-the-earth, two-way communications and tracking was spotlighted, and the development and implementation of the technology clearly needs to be accelerated.
- 2) Using a single or very few runs of the LAMODEL structural analysis program, or any computer modeling program, does not properly frame the risk (probability for failure). Rather, varying the values of input parameters over their practical ranges is important. These input parameters should include but not be limited to:
 - a. coal strength (unconfined and confined),
 - b. peak strain in an element of the model,
 - c. coal modulus of elasticity,
 - d. Poisson's ratio,
 - e. angle of internal friction,
 - f. depth of cover, and
 - g. progressive mining steps from initial entry development through the completion of retreat mining.

By doing this, a practical range of stability factors could have been calculated for various scenarios of mining (mining entries and crosscuts in the barrier as well as full or partial retreat of the pillars created in the barrier).

A consulting firm does only the analyses required in the scope of work issued by the mine operator, who pays for the analyses. If a risk assessment with a sensitivity analysis is not requested by the mine operator, then it will not be done, i.e., it costs more money to run many more analyses (varying parameters). If MSHA would require a more thorough risk-based sensitivity analysis, then the company would be required to do it in order to gain approval of the proposed mining plan. Requiring a sensitivity analysis with varying parameters would frame the level of risk mining in bump-prone mines.

- 3) MSHA should reevaluate its policy for reviewing and approving roof control plans (mining plans) and require, as a minimum, several computer analyses using a range of input data. NIOSH has developed the Analysis Retreat Mining Pillar System (ARMPS) program by Dr. Chris Mark. This program is readily available, easily run, and is based on 150 case studies. Some updating of the program may be required to include deep-cover pillar design.
- 4) MSHA should revisit its policies on rescue team safety and Command Center decision making training. The loss of three rescuers, including one Federal inspector during a rescue mission, and six injured rescuers is not acceptable.
- 5) Clearly, the technical expertise to recognize and remediate bump hazards associated with coal mining within the geologic environs found in the coal-producing areas of Utah and western Colorado has been lost to both industry and MSHA by the abolishment of Federal offices (U.S. Bureau of Mines and MSHA's Denver Safety & Health Technology Center). With the depletion of easily mined, high-grade coal deposits, mine operators are forced to consider mining deeper deposits with the ensuing risk of accentuating coal mine bump problems, or leaving large blocks of coal un-mined (loss of valuable resource). It is recommended that Congress mandate the creation of a small staff of highly qualified engineers and geologists within an existing Federal agency to focus attention on the bumping problem. The office should be easily accessible by western coal mine operators in Utah and Colorado.
- 6) MSHA, through its Mine Health and Safety Academy and its Educational Field Services Office, should develop new and informative training material on coal mine bumps, geologic environments and hazard recognition for operator and miner use. Availability of this material would enhance the miner's knowledge of hazards and allow early recognition and remediation of hazardous conditions.
- 7) In the long-term, industry should review current pillar load monitoring technology and determine its acceptability for in-mine use and remote monitoring of pillars in bump prone areas. Systems such as current CO and methane monitoring data recorders which can be continuously read outside the mine are envisioned. This would allow continuous monitoring of pillar stress buildup in active mining areas.
- 8) MSHA's public image at the Crandall Canyon mine was not impressive. It is obvious that additional training should be provided to Command Center personnel and Public Information Officers. The critical role of objectivity and staying on point in briefing the press and families of victims needs to be emphasized.
- 9) The cooperation between the Bureau of Land Management and MSHA needs to be reviewed. From the referenced BLM Inspection Reports, BLM noted the effects of the bumps in the North barrier pillar and expressed concern. Although BLM's primary focus is resource recovery, their inspectors appear to be quite knowledgeable of underground hazards, and an early exchange of information

between the two Agencies may have focused MSHA's attention on the bump problems at the Crandall Canyon mine.

- 10) As evidenced by both the Sago and Crandall Canyon disasters, the need for training of mine rescue crews (teams) and both operator and MSHA command center personnel remains great. Congress should consider funding the establishment of several mine rescue training centers in mining areas throughout the United States.
- 11) Accidents involving multiple fatalities should be investigated by a Federal entity independent of the regulatory Department. To protect the validity of the investigation and to ensure impartiality in fact finding, an independent entity needs to conduct these disaster investigations. This will allow an unbiased determination of process errors and misjudgments by all involved parties, and speed any requirements for corrective actions to further improve workplace safety for our nation's most valuable resource - - the miner.

Exhibit 100

Kimberly Greathouse

From: Gary Skaggs
Sent: Monday, April 02, 2007 10:16 AM
To: Tim Ross
Cc: Mike Hardy
Subject: GJ priority scheduling

REDACTED

To all

Please be advised that the Genwal Crandall Canyon mine pillaring project has to be top priority for Bo and Hau this week. We plan on Hau working on this with Bo's oversight [REDACTED] Genwal is starting to pull pillars this week and they need the results as soon as they can get them. If you or your professional staff have project conflicts, please contact me. I don't want the professional staff to be concerned or feel pressured about administrative decisions. Thanks.

Gary

AGAPITO ASSOCIATES, INC.

715 Horizon Drive, Suite 340
Grand Junction, CO 81506

[REDACTED]

www.agapito.com

AAI000192

Exhibit 101

Kimberly Greathouse

From: Leo Gilbride
Sent: Wednesday, April 11, 2007 5:45 PM
To: Mike Hardy
Subject: Various Projects Updates

Mike,

I hope your travels are going well.

By way of brief update:

REDACTED

- **GENWAL**—Hua completed the necessary modeling and I am just about to write up the results for Laine. The results were largely consummated by telephone with Laine last Friday, so he is already mining in the south barrier.

REDACTED

Exhibit 102

UtahAmerican Energy, Inc.



Crandall Canyon Mine
a subsidiary

Hwy31 MP 33, Huntington, UT 84528
PO Box 1077, Price, UT 84501
Phone: (435) 888-4000
Fax: (435) 888-4002

May 16, 2007

Mr. Allyn C. Davis
District Manager
Coal Mine Safety and Health
P.O. Box 25367
Denver, Colorado 80225

Re: Crandall Canyon Mine ID# 42-01715 Roof Control Plan for Pillaring Main West South Barrier

Dear Mr. Davis:

Please find attached for your review and approval, a site specific roof control plan for pillaring the South Barrier of Main West at our Crandall Canyon Mine. The plan consists of one page of text and 1 Plate.

Please contact me with any questions at 435.888.4023.

Sincerely,

A handwritten signature in cursive script that reads "Tom Hurst".

Tom Hurst
Mining Engineer

Crandall Canyon Mine
MSHA ID # 42-01715
Main West Pillaring
South Barrier
Roof Control Plan

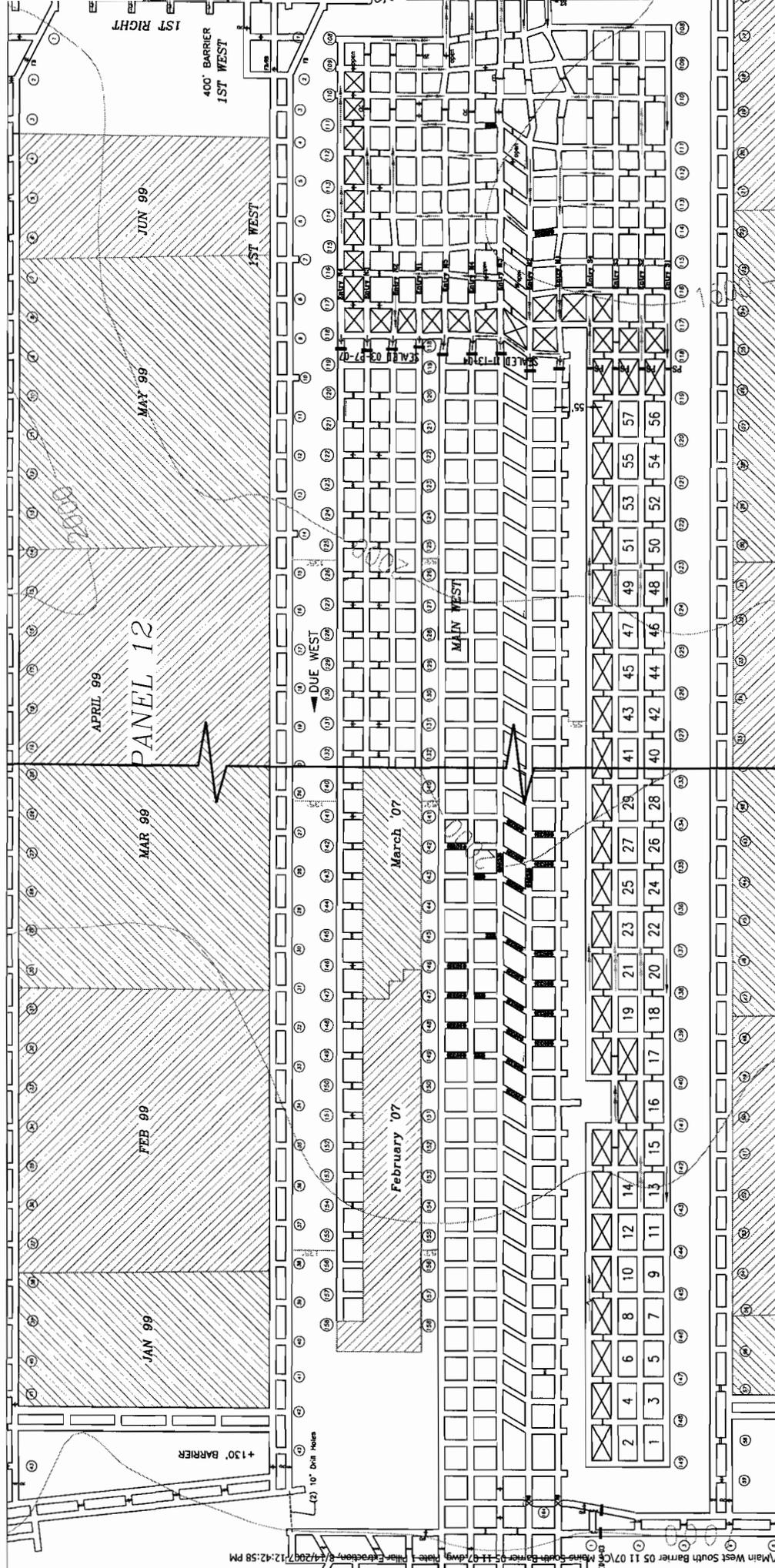
The mine is currently developing entries into the south barrier of the Main West area. This plan proposes to recover coal remaining in the pillars shown on attached Plate 1, Pillar Extraction.

Consultant reports indicate the development will avoid the majority of the side-abutment stress transferred from the adjacent longwall panels. These assessments have been validated by conditions experienced in the mine.

Plate 1, Pillar Extraction, shows the mining sequence and the blocks left in the mining process. This pillar recovery will be done in accordance with the approved Roof Control Plan.

Floor to roof support will be provided in the Bleeder entry. These timbers will be installed at the entrance to the crosscuts in number 4 entry. This support will consist of a double row of timbers (breaker row) installed on four (4) foot centers or closer if deemed necessary by the operator. There will be a minimum of four timbers in each row across the entry.

Also, should conditions warrant pillaring can begin at anytime in the panel. The pillar sequence and bleeder configuration will be same except that pillars will be left in by the beginning of the pillar line.



SOUTH BLOCK OF MAIN WEST MINING

PILLAR EXTRACTION
Crandall Canyon Mines
 Crandall Canyon
 P.O. BOX 1077
 PRICE, UTAH
 MSHA ID #42-01715
 DRAWN BY PJ
 CHECKED BY TH
 DATE 16 MAY 2007
 SHEET 1

Utah American Energy, Inc.
 201 NORTH Z CANYON BLVD, 2ND FLOOR, CANYON BLVD #400
 PHOENIX, AZ 85004
 PHONE: (480) 888-4000 FAX: (480) 888-4002

- LEGEND**
- ← PRIMARY ESCAPEWAY
 - ↔ SECONDARY ESCAPEWAY
 - PROPOSED SEAL
 - ⊗ PILLAR TO REMAIN FOR SUPPORT
 - ⊕ MPL DIRECTION & QUALITY POINT
 - ⊖ CHECK CURTAIN
 - ⊙ FD FIRE DOORS
 - ⊠ VENTILATION DOOR
 - ⊡ OVERBURDEN
 - 1:500

- ← BELT ENTRY/BELT AIR
- ↔ INTAKE ENTRY
- RETURN ENTRY
- ⊗ BLEEDER/BLEEDER AIR
- ⊕ OVERCAST
- ⊖ BOX CHECK
- ⊙ REGULATOR
- ⊠ EQUIPMENT DOORS
- ⊡ STOPPING

NOTES:

- EXACT PLACEMENT OF VENTILATION DEVICES AND PILLAR CONFIGURATION MAY DIFFER SLIGHTLY THAN THOSE SHOWN. THE VENTILATION DIRECTIONS, MPL AND MP LOCATIONS AS SHOWN SHALL BE UTILIZED TO INSURE ALL AREAS ARE VENTILATED.
- THE ROOF IN ALL ENTRIES WILL BE SUPPORTED ACCORDING TO THE APPROVED ROOF CONTROL PLAN. ENTRIES WILL BE MAINTAINED TO KEEP THE ENTRIES FREE OF STANDING WATER IN EXCESSIVE DEPTHS WHICH WOULD PREVENT SAFE TRAVEL. A SYSTEM OF PUMPS AND/OR GRAVITY DRAINAGE WILL BE USED TO REMOVE WATER.

Exhibit 103

From: Owens, Billy D - MSHA
Sent: Thursday, September 20, 2007 4:38 PM
To: Faraci, Matthew - OPA
Cc: Davis, Allyn C - MSHA; Knepp, William P - MSHA; Pon, Melinda - MSHA
Subject: RE: Questions

Mr. Faraci,

Mr. Stickler is correct, and Mr. McAteer is incorrect.

Agapito Associates, consulting engineers, employed computer modeling in July and August, 2006 and determined that two rows of pillars could safely be retreat mined in both the north and south Main West barriers in the Crandall Canyon Mine. MSHA also evaluated the Agapito/Crandall Canyon design by employing the same NIOSH computer modeling programs to conduct a retreat mining analysis. MSHA modeling included retreat mining in the south Main West barrier. There were some initial differences in the outputs of the models.

These differences were resolved by December 2006. Although the modeling showed that it was safe to retreat mine both the north and south barriers, MSHA only approved, on February 2, 2007, a plan amendment to retreat mine the north barrier. MSHA informed Crandall Canyon Mine that the actual north barrier mining experience would be reviewed before the retreat mining plan amendment for the south barrier would be reviewed. Agapito Associates conducted an underground evaluation of the retreat mining in the north barrier in March 2007. Agapito performed an additional computer model analysis of retreat mining in the south barrier. By increasing the length of the pillars in the south barrier, the stresses and vertical convergence in the pillars and openings outby the pillar line were decreased and more stress was transferred to the inby and adjacent gob areas. MSHA reviewed the computer modeling and conducted an on-site evaluation of the south barrier development before the retreat mining plan amendment was approved on June 15, 2007.

From: Faraci, Matthew - OPA
Sent: Thursday, September 20, 2007 1:32 PM
To: Owens, Billy D - MSHA
Subject: FW: Questions

Billy,

John Pallasch recommended that I get in touch with you. Can you take a look and question number 1 below and give me your thoughts?

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

Exhibit 104

From: Poulson, Jim
Sent: Friday, June 15, 2007 2:37 PM
To: Adair, Laine; Hibbs, David; Hill, Bruce; Hurst, Tom; Peacock, Gary; Allred, Bodee
Subject: FW: Crandall Pillar Plan roofcontrol

I talked with Billy on the phone about the plan and we will have to still get AI to sign the plan.

Jim

From: Owens, Billy D - MSHA [mailto:Owens.Billy@DOL.GOV]
Sent: Thu 6/14/2007 3:37 PM
To: Poulson, Jim
Subject: RE:

I signed off on the pillar plan for Crandall today.

Billy D. Owens



-----Original Message-----

From: Poulson, Jim [mailto:jpoulson@coalsource.com]
Sent: Thursday, June 14, 2007 7:09 AM
To: Owens, Billy D - MSHA
Subject: RE:

How is the ass kicking contest going? Are you making any headway? Is there anything I can do to help you?

I am sure a man of your stature and noble ability will prevail. I will try to keep the wolves at bay over here and pray you are successful in your accomplishments. It is looking like we will need the approval before Monday.

Jim

 enr
sig
James Poulson
Safety Manager
T T T T

From: Owens, Billy D - MSHA [mailto:Owens.Billy@DOL.GOV]
Sent: Wednesday, June 13, 2007 10:59 AM
To: Poulson, Jim
Subject: RE:

Welcome to the one-legged man ass kicking contest!!

Billy D. Owens



-----Original Message-----

From: Poulson, Jim [mailto:jpoulson@coalsource.com]
Sent: Wednesday, June 13, 2007 10:25 AM
To: Owens, Billy D - MSHA
Subject:

9/27/2007

UEICONG-K000006616

Bill;

Just a reminder, I am in a staff meeting right now and they are all asking when the plan for the pillaring in Crandall will be approved. They are about 7 days away from needing the plan.

I have a fire under my axxxxxx to get this approved. I need your help.



James Poulson
Safety Manager
UEI

Exhibit 105

From: Del Duca, Peter A. - MSHA
Sent: Wednesday, August 08, 2007 2:17 PM
To: Lyall, Kevin E - MSHA
Subject: RE:

They submitted us quite a bit of geotechnical analysis and we did on-site technical reviews and our own geotechnical analysis. Initial reactions were to allow development only...which was successful without problems. That's what the geotechnical analysis that I did said. It came from higher up, after on-site evaluations, and more submittals from the company's consultants to allow them to pillar it. I don't know, but I would guess that some people may retire early because of this.

Peter Del Duca
Mining Engineer
Roof Control
MSHA - District 9 Coal
[REDACTED]

From: Lyall, Kevin E - MSHA
Sent: Wednesday, August 08, 2007 12:12 PM
To: Del Duca, Peter A. - MSHA
Subject: RE:

It is hard to believe they let him go in and go between the 2 longwall panels and pull pillar. Are there a fault line under the mine.

Kevin E. Lyall
Underground Coal Mine Inspector
United States Department Of Labor
MSHA- District 4 Coal- Mt. Hope
[REDACTED]
[REDACTED]
[REDACTED]

From: Del Duca, Peter A. - MSHA
Sent: Wednesday, August 08, 2007 2:10 PM
To: Lyall, Kevin E - MSHA
Subject: RE:

They had a bounce just north of where they are at now that caused them to abandon the panel and move to the south panel. The roof control department here is trying hard to cover our asses since this is pretty bad.

Peter Del Duca
Mining Engineer
Roof Control
MSHA - District 9 Coal
[REDACTED]

[REST OF EMAIL REDACTED]

Exhibit 106

From: Owens, Billy D - MSHA
Sent: Friday, August 31, 2007 6:10 PM
To: Silvey, Patricia - MSHA; Pallasch, John - MSHA
Cc: Pon, Melinda - MSHA; Knepp, William P - MSHA; Davis, Allyn C - MSHA; Reitze, William P - MSHA
Subject: March 11
Importance: High

Pat,

After reviewing our records, we do not have a report of a bounce or of a complaint filed regarding mining in the north Main West barrier.

On March 13, 2007, William Reitze, Ventilation Supervisor, had a discussion with management at Crandall Canyon Mine regarding a request to move the bleeder MPL from approximately XC 148 outby to XC 133. The retreating section face was at XC 133. The mine stated that a bounce had occurred and the bleeder entry inby the face was not safe to travel.

Mr. Reitze correctly informed the mine that they were required the travel the bleeder entry in its entirety. The mine then stated that they would prefer to seal the north Main West barrier entries rather than travel the bleeder.

In an email, Allyn Davis, District Manager, requested that Tech Support expedite the seal approval for Crandall Canyon Mine because a bounce had occurred in the section and sealing the section would be safer than traveling the bleeder.

The mine did comply with the required examinations with regard to the bleeder entry.

The April 18th- Agapito report stated the bounce damaged the entries located between XC's 133 and 139. This area was inby the retreating face and the only entry in this area was the number 4 entry, the bleeder entry.

If the mine had been allowed to move the MPL outby to XC 133, they would have continued to retreat mine the north Main West barrier. The reason that the mine stopped mining was their belief that requiring a person to travel in the bleeder entry to back of the bleeder was unsafe. This is consistent with the discussions between the myself and mine management.

Please contact me if there are more questions regarding this issue.

2/15/2008

Billy D. Owens
Roof Control Supervisor



Exhibit 107

From: Fredland, John W. - MSHA
Sent: Tuesday, March 13, 2007 2:38 PM
To: Davis, Allyn C - MSHA
Cc: Reitze, William P - MSHA; Hoch, Terry - MSHA
Subject: Construction of Seals at Crandall Mine

Allyn,

As you informed me by phone this afternoon, Crandall Canyon Mine has experienced a bounce and has an urgent need to construct seals. You asked whether we could allow the mine operator to proceed with seal construction based on the same seal plan that has been provisionally approved for West Ridge Mine.

The provisionally approved seals at West Ridge are Minova pumpable seals. Provided the conditions at Crandall Canyon are similar with respect to the roughness/undulation of the ribs, roof and floor, then I have no problem with recommending that Crandall Canyon be permitted to construct these urgently needed seals using the same specifications as was approved for the Minova seals at West Ridge Mine. Minova seal plans include a table which provides the required thickness of the seal based on the height and width of the mine entry. This table should be followed for seal thickness. (Any approval to use Minova seals should be provisional based on Minova completing more detailed analyses and material testing to verify seal adequacy.)

(Note that the plan for West Ridge was complicated by the construction of partial walls for water impoundment just inby one of the seals. For this condition, the seal had to be designed for the potential for increased explosion pressure. The additional construction requirements approved for this seal would not be needed if this higher pressure condition does not exist at Crandall Canyon. More recently than the West Ridge approval, Technical Support has agreed with Minova (provisionally) on two seal-thickness tables, one for gob isolation type seals (seals which will experience significant convergence), and one for main or longer-term seals. If I remember correctly, the longer term seals are to be 20% thicker than the gob isolation-type seals. Crandall Canyon could use these updated tables and use the appropriate thicknesses depending on the conditions at the seal location – but seal site preparation and other construction requirements should be the same as was approved for West Ridge.)

If you have any questions about this recommendation, please let me know.

John

Exhibit 108

MAR 16 2007

Coal Mine Safety and Health
District 9

Surname	Date
Fleshman	3-16-07
[Signature]	3-16-07

Gary Peacock
General Manager
Genwal Resources, Inc.
P.O. Box 1077
Price, UT 84501

RE: Crandall Canyon Mine
ID No. 42-01715
Ventilation Plan Amendment

Dear Mr. Peacock:

The enclosed plan amendment, dated March 14, 2007, consisting of a cover letter and four pages, addressing a plan for sealing the North Barrier of Main West, is **PROVISIONALLY** approved in accordance with 30 CFR §75.370(a)(1). This amendment will be incorporated into the Ventilation Plan approved on July 27, 2006.

This approval is site specific and will terminate upon completion of the project.

A copy of this approval shall be made available to the miners and reviewed with all miners affected by this plan.

Sincerely,

/s/ William P. Knepp

Allyn C. Davis
District Manager

Enclosure

cc: Tom Hurst

bcc: EC Plan File (Original Surname w/Original Plan)
Price #2 FO (Copy of Surname w/Copy of Plan)
Price #2 UMF (Copy of Surname w/Copy of Plan)
(Copy of Surname w/Copy of Plan)
VG - Plan File (Copy of Surname w/Copy of Plan)
VG - Chron V* (Copy of Surname)
D-9 Chron * (Copy of Surname)
Lan/coal/vent/jf/4201715/8660-B4-A12

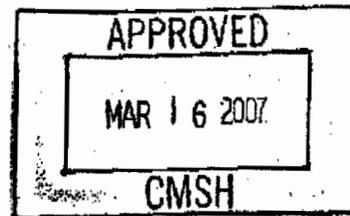


Exhibit 109

From: Hill, Bruce
Sent: Thursday, March 29, 2007 11:33 AM
To: Poulson, Jim; Adair, Laine; Taylor, Jerry; Heidelbach, Roy; Hurst, Tom; Hibbs, David; Leonard, Darrell
Cc: 'Davis, Allyn C - MSHA'
Subject: RE: Wood squeeze seals - West Ridge Mine

Jim,

Thanks. Keep the pressure on. Also, please continue to monitor the wood seal approval for Crandall.

From: Poulson, Jim
Sent: Thursday, March 29, 2007 4:49 AM
To: Hill, Bruce; Adair, Laine; Taylor, Jerry; Heidelbach, Roy; Hurst, Tom; Hibbs, David; Leonard, Darrell
Cc: 'Davis, Allyn C - MSHA'
Subject: FW: Wood squeeze seals - West Ridge Mine

I will be following up with Mr. Fredland.

James Poulson
Safety Manager UEI
[REDACTED]
[REDACTED]

From: Fredland, John W. - MSHA [mailto:Fredland.John@dol.gov]
Sent: Wednesday, March 28, 2007 4:23 PM
To: Poulson, Jim
Cc: Davis, Allyn C - MSHA; Superfesky, Michael C - MSHA; Hoch, Terry - MSHA; Michalek, Stanley J - MSHA
Subject: Wood squeeze seals - West Ridge Mine

Mr. Poulson,

I've had several calls from Allyn Davis on the urgency of your situation. We are trying to get the wood squeeze seal plan processed. We have had to make a change because Mr. Superfesky was needed to investigate a fatal accident. I am attempting to make other arrangements so that we can respond ASAP.

I will call you tomorrow to discuss the situation when I have a better idea of how we can proceed.

John

-----Original Message-----

From: Poulson, Jim [mailto:jpoulson@coalsource.com]
Sent: Wednesday, March 28, 2007 4:55 PM
To: Fredland, John W. - MSHA
Cc: Davis, Allyn C - MSHA; Superfesky, Michael C - MSHA; Hill, Bruce; Adair, Laine; Heidelbach, Roy; Hurst, Tom; Taylor, Jerry
Subject:

Mr. Fredland;

Could you please give me a call. I would like to discuss the progress of the approval for the wood squeeze seal(s) for the West Ridge operation. As per our phone conversation several days ago, this approval is of the utmost importance.

I look forward to hearing from you soon.

Regards,

James Poulson
Safety Manager UEI
[REDACTED]

Exhibit 110

From: Adair, Laine
Sent: Wednesday, May 09, 2007 8:41 PM
To: Peacock, Gary; Richens, Steven; Poulson, Jim; Hibbs, David
Subject: MSHA Billy Owens ground control visit

Gary and Steve

Billy Owens (MSHA Denver ground control) will be here on the 22nd and 23rd of May. On the morning of the 22nd we will visit the Crandall mine to view conditions in the south barrier under +2000' cover in preparation for approval of the pillar recovery plan. On the morning of the 23rd we will visit Tower to view conditions in the 2 entry development in 13th and 14th to evaluate the stability of the entries used as connections to the bleeder.

Laine

Exhibit 111

OPERATIONS

The Crandall Mine produced better than forecast during May. The section developed west in the south barrier from crosscut 121 to 133. The section was under more than 2,000 feet of cover most of the month.

During May, MSHA Denver District 9 ground control specialist Billy Owens visited the section to observe mining conditions in the barrier at +2,000 feet of cover. Mr. Owens wanted to see the mining conditions before reviewing the proposed pillar pulling plan for the section. The general consensus of the group which visited the section was that the larger pillars recommended by Agapito and Associates, Inc. are resulting in better rib conditions and fewer bounces on development. We need MSHA approval of the pillar pulling plan by the first part of July.

Toward the end of May the top two feet of the coal section had two 2-inch thick rock bands and generally dirty coal. Channel samples of the top 2 feet showed [REDACTED] ash. This elevated the overall ash level from the section.

The underground mine crews worked on the following projects during May:

- changed out the silo belt and part of No. 3 belt,
- performed mechanical work on the MRS units to get ready for pillar pulling,
- continued retrieving re-useable materials out of the north barrier section.

Engineering

Roof control and ventilation plans were submitted for mining the remainder of the South Block of the Main West at Crandall. The ventilation plan has been approved and roof control plan is on the MSHA District Manager's desk for signature.

MANPOWER

At month's end Genwal had a total of 66 employees which equals the budget of 66 employees. During the month there were no employees who chose to terminate employment.

Two employees were recalled.

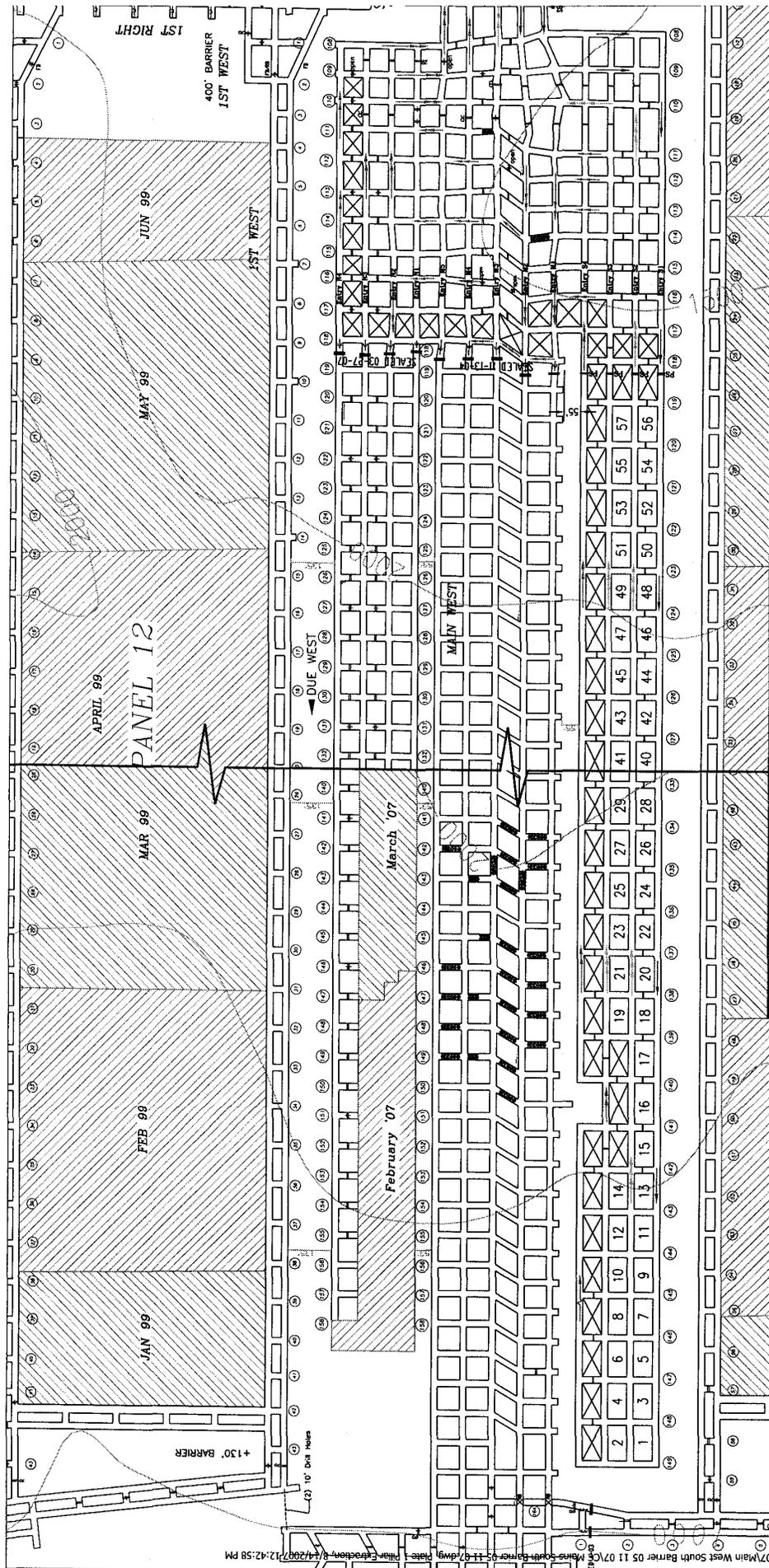
RECALLS

<u>Location</u>	<u>Name</u>	<u>DOH</u>	<u>Position</u>
Crandall	[REDACTED]	5/8/2007	Roofbolter
Crandall	[REDACTED]	5/29/2007	Shuttle/Roofbolter

There were no transfers during April which affected Genwal.

During May, there were 35 employee work days lost to previous Workers Comp injuries

Exhibit 112



SOUTH BLOCK OF MAIN WEST MINING

NOTES:
 1. EXACT PLACEMENT OF VENTILATION DEVICES AND PILLAR CONFIGURATION MAY DIFFER SLIGHTLY THAN THOSE SHOWN. THE VENTILATION DIRECTIONS, MPL AND MP LOCATIONS AS SHOWN SHALL BE UTILIZED TO INSURE ALL AREAS ARE VENTILATED.
 2. THE ROOF IN ALL ENTRIES WILL BE SUPPORTED ACCORDING TO THE APPROVED ROOF CONTROL PLAN. ENTRIES WILL BE MAINTAINED TO KEEP EXCESSIVE DEBRIS WHICH COULD IMPAIR SAFE TRAVEL. A SYSTEM OF PUMPS AND/OR PERMITS DRAINAGE WILL BE USED TO REMOVE WATER.

- LEGEND**
- PRIMARY ESCAPEWAY
 - SECONDARY ESCAPEWAY
 - PROPOSED SEAL
 - PILLAR TO REMAIN FOR SUPPORT
 - DIRECTION & QUALITY POINT
 - CHECK CURTAIN
 - FD FIRE DOORS
 - VENTILATION DOOR
 - OVERBURDEN
 - 1500'

- BELT ENTRY/BELT AIR
- INTAKE ENTRY
- RETURN ENTRY
- BLEEDER/BLEEDER AIR
- OVERCAST
- BOX CHECK
- REGULATOR
- EQUIPMENT DOORS
- STOPPING

UtahAmerican Energy, Inc.

PILLAR EXTRACTION

Crandall Canyon Mines
 Crandall Canyon
 P.O. BOX 1077
 PRICE, UTAH

MSHA ID #42-01715

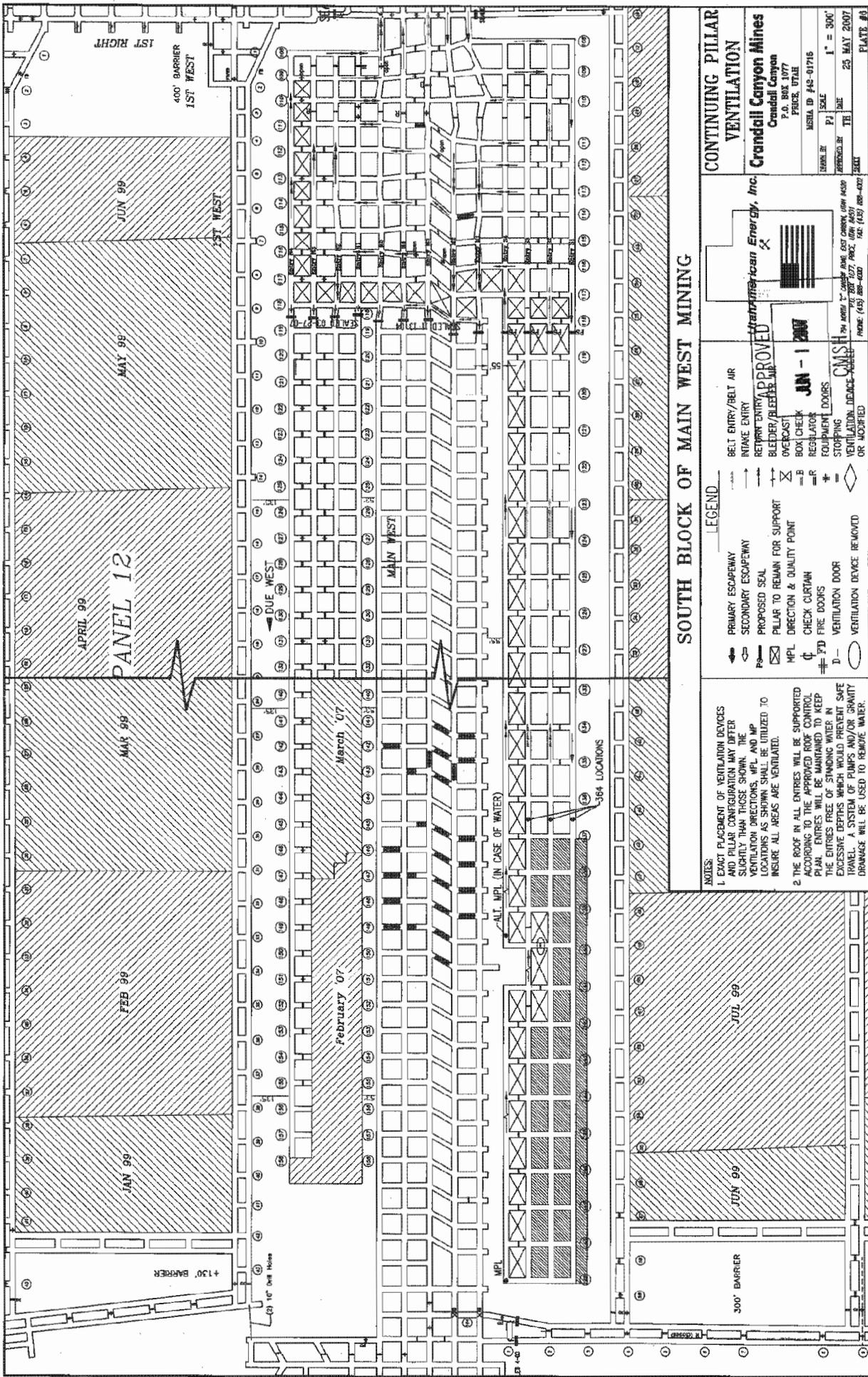
SCALE 1" = 300'

DATE 16 MAY 2007

PROJECT NO. 0511472007

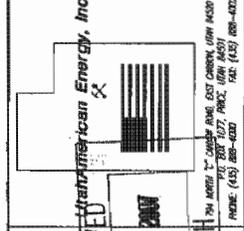
PLATE #

Exhibit 113



SOUTH BLOCK OF MAIN WEST MINING

CONTINUING PILLAR VENTILATION
Grandall Canyon Mines
 Grandall Canyon
 P.O. BOX 1077
 PRIDE, UT 84701
 MSHA ID #42-01716
 DRAWN BY P.J. SOLE
 APPROVED BY T.H. SOLE
 DATE 25 MAY 2007
 SHEET



APPROVED
JUN - 1 2007
 C.M.S.H.
 VENTILATION DEVICES
 OR MODIFIED

- LEGEND**
- ◀ PRIMARY ESCAPEWAY
 - ◁ SECONDARY ESCAPEWAY
 - ⊠ PROPOSED SEAL
 - ⊡ PILLAR TO REMAIN FOR SUPPORT
 - ⊢ MPL DIRECTION & QUALITY POINT
 - ⊣ CHECK CURTAIN
 - ⊤ FTD FIRE DOORS
 - ⊥ VENTILATION DOOR
 - ⊦ VENTILATION DEVICE REMOVED
 - ⊧ BELT ENTRY/BELT AIR
 - ⊨ INTAKE ENTRY
 - ⊩ RETURN ENTRY
 - ⊪ BLEEDER/RELEASE
 - ⊫ OVERCAST
 - ⊬ BOX CHECK
 - ⊭ REGULATOR
 - ⊮ STOPPING
 - ⊯ VENTILATION DEVICE REMOVED OR MODIFIED

NOTES:

- 1 EXACT PLACEMENT OF VENTILATION DEVICES AND PILLAR CONFIGURATION MAY DIFFER SLIGHTLY THAN THOSE SHOWN. THE VENTILATION DIRECTIONS, MPL AND MPL LOCATIONS AS SHOWN SHALL BE UTILIZED TO INSURE ALL AREAS ARE VENTILATED.
- 2 THE ROOF IN ALL ENTRIES WILL BE SUPPORTED ACCORDING TO THE APPROVED ROOF CONTROL PLAN. ENTRIES WILL BE MAINTAINED TO KEEP THE ENTRIES FREE OF STANDING WATER IN EXCESSIVE DEPTHS WHICH WOULD PREVENT SAFE TRAVEL. A SYSTEM OF PUMPS AND/OR GRAVITY DRAINAGE WILL BE USED TO REMOVE WATER.

300' BARRIER
 JUN 99
 JUL 99

Exhibit 114

Jones, Wilberta L - MSHA

From: Walker, Barbara - SOL
Sent: Wednesday, September 12, 2007 8:06 AM
To: Jones, Wilberta L - MSHA
Cc: Plick, Joseph - SOL
Subject: NEW FOIA REQUEST - FW: Crandall video request
Importance: High

Please process this request. Thanks.

From: Robert Gehrke [mailto:gehrke@sltrib.com]
Posted At: Tuesday, September 11, 2007 7:25 PM
Posted To: FOIARequests
Conversation: Crandall video request
Subject: Crandall video request

The Salt Lake Tribune

September 6, 2007

Ms. Patricia Silvey
U.S. Department of Labor - MSHA
FOIA Officer
1100 Wilson Blvd., Room 2314
Arlington, VA 22209-3939

Dear Ms. Silvey:

I am a reporter with The Salt Lake Tribune, and this is a request under the federal Freedom of Information Act, as amended, 5 USC 552.

I am seeking video records of the Crandall Canyon mine created any time between March 1, 2007 and August 17, 2007. I am seeking any video format, including, but not limited to, VHS, 8 mm, or any digital format.

I am requesting this information for the purpose of possible public dissemination in a news article and

9/12/2007

S1.3 000049

therefore request that you waive charges pursuant to 5 USC 552 (a) (4) (A), Fed. Reg. 7296, Section 1900.25. I would also appreciate anything that can be done to expedite this request.

To facilitate a timely review, I would appreciate your communicating with me by telephone or e-mail if you have questions regarding this request. My number is 801-257-8730. My e-mail address is gehrke@sltrib.com.

Relevant records can be mailed to me at: 90 So. 400 W., Suite 700, Salt Lake City, UT, 84101.

Thank you for your assistance, and I will look forward to receiving your response.

Sincerely,

Robert Gehrke

9/12/2007

S1.3 0000050

Exhibit 115

8-28-07 6:42 AM VM
Ren Paletta - again

8-28-07 7:20 AM
Pat ERROMOUSPO

Ren Paletta - Got Too Much air dumping
@ back - West Ridge

8-28-07 9:10 AM
All - Conference Call

Put TOGETHER PPT on CARBONOCOPY ≈ 9-05
Time Frame STARTS w/ POLING PLANS from South Maine
ON NORTH & SOUTH - Must more Detailed w/
Dates - EXPLANATIONS & JUSTIFICATIONS
HISTORY OF ONCITE INVESTIGATIONS
CONFIDENCE IN AERITE
- Looking @ MSIS - Citation, Accidents, NFDC
- Wants Brief History of Mine

Root & Vent Plan - INCONSISTENT - Vent supposed to
allowed pulling of Berman & Root did not

- REVISIT ALL POLING PLANS > 1500' COVER

8-28-07 2:18 PM VM
Tom GREEN - Call -

Exhibit 116

OPERATIONS

The Crandall Mine produced better than forecast during April. The section developed four crosscuts into the south barrier starting at crosscut 108 and then turned west and developed to crosscut 121 by the end of the month. Mining conditions were good all of the month. Beginning at crosscut 118 the pillar length increased from 92 feet to 130 feet, as recommended by Agapito and Associates, Inc. (ground control consultants) in an effort to minimize the bouncing as we retreat out of the south barrier. The section was developing under 1,500 feet of cover at the beginning of the month and ended up at 1,800 feet of cover at the end of the month. Four shifts of down time were forecast in April to install belt drives into the south barrier. By working on the drives a little at a time in advance, the job was completed with only 2.5 shifts of down time.

The underground mine crews worked on the following projects during April:

- removed the short belt drive and no. 7 belt drive and take-ups from the north barrier
- installed the short belt drive and no. 7 belt drive and take-ups in the south barrier
- removed remaining equipment from the north barrier
- installed a dewater line into the section

Engineering

Roof control and ventilation plans submitted for mining the remainder of the South Block of the Main West at Crandall.

REDACTED: NON-RESPONSIVE

TRAINING

Hazard training was conducted for ten people at about one hour each.

Exhibit 117

UEI Staff Meeting, 4-4-07, at Tower Mine

Attending: Bob Murray, Bruce Hill, Gary Peacock, Steve Richens, Steve Brown, Jim Poulson, Doug Johnson, Darrell Leonard, Gary Sitterud, Laine Adair, David Hibbs, Ron Koontz, Shane Hackney, Mike Knowles, Susan Frohlich, Gary Gray

1. Bruce Hill gave an overview of the operations.
 - a. Crandall had a rough month. There were bounce problems in the north panel in the West Mains. Production was moved to 3 North where the equipment had not been run for six months.
 - b. Mining has been moved back to the West Mains, this side developing the panel on the south side. Conditions are looking better. Ash is back down to ██████% and sulfur is lower. Costs are looking better so far in April.

**Redacted:
Not Responsive**

2.

**Redacted:
Not Responsive**

**Redacted:
Not Responsive**

Exhibit 118

Re: Crandall Month End May, 2007.
To: Laine Adair
From: Gary Peacock

The total production for May was [REDACTED] tons. We had forecasted [REDACTED] to be mined in May. We developed West in the South barrier block the entire month. We spent the better part of the month in over 2,000' of cover. The rib and roof conditions are noticeably better than they were on the North barrier. Much of the improvement could be attributed to the larger pillars. We started the month just in by xc-121 and ended at xc-133. We have 2,100' left to develop, if we are able to make it to the end. We were 350' short of making it to the end on the North side. This equates to about 30 days of development to go to the end.

The MSHA roof support team came for a day and done a thorough evaluation of the conditions in the entire section. The comments they made were generally favorable as far as an extraction approval, but we have not received anything in writing yet.

We changed out the Silo belt and part of #3 belt. We done some mechanical work on the MRS units to get them ready for extraction. We continued retrieving the good materials out of the old section in an ongoing effort to minimize costs.

We had three people off all month. Two were hourly and one salary. Again this month we struggled to keep the sections staffed while staying in compliance throughout the mine.

Exhibit 119

**Redacted:
Not Responsive**

- k. Approval for Crandall to pillar the south panel is needed in 2½ months at the latest. Gary reported that bouncing has started in the south panel advance and he may have start retreating sooner than the end of the panel.

**Redacted:
Not Responsive**

**Redacted:
Not Responsive**

Exhibit 120

Crandall Canyon

Management Meeting

May 18th, 2007

Safety:

- Jim Hanna has not returned yet. It sounds like he could be off a while. Could Josh Fielder be used in the mean time.
- Mark Toomer is still off, he does have a partial release. I talked to him yesterday.
- One citation on running the dust pumps this quarter. 11 inspector days.
- Some confusion created by the company policy for electrical.

Production:

- The production so far in May is [REDACTED] tons.
- The forecasted tonnage is [REDACTED] tons.
- That is a difference of [REDACTED] tons to the ~~positive~~ ^{neg.}
- Have run 40 of 39 scheduled shifts.
- Ash is in the [REDACTED] range.
- Currently at xc-130 and under the deepest cover.

Projects:

- Setting some beams and rock props in the 1st South bleeder entry where it is deteriorating.
- Getting the timbers set in the return.
- Keeping the 4" water line caught up. We should be hitting water in about 9 xc's.
- Getting the head roller lagged on the silo belt, this will be done on Memorial Day.

Problems:

- Manpower, with the people off and vacations it is very difficult to keep the mine in compliance and the section staffed. Trying to run coal with 4 people at times. Equipment is showing the affects of using the mechanic as the faceman.
- Tools we order go to West Ridge? We have ordered tools twice for two different mechanics, every time they end up at West Ridge and the tools don't make it to Crandall.
- Budgeted number for May??

Manpower

- Mark Toomer and Jim Hanna are both off on Workers Comp. Kerry Allred is off on STD.

Trucks

- We have 16 trucks, 0 are down today.

Exhibit 121

OPERATIONS

The Crandall Mine produced as forecast during June, but less than budget. Production was slow due to adverse roof conditions and the need to take short cuts. The top 2 feet of the coal seam was high ash – the same as experienced during May. This resulted in high ash for the month of June. The section developed from crosscut 133 to 143 during June. We did not encounter the water that was experienced in the north barrier in this area. We received approval from MSHA for the pillar extraction plan in the south barrier during June.

The underground mine crews worked the following projects during June:

- continued setting timber breaker rows in the south barrier bleeder
- brought the Stamler feeder to the surface and repaired it
- finished all repairs on the MRS units in preparation for pillar extraction
- continued setting timbers and planks in the 1st South Mains bleeder

Engineering

Roof control and ventilation plans submitted for mining the remainder of the South Block of the Main West at Crandall. The ventilation plan and roof control plan for pillaring have been approved. Plans are being prepared to pillar the remainder of the Main West area. A study of the transportation system is planned for the near future.

MANPOWER

At month's end Genwal had a total of 69 employees which is three more than the budget of 66 employees. This is to cover for two employees off on workers compensation and two employees off on short term disability.

During the month there were two employees who chose to terminate employment.

TERMINATIONS

<u>Name</u>	<u>DOT</u>	<u>DOH</u>	<u>Comments</u>
[REDACTED]	6/4/2007	7/18/2005	Working at Bridger
[REDACTED]	6/14/2007	11/6/06	Going to Idaho

Two employees were recalled.

RECALLS

<u>Name</u>	<u>DOH</u>	<u>Position</u>
[REDACTED]	6/25/2007	Section Foreman
[REDACTED]	6/29/2007	Faceman

There were five new hires.

NEW HIRES

Exhibit 122

Confidential
Please do not fax copy

6-26-07

THU & CC: Bruce Hill

June 22, 2007

To: Mr. Murray

From: Bruce Hill

Re: Weekly UEI Status Report

EMAILED

my response.

Bob Murray

THU & CC: Ray Hadelbach

Bob Murray

Bruce Hill

Mr. Murray, listed below is an executive summary for UtahAmerican Energy for the week of June 17th

Safety

Mine	Total Citations	S&S	Orders	Insp. Days	Lost-Time Inj.
Tower	[REDACTED]				1
West Ridge	[REDACTED]				0
Crandall	3	1	0	5	0
Total	37	16	2	35	4

Noted.
The citations will be verified.

- Safety Data is month to date through June 21st. ✓

- [REDACTED] lost time injury occurred at Tower during the week. West Ridge and Crandall remains injury free for the month. In total, Tower has incurred [REDACTED] lost-time injuries this month. [REDACTED], tripped over a floor jack handle walking around a vehicle located in the shop. He fell to the ground striking his right knee against the concrete floor. He completed the shift and following shift, but became concerned about the swelling in the knee. An e-ray was negative, but the doctor advised [REDACTED] to take two days off work. He has since returned.

noted.



- In the meantime, we plan to hire 8 personnel (of the 16 man budget shortfall) who will focus on the belts. In addition, we are going to hire on safety man to bring the department to two. For a mine the size of Tower and with the new regulation requirements, the mine cannot complete the statutory requirements with one person in safety. Across MEC, the minimum number of safety personnel at any one mine is one (Tower and Crandall) with up to four at OVCC. Crandall can remain at one, but Tower needs at least two. With the amount of training required, compliance with regulations and the ventilation/ground control issues at Tower, we need to hire a second safety man. Your approval is requested.

Approved, again, with the new fine structure, there will be no cash to pay them for this.

- Andy Binnersley remains in Illinois. He remains under doctors' care in Illinois. He is helping some with the equipment for the longwall at Tower, but we are somewhat strained on manpower associated with the next panel. With Keith not totally involved in the two longwall rebuilds, Billy Williams not able to travel to Utah, Andy in Illinois and Ron needing to be underground, I decided to attempt to bring Joe Fielder back. Ron said he really didn't need him, but I know this is not the case and am very worried the two longwall moves will not be successful without additional oversight. Consequently, we have hired Joe and he is starting Monday. He will be in charge of maintenance planning for all three mines and c/m rebuilds. After Ron learned Joe is coming back, he immediately asked for Joe to help on the two moves. We will be using Joe in that capacity until the moves are complete. We recognize there were some purchasing procedure problems when Joe was at UEI. I believe these problems were encountered before the purchasing procedures were well defined and explained to UEI personnel, however, we have instructed Susan to sit down with Joe and thoroughly go through all procedures to ensure future problems do not occur. Joe will report to Gary Sitterud.

by Mike Riley (I believe) that Andy Binnersley can come to Utah now. He should be there.

Year to date (October 2006-June 12, 2007) workers compensation costs (paid and reserved) are now at [REDACTED]. The premium to date has been [REDACTED]. While UEI has had too many injuries over the last two months, the improvement in workers compensation costs indicates the severity of the injuries has been low. Rockwood Insurance personnel (5) were here this week and traveled underground. They had very favorable comments regarding the tour as well as the support and direction of claims management at the mines. *Good.*

- Jim Poulson presented testimony before the Belt Air Panel in Birmingham yesterday. His presentation was at the request of the panel regarding UEI's training manual for control room personnel. Based on the feedback received, it appears the panel was very impressed. In addition, Jim presented information regarding the number of roof falls in two versus three entry systems. As you can see from the attached document, in Utah there have been 0.16 falls per 1000 feet of advancement in two entry systems versus 0.84 falls per 1000 feet in three entry systems.

Noted. It's still "uphill".

- Crandall has received MSHA approval for panel extraction in the south mains. This allows us to fully extract all pillars while retreating. We are currently 16 crosscuts from reaching the end of the panel and the start of pillar recovery.

Noted.

Manpower

	Active	In-Active	Total	Budget	Variance	Change
CCM	64	3	67	68	-1	0
TM						
Wildcat	17	1	18	17	+1	0
WestRidge						
Shared	37	0	37	36	+1	0
Total	483	22	505	527	-22	0

Manpower is through June 22th.

- [redacted] employees were hired this week. [redacted] at Tower and [redacted] at West Ridge. *noted*
- [redacted] employees terminated this week. [redacted] at Tower and [redacted] at West Ridge. The [redacted] Tower employees moved to Idaho and [redacted] West Ridge employees went to Bridger while the [redacted] retired. *noted*

Inactive Employees

Mine	Work Comp	Change	S & A	Change	Total
Crandall	2	0	1	-1	3
Tower					
West Ridge					
Total	12	+1	9	+1	21

- A job fair in Deserado was held on June 21st. The turnout was good with 87 prospects filling out applications. However, only 7 experienced, employed miners attended. We are interested in 4 along with some good inexperienced prospects. *noted*
- Family Day Picnic scheduled for tomorrow. We expect over 1,000 to be in attendance. The mines will not idle for the event. *✓*
- [redacted]
- I am very disappointed with the performance of the continuous miner operators and roof bolters at all three mines. The roads have a way too familiar 'washboard' look which causes problems with transportation and maintenance. The c/m operators are simply not doing as good a job as needed. A review of the experience level of the operators shows we have personnel who need training. As a result, we have taken the best c/m operator and bolter operator to train men in all three mines. In addition, I have spoken to Sam Quigley and WITEC about acquiring a c/m mining machine simulator for training. *noted*

- Electrical training tied to trouble shooting and print reading is scheduled to begin next week. All maintenance personnel will attend. Wendell is the instructor. *Noted*

Production/Sales-May
Thru June 22nd

Mine	Production	Budget	Variance	Cost/Ton	Budget	Sold	Budget
West Ridg							
Tower							
Crandall							
Total							

- The sold tons are through June 21st and budgeted sold tons are thru June 30th. Cost/Ton is through June 21st and is FOB Mine. Mine costs are projected. *Nothing is good.*
- Month to date, actual shipments are lagging budgeted shipments by [redacted] tons. Inventories now stand at [redacted] tons. ✓

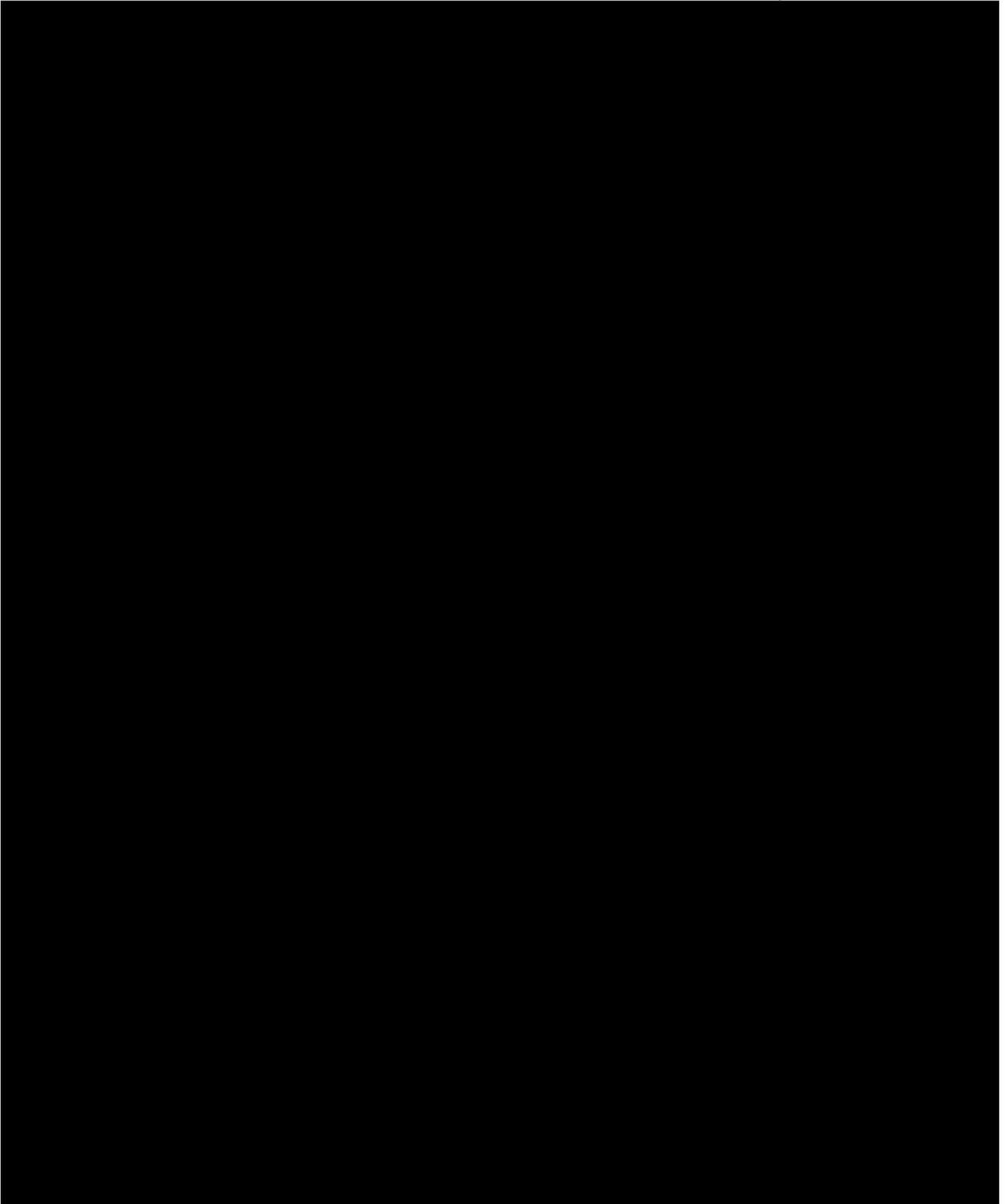
- UEI has experienced a difficult start in June from a safety, production, cost and quality perspective. June is the first month since October that UEI is trailing budgeted production numbers this far into the month. While I believe Tower can make budget if we can correct the belt and MSHA problems, West Ridge will not meet budget this month. This is partly due to continued condition problems on the face and longwall equipment that has been impacted from all of the rock cut last month. In addition, as we continue to out produce sales, we are not going to operate the remaining Saturdays budgeted, in an effort to conserve cash. If you are in agreement with this decision, the cost per ton will increase, but the actual cash flow will improve. A through analysis of production and costs follows in each mine site section of this report.

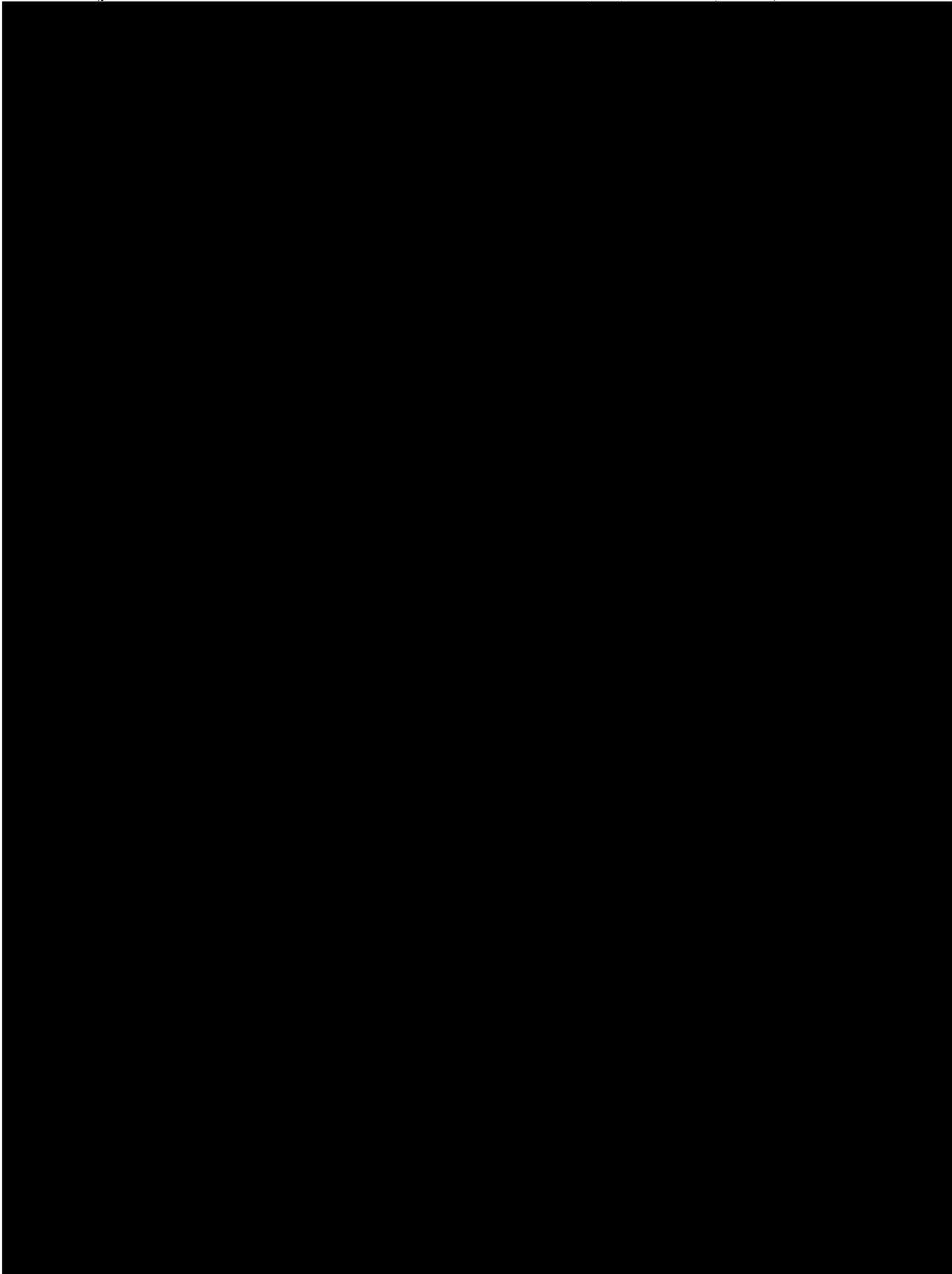
[redacted]

- Crandall's ash has significantly improved with reading in the [redacted] range. The top is better and the projections show it should remain low for the remainder of the panel. *Noted*
- Headwater completed the test run of the 'low' high ash product ([redacted]). The product screened out at [redacted]. This adds up to a [redacted] product (assuming the coal costs are [redacted]/ton FOB mine. Headwater is completing the test of the high ash product ([redacted]) and will have results early next week. Clearly, screening the coal is not cost efficient. While we have some sales above the final product price, most of the sales are below mined costs. We are working with Headwater to lower their costs and we can reduce the transportation costs by shipping directly from the mine to Headwater. However, it is going to be difficult to cash flow coal that is screened. Consequently, we are placing a heavy emphasis on staying in the coal and in reducing the mining height in the next panel. *Noted, again,*

this is a waste of time. The marketplace does not allow Utah coal washing.

Tower



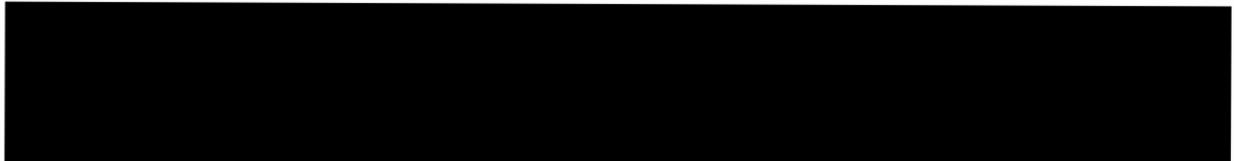


Crandall

- Crandall is [REDACTED] tons short of budget month to date. The variance is due to bad top and slowed bolting associated with the top and a belt problem (head roller) that cost 36 hours of production. In addition, we lost production due to dropping an entry for 1.5 x-cuts due to the top and the lost entry caused sequencing problems with the mining cycle. *noted.*
- The area we are mining was identified as a ding area and we anticipated difficult mining in the area. The Peake model is not recognizing the ding area. *noted.*
- We have mined beyond the deep cover and the pillars appear to be in very good shape. We have 16 days before pillaring begins. However, several bumps are occurring and the ribs show significant signs of sloughage. *noted.*
- Ash has improved, but we are still seeing a trash band in some places that averages about 4 inches thick. *noted.*
- Mine costs are higher in June than for the past two months ([REDACTED]). The sole reason is supply costs being over [REDACTED] above budget. The supply costs are not from this month, but are from adjustments being made from months ago and an inventory adjustment tied to an inventory count. *noted.*

Engineering

Work started this week surveying in the location for the sediment containment fence. Due to the fact SUWA has not filed an injunction blocking work on site, we are pressing forward for all work that we can generate. To more that is done, the better for us when presenting to the board. *noted.*



- Royalty rate reduction submittal information completed by engineering for Tower and corporate accounting has finalized the CPA review. The reduced royalty rate at West Ridge is complete and in effect. Crandall application is complete and waiting on Corporate Financial analysis. *noted.*
- Summer engineering students have completed c/m time studies and are now working on transportation studies to reduce the number of mantrips and improve efficiency/reduce delays. *noted.*

General

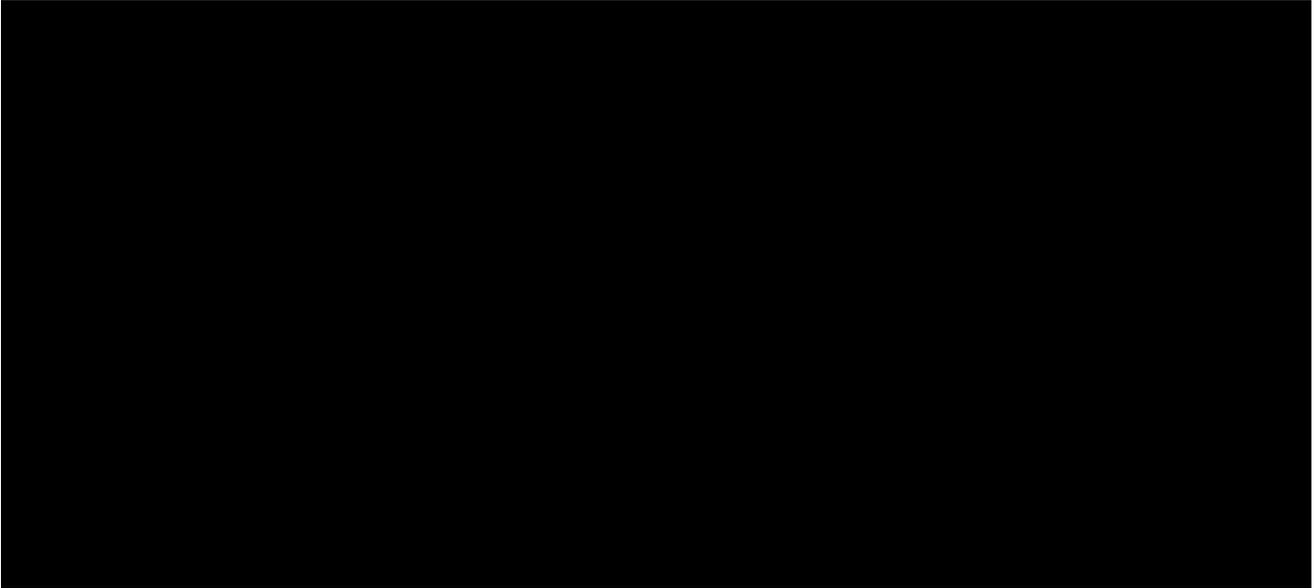


Exhibit 123

Date 8-7-07

Kennedy stoppages did not take well from the event clear out to 9:45 x-out in main west.

Blount in different directions - some portions in stoppages (10 panel segments) blown as far as 145 ft. from origin.

Airt reaching x-out 110 + extending section as follows - 1035-14.

Inspector's Initials D.L. Supervisor's Initials and Date Page No. 12

Date 8-7-07

Bodie Alford called shortly after and said he had passed but meters this A.M.

Told him he had 12 HUS No-look! 1005 hrs - GUS readings in return x-out (1) at 6 belt

In 20.80% - (0.8 PPM) no chcl -

Inspector's Initials D.L. Supervisor's Initials and Date Page No. 11

Date 8-7-07

9:55 hrs - Return stopping line along H.S. belt progressing well - some flour needed -

miners working in return stoppages along #6 belt. Rich's parallel to 110 x-out -

Checked groups of miners - not enough apt detector >>

Informed desso Gatedon

Inspector's Initials D.L. Supervisor's Initials and Date 4:45 8/8/07 Page No. 10

Date 8-7-07

7²⁴ V 22' x 370 vel.

63,085 CFM

Return stoppings helping -

Provided #7 belt to about 155 v-cut -

Alone so stopped there

Pillars shelled (bumped) practically obstructing walkways on both sides - 11 to 15 v-cut

Inspector's Initials 12/2

Supervisor's Initials and Date 9/15/07

Page No. 13

Date 8-7-07

Would describe as "fragmented bump"

vertical, not horizontal sloughing - not recent event related - coal well rock dusted!

Rib to pin spacing questionable in numerous spots -

Not now gassed -

Tapered to the roof -

Inspector's Initials 12/2

Supervisor's Initials and Date

Page No. 14

Date 8-7-07

Appears that bumping and shelling of pillars has been ongoing -

Traveling mat as affected by bad -

Mostly north & south of pillars affected - X-cuts less affected -

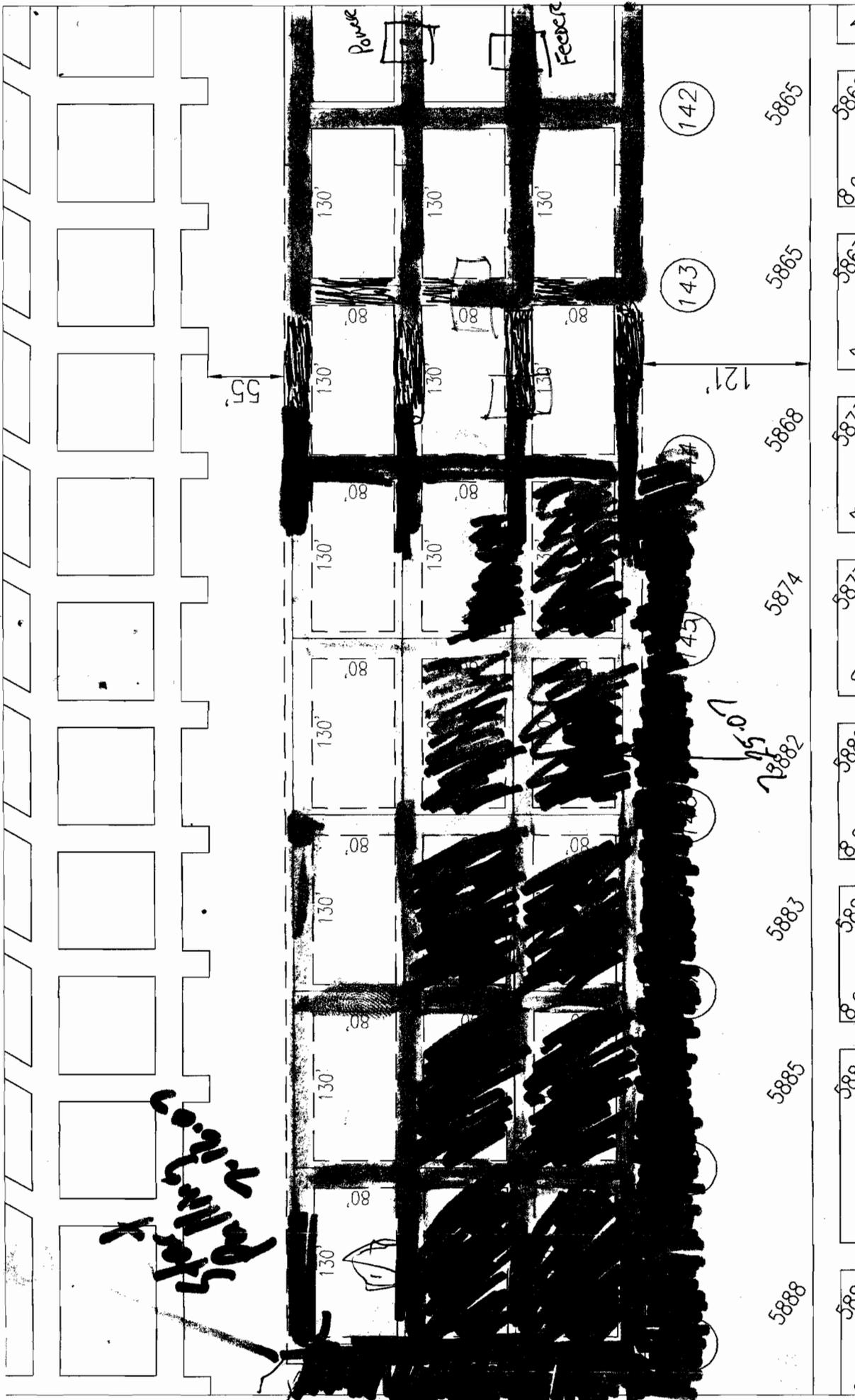
Philip Cox stated this morning that when articles were being developed, it bumped & was "heavy."

Inspector's Initials 12/2

Supervisor's Initials and Date

Page No. 15

Exhibit 124



06-26-07

MAINS WEST
Scale: 1" = 100'



Exhibit 125

Went UG ~ 5:30 pm 8/7/07

M. Gunn

J. Zelan

G. Jensen

5:50 pm Discussed Root Support

Old means No mesh

New Development Mesh panels 3' x 3'

FG 8 Bar x 5' in (1 3/8" hole), Tennant

Pillar ribs show sloughage - Repaired

Normal throughcut mini-stress

driven wet ice

Root Plan shows thick SS

immediate root of floor some

variable sh/SS below root SS

Mining Height at 7.5 - 8 ft

Two Bands in Seam

1-2" Ash band between void & coal

Rock Band at mill seam

6:00 pm Begin Walk #1 Entry

118

① Xcut 115 #1 entry
 20'-2" width cut X 94" high
 25' w slash

② Xcut 115 1-2 Xcut
 20' cut X 100" high
 25' slash

Joint N 103° W vertical
 position = 10' W of Spot 6751

Recent New Beacon Rd's slash
 begins at E west of Xcut 115

Joint N \approx ~~05~~⁰⁵° E. of spot # 116
 Sandstone IR starts west of 116

Stresses start ended on P115
 west of 117

Walker up to 118 then back to
 Et 117 to traverse across to #4 of
 old main

Picture take 1, 2, 3, 4
 #4 entry Xcut 119

Exhibit 126

Crandall Canyon

Management Meeting
Aug. 3rd, 2007

Safety:

- 0 incidents.
- 12 citations. 5 none S&S, 6 S&S 1 order. Several are being contested.
- 8 Inspector days.
- 1.5 VPID.

Production:

- The production in July was [REDACTED] tons.
- The forecasted tonnage is [REDACTED] tons. The Citrix tonnage is quite a bit lower than the forecast this time.
- That is a difference of [REDACTED] tons to the positive.
- August tonnage is [REDACTED] tons.
- Forecasted [REDACTED] tons to the negative.
- Currently at xc-142, we have pulled 7 rows of pillars. We are at the area where we have to leave three rows.
- The conditions are very good right now, we are getting a lot of good floor coal and 85%+ of recovery on the pillars. The cave is good and high and staying right with us for the most part. We will be starting the cave over again after leaving the 3 rows, this next week will be critical to get the maximum out of each pillar to start a good cave.

Down Time:

- July 30th lost 3 hours with the MRS's stuck. Had it cave around them on the final.
- Aug. 1st moved belt 285 minutes.
- Aug 2nd was down all of night shift moving belt and power. It was the move around the 3 entry area, also a lot of floor heaving that took a lot of clean up.

Costs:

- The cost per ton show us at [REDACTED] which is [REDACTED] to the good. Supply costs are showing high, they are [REDACTED] above what is budgeted. I have not seen anything out of the ordinary. This does not make any sense because we are in a retreat mode and should not be seeing the costs we do on advancement.

Projects:

- We have the contractors starting today to do the setting of the beams and rock props in the 1st South bleeder entry where it is deteriorating. We have got some of the timbers set in there, we still need to re-route some of the dewater line and 4/0 cable in the bad area.
- Trying to stay ahead of Grossley.
- 3rd North, we are getting the information on the specific equipment we need to really be efficient in here. Working with the people in the east to see what might be available within the company.

Manpower: [REDACTED] are both off on Workers Comp. [REDACTED] is on STD with open heart surgery, he is a fireboss. We have 2 people training today.

Trucks

- We have 16 trucks, 2 down today.

Crandall Canyon

Management Meeting
Aug. 7th, 2007

Safety:

- 0 incidents.
- 12 citations. 5 none S&S, 6 S&S 1 order. Several are being contested.
- 8 Inspector days.
- 1.5 VPID.

Production:

- The production in July was [REDACTED] tons.
- The forecasted tonnage is [REDACTED] tons.
- That is a difference of [REDACTED] tons to the positive. We had very little down time, conditions were very favorable and we were able to capitalize on the floor coal better than we had thought.
- August tonnage is [REDACTED] tons.
- Forecasted [REDACTED] tons to the positive.
- Currently at xc-138, we have pulled 8 rows of pillars. We are past the area where we had to leave three rows.
- The conditions have been very good, we are getting a lot of good floor coal and 85%+ of recovery on the pillars. The cave is good and high and staying right with us for the most part. We just started on the row outbv the area where the 3 rows were left, this week will be critical to get the maximum out of each pillar to start a good cave without having the weight go over the top of us.

Down Time:

- July 30th lost 3 hours with the MRS's stuck. Had it cave around them on the final.
- Aug. 1st moved belt 285 minutes.
- Aug 2nd was down all of night shift moving belt and power. It was the move around the 3 entry area, also a lot of floor heaving that took a lot of clean up.

Costs:

- The cost per ton show us at [REDACTED] which is [REDACTED] to the good. Supply costs are showing high, they are [REDACTED] above what is budgeted. I have not seen anything out of the ordinary. This does not make any sense because we are in a retreat mode and should not be seeing the costs we do on advancement.

001-5
1961

Projects:

- We have the contractors starting today to do the setting of the beams and rock props in the 1st South bleeder entry where it is deteriorating. We have got some of the timbers set in there, we still need to re-route some of the dewater line and 4/0 cable in the bad area.
- Trying to stay ahead of Grossley.

Priorities:

- 3rd North section is one of our top priorities, it is critical we have the equipment in there that will allow us to maintain our current tonnage even though it is lower coal than in the west. We also need to be ready in there far before the projections show us in there.
- We will set up a super section with 2 miners, 4 cars and 2 bolters. While we will be needing several pieces of lower equipment, it is important to note that we do have a lot of other equipment that will be used as cores or sold, to significantly offset the costs
- Equipment status/pricing for 3rd North.
 1. We have the miners needed, although they both need some moderate work before being put in service.
 2. We need 2 Roof Ranger bolters that cost 300k to 340k each. We currently have 2 cat mounted bolters that will be sold or traded that are valued at 280k each.
 3. We will need 4 of the 10 sc 32-abhe-5 shuttle cars. They are 280 k each, again we have equipment to trade to offset some cost.
 4. We have a new feeder already in this years budget that will be built to accommodate 55 inches of coal.
 5. We will need 2 lower personnel carriers at 78k each.
 6. We have the scoop that was recently rebuilt.
 7. The MRS units are done and ready to be shipped from Delta Colorado.

Manpower: [REDACTED] are both off on Workers Comp. [REDACTED] is on STD with open heart surgery, he is a fireboss.

Trucks

- We have 16 trucks, 2 down today.

Exhibit 127

PRE-SHIFT SECTIONS

DATE OF EXAMINATION 8/3/07
 TIME OF EXAMINATION START 330 AM PM
 EXAM. CALLED OUT — YES NO
 CALLED OUT BY _____

SECTION/AREA Main West
 END 430 AM PM
 CALL OUT TIME _____ AM/PM
 REPORT RECEIVED BY _____

SIGNATURE _____

LOCATIONS	O ₂	CH ₄ %	CO	CFM/AIR DIRECTION	V or H	HAZARD CONDITIONS	ACTION TAKEN
LOX/INTAKE	20.8	0%	0	50/68		none ob	
HEADGATE #10							
TAILGATE #126							
BELTLINE							
RETURN	20.8	0%	0			diagonal stopping needs repaired (bounce)	SENT MEN TO REPAIR DONE
#1 ENTRY							
#2 ENTRY							
#3 ENRTY							
#4 ENTRY							
#5 ENTRY							
#6 ENTRY							
transformer	20.8	0%	0			none ob	
Pillar line	20.8	0%	0			none ob	

V = VIOLATION
 H = HAZARD

ON-SHIFT HAZARDS IDENTIFIED

LOCATIONS	HAZARDS	ACTION

PRE-SHIFT REMARKS areas reasonably safe, need visible
 timber along pillar mining on.

PRE-SHIFT/MINE EXAMINER [Signature] CERT. # 9674
 COUNTER SIGNATURE [Signature] CERT. # 7485
 SECTION SUPERVISOR _____

INITIALS (NOT REQUIRED)

2MSHA02829

Exhibit 128

Closeout conference with MSHA at the Crandall Canyon Mine July 2, 2007

Those in attendance were Bodee Allred, and Gary Peacock from the Crandall mine and Jim Martin from MSHA.

Mr. Martin had the following comments:

1. Permissibility: All the cables looked good and the electrical components, felt like the crews do a good job of keeping the equipment clean.
2. Shop: the area is messy at times but, when the projects are completed we do a good job of the clean up.
3. Escape ways: Well marked, clean, dusted and easy to travel.
4. Seals: looked good, well maintained, and checked.
5. Pre shifters: doing a good job, they report problems and take care of them quickly.
6. Rock Dust: Mine wide we are doing a good job, the Main West section still needs more dust applied.
7. Fire Protection: all the deluge systems check out good, all of the fire hydrants were maintained and set at the right pressures; all extinguishers were up to snuff and were obvious they were being check on a regular basis. All fire protection was in place.
8. Belts: looked good with more emphasis on dust.
9. Main West Section: Need to continue to keep an eye on the ribs; Mr. Martin also mentioned that the Miner operators in the section do an excellent job of positioning and parameters.
10. Safety: Mr. Martin express that he felt like the safety department was stretched to thin and employees here wear lots of different hats.

Mr. Martin closed with saying that he thinks we are doing a good job and would like to see us continue in our efforts with overall house keeping.

I read these comments back to Mr. Martin and then asked the question if he feels that this is a mine that deserves to be on the D series he had no comment on the question but felt like we will eventually get of the D series.

Exhibit 129

DATE 07-18-2007

Pre-inspection conference

Gale Anderson

Shift Foreman

Lyle

Christensen

Sup. of Maintenance

Boedel

Allred

Safe Director

discussions:

condition which were assessed

gent operator notes on conditions cited along

Belt line

mine maps

electrical

Escape way

vent

Roof control

condition of ribs

unsupported top

haulage way

(Diesel EQ)

road ways

water holes/mud holes

sections

wood keepings

acc. of corner

garage

ventilation

stoppings

Belt line

RK dust

acc. of comb.

INSP. INITIAL BS SUPV. D&I N 7/31/07 PAGE NO. 2

Exhibit 130

To: Laine Adair
Re: April Month end Report
From: Jim Poulson

Date 5/1/06

During the month of April I attended the Mine Fire and Suppression system meeting in Grand Junction Colorado. Discussion was held about the fire suppression systems in use today and the expectations of the agency. While at the meeting we had a chance to talk with Bill Knepp about the use of Hydrogen Fluoride filters in the airstream helmets and the effects of Hydrogen Sulfide on miners.

All 3 operations discovered that previous methods at all operations of providing fire protection at fire drops were not no longer accepted by the agency. All 3 operations have since ordered the Senior Conflow pressure reducing valves for fire drops. They will be installed and pressures set as fast as they arrive at each location.

During April we conducted the tours for all the prospective buyers. A follow-up tour was also held with Consol Safety Personnel.

Metatarsal boots we implemented at all operations and we are currently looking into the use of metacarpal gloves.

Meeting was held at the Price field office with Ted Farmer and Bill Taylor in relation to the bounces and the reporting of such as referred to Part 50.2 (h) and the definition of accident as it occurs on the longwall face. A consensus of the group was if the bounce occurs and it basically, does not cause harm to personnel then the reporting of the event does not need to be done. Discussion was also held on the use of the CSE and the leather pouches used at all operations. The final outcome is still pending.

**Redacted:
Not Responsive**

**Redacted:
Not Responsive**

6 employees were contacted that are on medical leave and updates as to their condition and return to the mines was communicated to Cindy.

15 different Emergency Temporary Standard plans were submitted to Denver. (3 for each minesite) Questions regarding plans are being answered on an ongoing basis.

**Redacted:
Not Responsive**

Exhibit 131

Exhibit 132

From: Knepp, William P - MSHA
Sent: Tuesday, August 28, 2007 11:42 AM
To: Davis, Allyn C - MSHA
Cc: Reitze, William P - MSHA; Owens, Billy D - MSHA
Subject: Early Look at Issues

1. Roof control plan: both the development and retreat of the north and south barriers.

The Agapito Report [dated July 20, 2006] recommended a pillar size of 60 feet by 72 feet as measured from rib to rib [not centers] for development and pillaring of the North Barrier block. The amendment for development, approved November 21, 2006, included pillars on centers of 80 feet by 90 feet. With entry and crosscut widths mined 18 feet wide, the effective pillar size would be 62 feet by 72 feet, which follows the Agapito Report recommendations. The Agapito report also recommended skipping pillars if conditions dictated this was the prudent mining practice.

They did not show the change in pillar size, from north to the south and didn't reflect much of the Agapito recommendations, rather just relied on standard figures in the old base plan.

The amendment to develop the South Barrier was approved March 8, 2007. The same Agapito recommendations from the 2006-reports were incorporated into the approval. The week of March 14th the Roof Control Group was notified that ground conditions had resulted in the section skipping pillars and the area was bouncing, therefore the section was moving to the South Barrier. They requested that the pillaring plan be approved soon so they could retreat if conditions dictated that development stop. The mine was informed to contact the district when development reached a point where an adequate evaluation of conditions could be conducted. The District received the April 18, 2007-Agapito Report on May 15, 2007. The Roof Control Supervisor visited the mine on May 22, 2007. The Agapito report recommended pillars for the South Barrier be on centers of 80 feet by 129 feet with entry widths of 17 feet. The approved amendment had centers of 80 feet by 130 feet. The Agapito report recommended that no pillars be skipped during retreat mining. The Roof Control Supervisor had the mine skip three rows of pillars from crosscuts 142 to 139 to protect the bleeder entry. The Agapito Report also recommended that a cut be taken out of the barrier pillar to transfer stress to the previously mined gob and away from the outby pillars. This recommendation was included in the approval of the amendment.

No mention of floor coal, which was being taken.

Mining of the floor coal was not approved and was never

discussed as part of the pillaring plan.

2. Vent Plan: We approved sealing of the 1 South area in 2006, but it was never sealed.

The 1st South and South Mains areas were never sealed, as the mine wanted to use this area as the flow through bleeder system when final recovery of the mains was started. They were intending to retreat mine outby the South Mains after completion of the North and South Barriers of West Mains.

3. Approved pillar mining against seals.

Since this area will become part of the gob, and there are means to monitor the gob through bleeder evaluation points, and since there has been a history of no methane at this location, there was no issue.

4. Not remotely evaluating seals.

[REDACTED]

5. ineffective bleeder evaluation.

[REDACTED]

6. Vent plan approval date of 2006, any review since?

There have been reviews performed by the field office on each of the E01s that have been done.

There has not been a Ventilation Group review performed since July of 2006. The workload of the Ventilation Group has grown by 2-3 times in the last year and a half due to the seal issues multiple times, MEE regulations twice, ERPs and the moving targets associated with completing these, the new Seal ETS and associated protocols, and the continuing ventilation plan amendments and day-to-day issues and questions that continue. There were no additional resources provided to assist in accomplishing all of the above and continue with the ventilation plan reviews and other things. Quite clearly, the priority from HQ has been the MEE plans and ERP plans, and seal issues and with no additional resources provided, priorities had to be determined.

7. Vent and RC plans approved less than the Agapito report.

The approved roof control plan amendments followed the Agapito Report recommendations, except for the recommendation to not skip pillars in the South Barrier. The Agapito Report evaluated ground control conditions only and did not evaluate the requirements for ventilation, bleeder systems, and the safety of miners and inspectors conducting required examinations and inspections.

In addition to the seven questions here is one other ---- The reporting of the bounce will become an issue. The bounce was not reported to the national call center or to anyone on the day it occurred, Lane Adair claims he called the following day on Monday morning and discussed roof conditions with Billy Owens, the day after the bounce occurred. Owens did not recall this conversation as a bounce discussion or of it being to report a reportable accident, rather as a general ground conditions and moving to the south barrier Reitze listened to a voice mail on Tuesday from March 13th that in general talked about moving the evaluation point because of a bounce and ground conditions. This also was not taken as reporting a reportable accident nor did the operator give such an impression. There were phone conversations that followed between Reitze and the operator and

the request denied. The operator then decided to immediately seal the area however did not have an approved seal. Emails and phone conversations then followed among Reitze, Fredland, and Allyn, attempting to expedite some type of seal approval. The word bounce did appear in at least one email, but in all cases was in the context of being a part of overall ground conditions and not significant enough or ever indicated to meet the criteria as a reportable accident. When the subject came up after the accident I informed HQ informed HQ after talking to Owens, Allyn, Cornett, Bill Taylor and Bill Denning that we were not aware of any bounce. Later I came across the part in the third Agapito report that mentioned a bounce and Bill Reitze informed me about his discussions when I started to probe this issue. Also the email to Fredland appeared related to the seal issue an attempting to get an approval.

Exhibit 133

From: Vasten, Shane
Sent: Friday, March 02, 2007 12:34 PM
To: Hurst, Tom
Subject: Answers

Tom,

Sorry I had left for the day before getting your message. Here is the short version for now. Get ahold of me later if you need more info. I will try to answer your questions the best I can:

1- Yes the maps have been updated. I am guessing you have found that out by now.

**Redacted:
Not Responsive**

3- The average height of 10' actually came from one of the shift foreman and one of the section bosses at Crandall. They both said they are taking quite a bit of bottom coal when they are retreating. I forgot to have Gary confirm that yesterday but if either one of us talked to him about it, I am guessing he would as well be in that neighborhood.

Again, if you would like to discuss this further, give a ring at Tower when you get this.

Shane

Exhibit 134

Pulling 4 to 5 feet
of bottom coal
only 139 towards 141

Stopping line stands
from 148 out of between
3 & 4 entry, man doors but
no equipment doors

Supply car was thrown
 $\frac{1}{4}$ to $\frac{1}{2}$ out in entry -
would have been in the
rib line

8-18 1:30 meeting

Gale:

Were taking bottom
only ~~140~~¹⁴⁰ in #1 entry

Thinks from production
that they got started
taking lifts out of
banier

Dale left ~ 10:00 pm

MRS 2 in #1 entry
2 in #2 entry

Exhibit 135

Crandall Canyon

Management Meeting
Aug. 3rd, 2007

Safety:

- 0 incidents.
- 12 citations. 5 none S&S, 6 S&S 1 order. Several are being contested.
- 8 Inspector days.
- 1.5 VPID.

Production:

- The production in July was [REDACTED] tons.
- The forecasted tonnage is [REDACTED] tons. The Citrix tonnage is quite a bit lower than the forecast this time.
- That is a difference of [REDACTED] tons to the positive.
- August tonnage is [REDACTED] tons.
- Forecasted [REDACTED] tons to the negative.
- Currently at xc-142, we have pulled 7 rows of pillars. We are at the area where we have to leave three rows.
- The conditions are very good right now, we are getting a lot of good floor coal and 85%+ of recovery on the pillars. The cave is good and high and staying right with us for the most part. We will be starting the cave over again after leaving the 3 rows, this next week will be critical to get the maximum out of each pillar to start a good cave.

Down Time:

- July 30th lost 3 hours with the MRS's stuck. Had it cave around them on the final.
- Aug. 1st moved belt 285 minutes.
- Aug 2nd was down all of night shift moving belt and power. It was the move around the 3 entry area, also a lot of floor heaving that took a lot of clean up.

Costs:

- The cost per ton show us at [REDACTED] which is [REDACTED] to the good. Supply costs are showing high, they are [REDACTED] above what is budgeted. I have not seen anything out of the ordinary. This does not make any sense because we are in a retreat mode and should not be seeing the costs we do on advancement.

Projects:

- We have the contractors starting today to do the setting of the beams and rock props in the 1st South bleeder entry where it is deteriorating. We have got some of the timbers set in there, we still need to re-route some of the dewater line and 4/0 cable in the bad area.
- Trying to stay ahead of Grossley.
- 3rd North, we are getting the information on the specific equipment we need to really be efficient in here. Working with the people in the east to see what might be available within the company.

Manpower: [REDACTED] are both off on Workers Comp. [REDACTED] is on STD with open heart surgery, he is a fireboss. We have 2 people training today.

Trucks

- We have 16 trucks, 2 down today.

Exhibit 136

Based on leaving Floor coal,
Bolting mostly rock roof, used
#8 Bar, 6 bolts across, F6, w/
wire mesh. No adverse
conditions were encountered the
Bumping noted in the north end
deep cover did not occur.
Management had no indication
of pending ~~any~~ adverse conditions

7. Pillar extraction occurred as
projected.

However, in area where pillars
were to remain near Sump lifts
were taken out at the South Basin
separation Panel 13 of the pillar
section. Only limited mining
No left lifts were taken out
the intersections where the MRS
was pushed against the breaker row.

8. Bump occurred after ≈ 2 lifts
cut at the new pillar line at Xcut 139.

Exhibit 137

8/6/07 LAINE ADAIR - 120 XC FAB
Need to go 2600 feet to XC 139
MINE RESCUE teams go as far as possible

435-687-5420

- 8/6/07 MSHA HDQs - Strickland, Stukler, FRIEND, Bentley
- Need to check on Breathable air [status]
 - Need to check on 2 SCPS per person
 - BACKGROUND on who was in mine and what they were doing
 - Battle samples at fan
 - SCAN vent + root control plans to Hdqs
 - Knepp update Hdq hourly

202-683-9679

BARRY Grosley - GARY Christensen - RANDY Gundersen

10:10 AM }
TAYLOR }

to XC 126 16-17% O₂

42 ppm CO

Belt entry water line broken compressed air

Deer Creek - 48 hrs to drill on mountain
REI may do horizontal drilling

HARPER

ELECTRICIAN TIM HARPER @ XC 35 3RD NORTH talked to section

C. MINER was MINER was mining into barrier @
XC @ 139 2:00 AM

JAMISON WARD was on section → @ 2:50 AM @
@ XC 107

11:10 AM Bill TAYLOR - BREACH 2 seals MAIN WEST + Explore
with Mine Rescue Teams

SENDING PEDS

Exhibit 138

8/6/2007

7:32 AM Amy Louviere - phone number:

This phone number was given to Hubert Wilson and forwarded to Jim Poulsen.

7:40 AM The Emery County Sheriff's office has established security at the entrance to the mine road. The operator has established procedures to meet w. O. families of the miners. All information provided to the press, will be reviewed by Amy Louviere or Dick Fillpot.

7:40 AM Met with Tim Harper, Jameson Ward, and Brian Pitt. Tim Harper (Electrician/mechanic) normally worked from 5 AM to 5 PM. Tim stated that at 2 AM on 8/6/07 he was at the mouth of 3rd North (Xcut 35). He finished his work in the area but couldn't leave because his pickup would not start. He called Jameson Ward (section Electrician) in the main West Pillar Section and asked him for a ride. Jameson stated that he had been setting a breaker row and the crew was mining off the #1 entry at Xcut 139 into the barrier. Jameson left the section and traveled outby to Xcut 107 at about 2:50 AM. Jameson had last communicated with Don Erickson (step up section foreman) at about 2:45 AM. Jameson stated that something happened at about 2:50 AM that affected ventilation and he could hardly see. Jameson picked up Tim Harper and they traveled inby to Xcut 112. At Xcut 112 they donned their SCBA and proceeded inby on foot to crosscut 120 where their travel was blocked.

Brian Pitt (outby fireboss) met Tim Jameson at Xcut 120. Brian donned a firefighter lungide apparatus. Tim Curtis & Brent Hardy brought in firefighter lungide apparatus & proceeded inby to Xcut 124. Tim Curtis stated that the PED system was working because he received a PED about 3:15 AM while pre-shifting the #1 belt.

Exhibit 139

AR
10:40

Utah American Team

At 123

4, 3, 2 are blocked & X-cut

Equipment/diesel being sent to help mine/load
air traveling in by F.A.B = 20%

Drill rig being readied - 1,500 ft. cover

MMU was/is about ⁴ ~~3~~ miles in by from portal

AR
11:05

- Reported from Wayne Adair - roof did not fail,
appears that only the pillars blew out.

Working w/ Energy West for borehole arrangements. Also,
compressors.

Steele

Salt Lake City Tribune web site - Top Billing

11:55 AM
AL

Rescue Teams
At X cut 126
Impassable from there in by

Bill Taylor indicates they were mining the barrier block
towards the L.W panel (sense k) ^(stopping)

working to pressurize a water line to supply air

will take 48 hours to set up surface drill rig
also considering a horizontal hole

NOON

Tim Baker called Kevin for info.