Virginia Department of Mines, Minerals & Energy
Division of Mines

Accident Investigation Report
Underground Coal Mine

Fall of Roof Material
Fatality Investigation Report
July 25, 2008

Consolidation Coal Company
Buchanan Mine No. 1
Mine Index No. 11912AA
Buchanan County, Virginia

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Consolidation Coal Company
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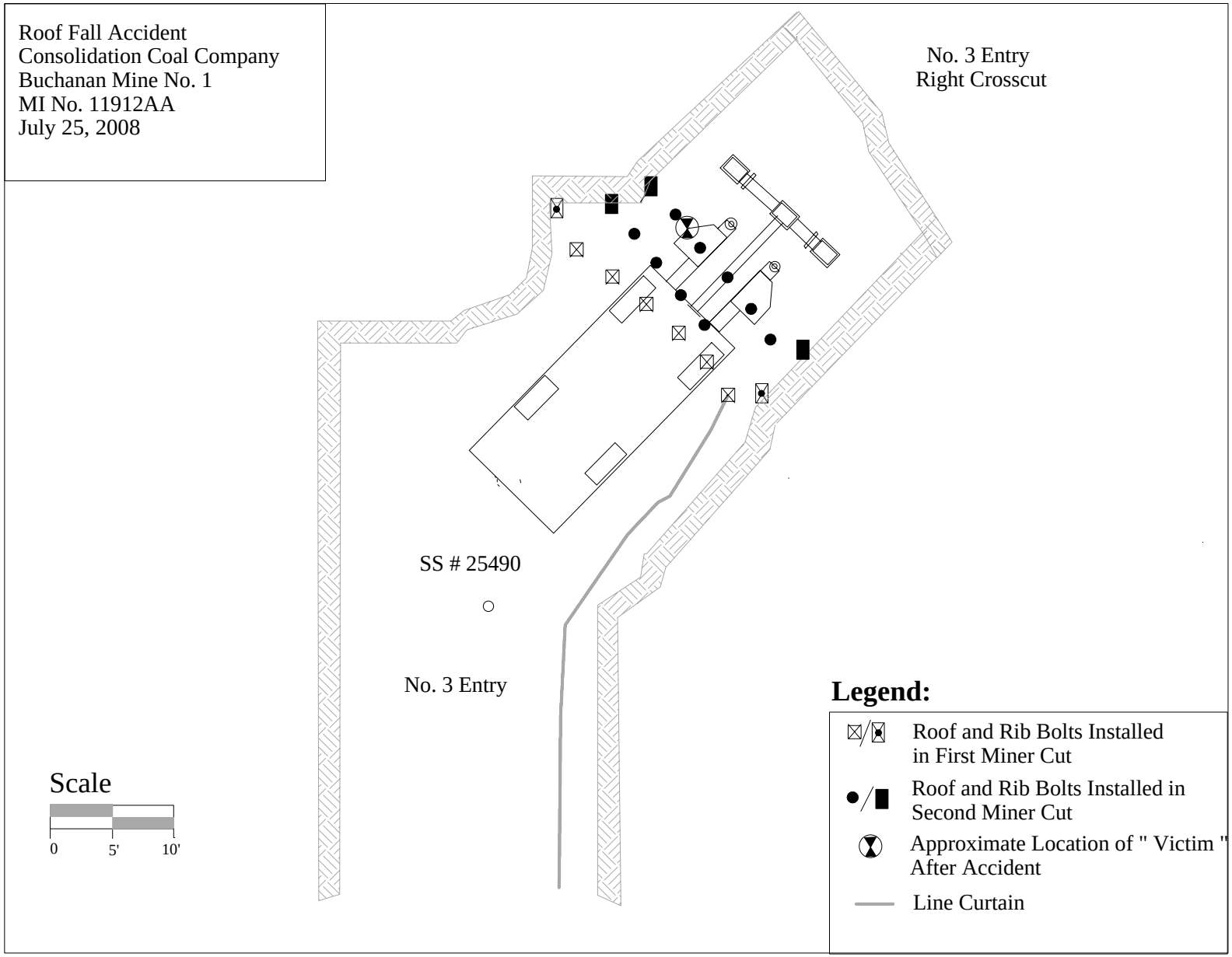

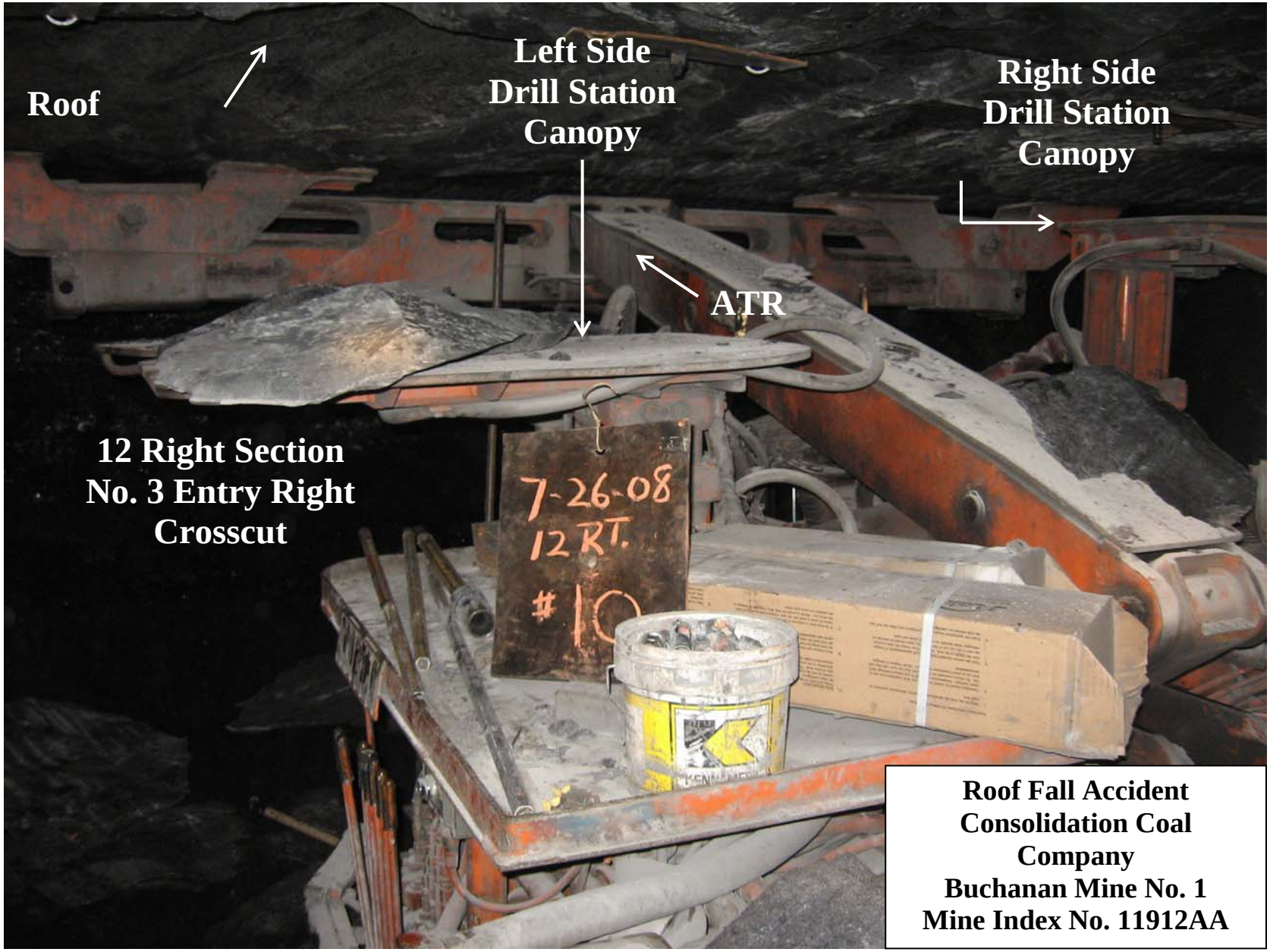

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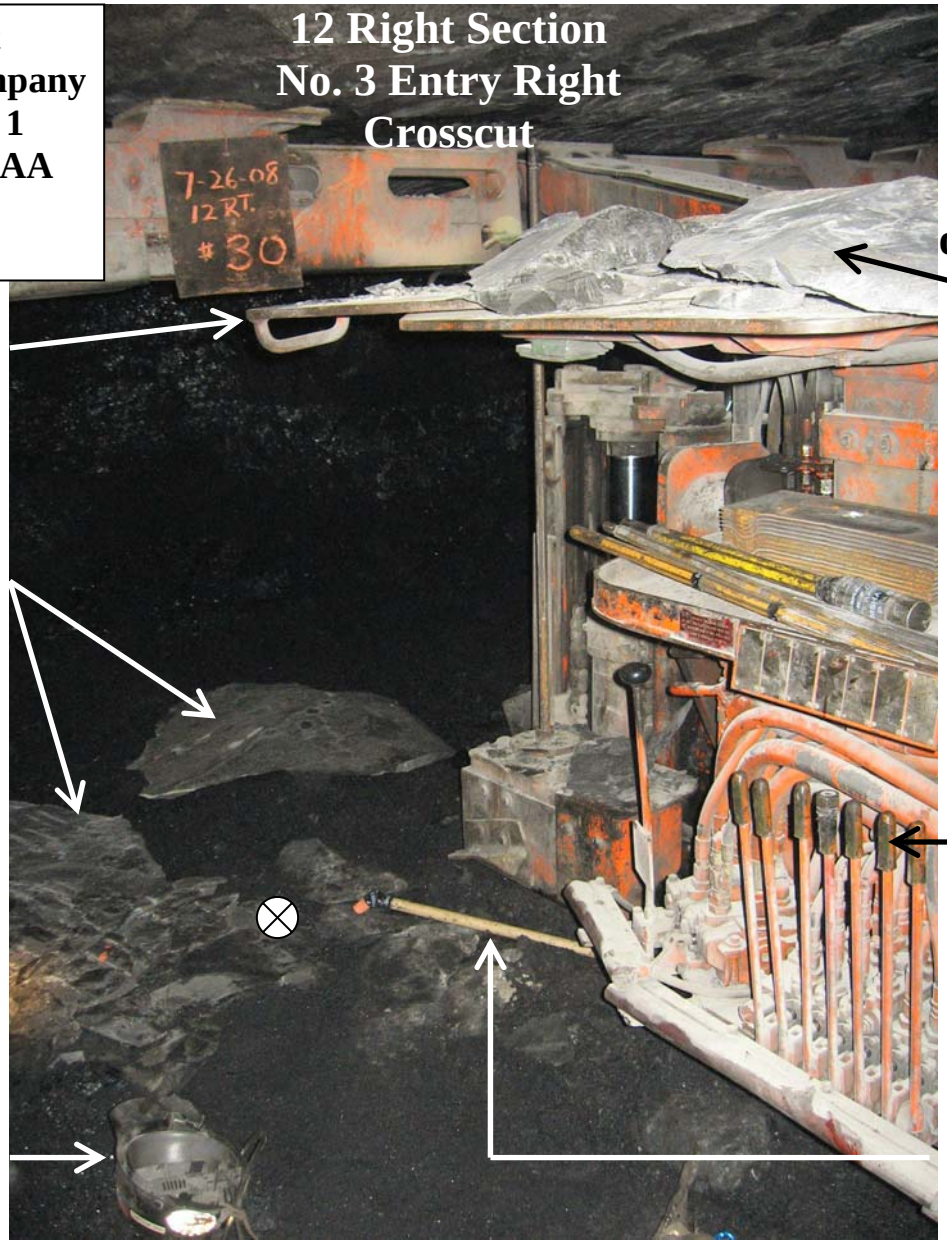

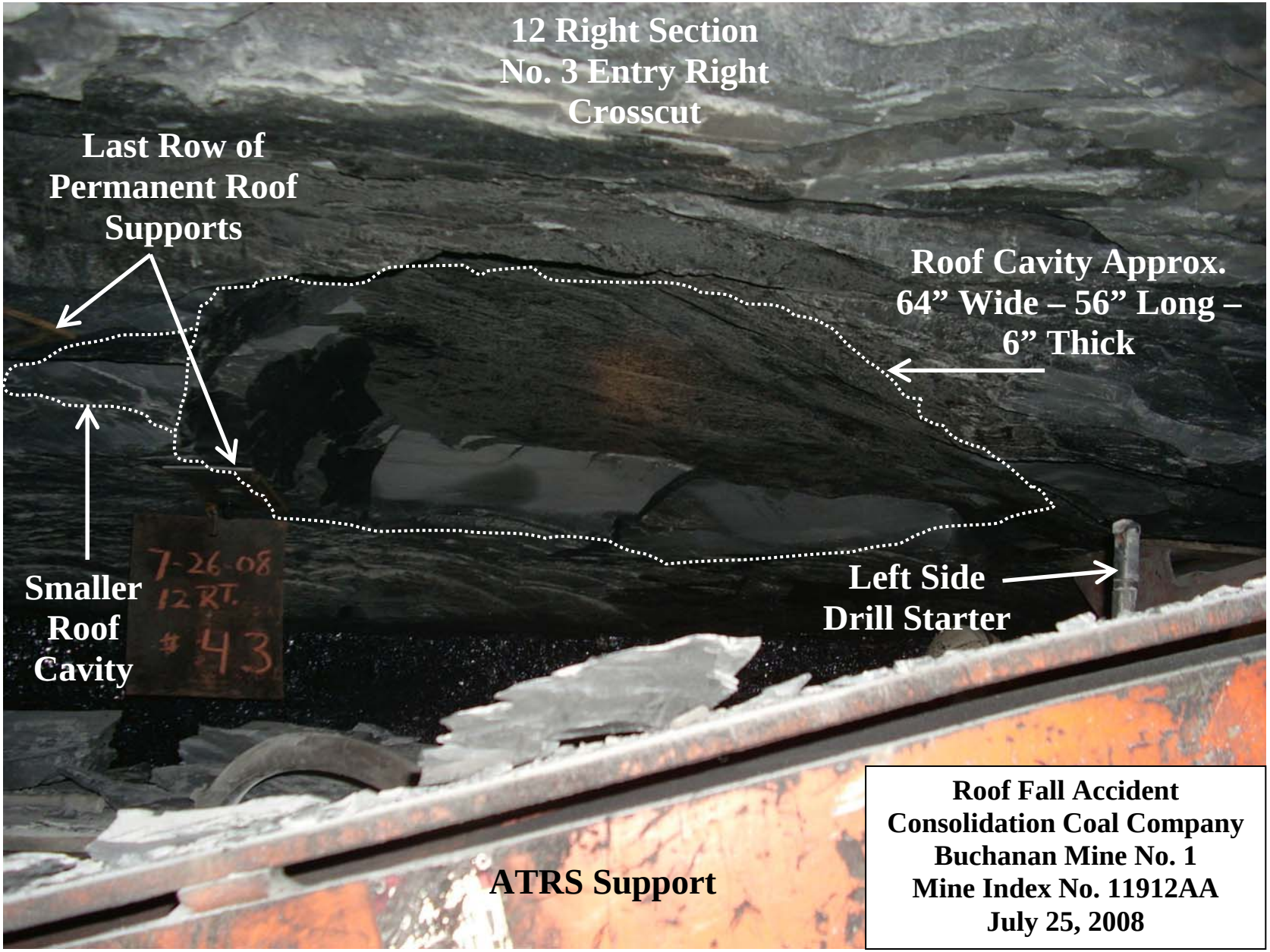

Roof Fall Accident
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12 Right Section
No. 3 Entry Right
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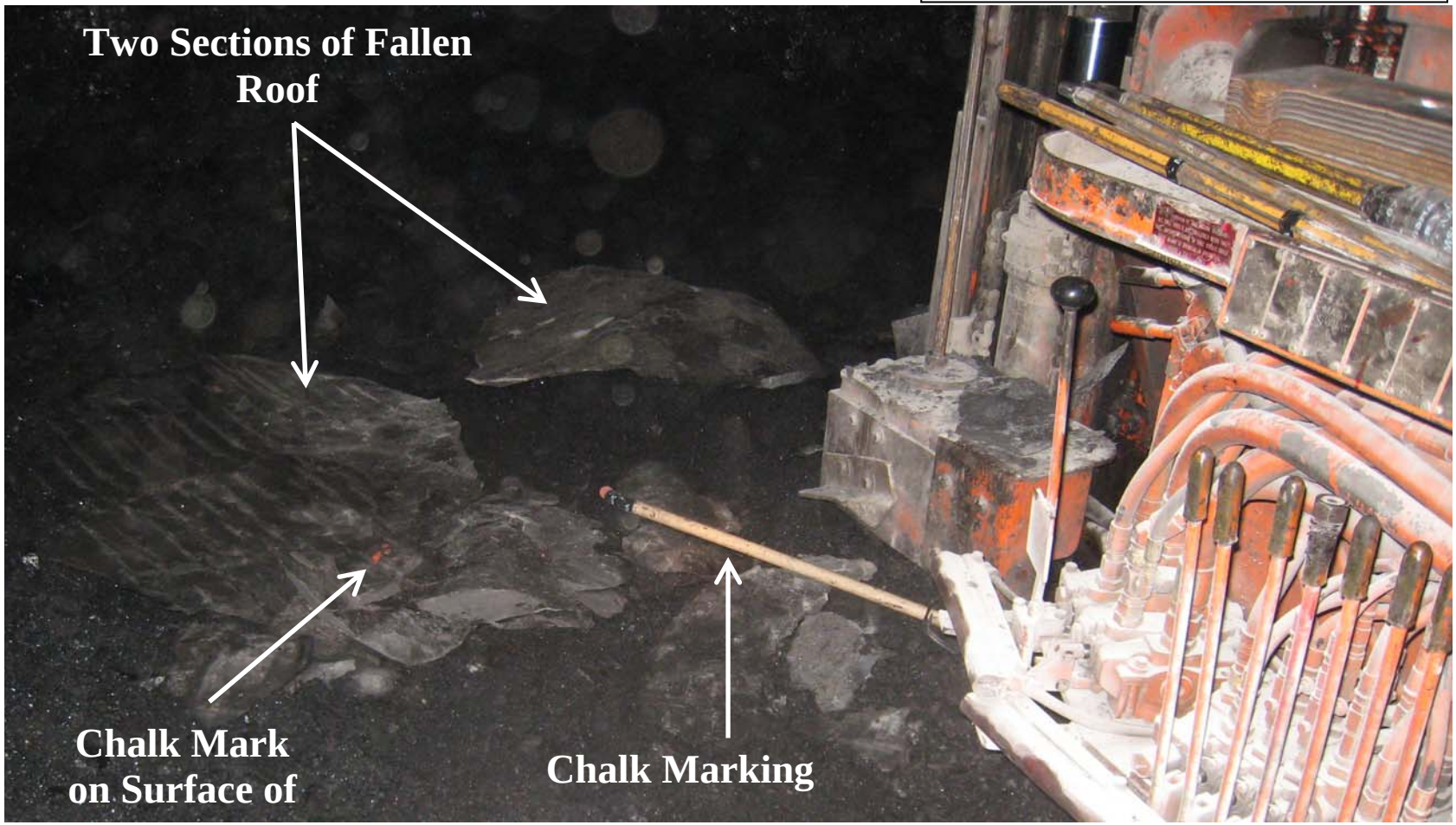

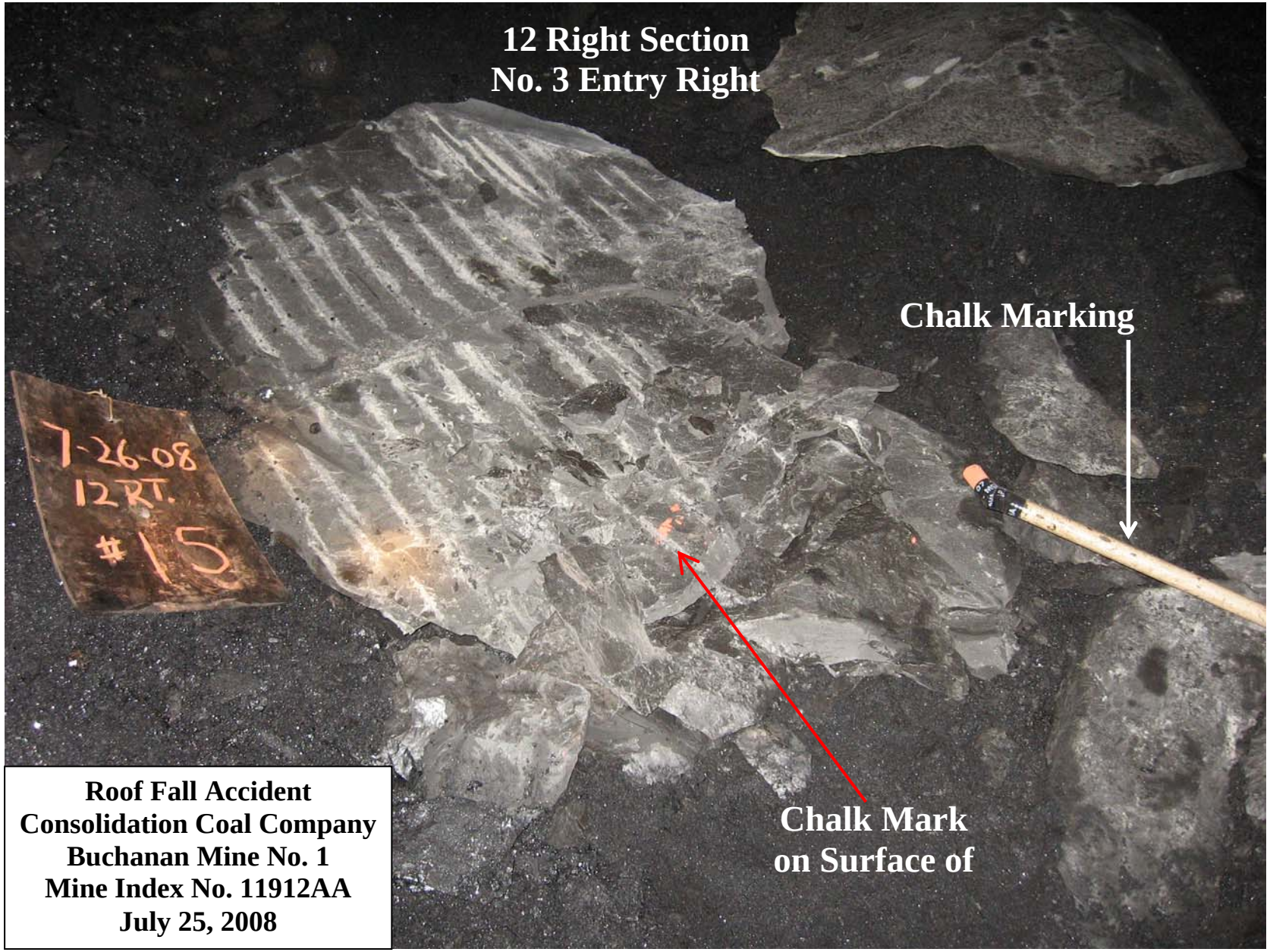

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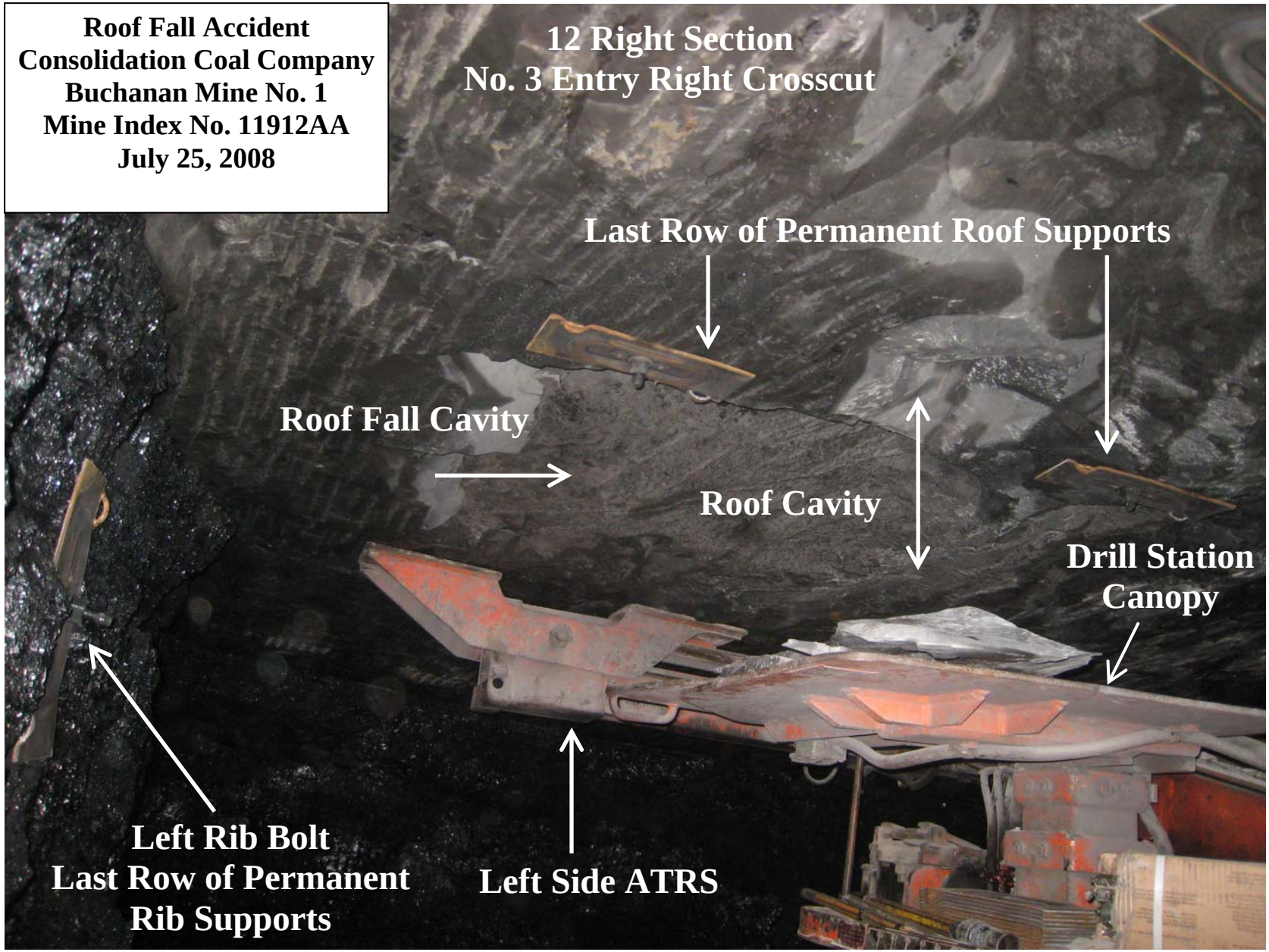
Roof Fall Accident
Consolidation Coal Company
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July 25, 2008
12 Right Section
No. 3 Entry Right Crosscut
Last Row of Permanent Roof Supports
Roof Fall Cavity
Roof Cavity
Drill Station
Canopy
Left Rib Bolt
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Rib Supports
Left Side ATRS

FALL OF ROOF MATERIAL
FATALITY INVESTIGATION REPORT
CONSOLIDATION COAL COMPANY
BUCHANAN MINE NO.1

INTRODUCTION

On July 25, 2008, at approximately 1:05 p.m., an underground fall of roof material accident occurred at Consolidation Coal Company, Buchanan Mine No. 1, Mine Index No. 11912AA. Mr. Todd Meadows and Mr. Rocky Meadows are brothers and were operators of the roof bolting machine located on the right side of the 12 Right Section. Mr. Todd Meadows, roof bolting machine operator, received serious injuries as a result of a fall of roof material accident while installing permanent roof supports in the No. 3 entry right crosscut on the 12 Right Section. Mr. Meadows was positioned in the area of the Automated Temporary Roof Support System (ATRS), near the left drill station canopy, on the tram operator side of the roof bolting machine, when the accident occurred. Emergency medical services personnel affiliated with Dismal River Rescue Squad, Inc., transported Mr. Meadows to Clinch Valley Medical Center, Richlands, Virginia, where he was pronounced dead. The victim, age 44, had approximately 22 years total mining experience with seven years, six months, employment at Consolidation Coal Company, Buchanan Mine No. 1. The Department of Mines, Minerals and Energy's Division of Mines was notified of the accident at 1:20 p.m. on July 25, 2008, and a joint investigation with the Federal Mine Safety and Health Administration was initiated the same day. A regular inspection of this mine was in progress and was initiated on July 01, 2008.

COMMENTARY

The Consolidation Coal Company, Buchanan Mine No. 1, is a large shaft mine operation with two surface portal shafts located at Page, along State Route 632, and at Contrary, along State Route 680, near Oakwood, Virginia, in Buchanan County. The mine has three longwall development continuous miner sections and one longwall section that produce approximately 14,000 tons of clean coal daily from the Pocahontas No. 3 coal seam. The longwall panels are developed using continuous miner units advancing four entries. The 12 Right Section produces coal using two continuous mining machines, two roof bolting machines, battery operated coal haulers and shuttle car haulage equipment. Coal production is conducted on the left and right side of the sections simultaneously and/or separately. The mine utilizes various coal haulage systems consisting of underground belt conveyor systems, two underground coal storage facilities and a production skip hoist. Mine personnel work rotating schedules and are utilized to operate three coal production shifts per day, seven days per week. The mine operation employs 536 mine personnel.

On Friday, July 25, 2008, the 12 Right production crew, supervised by Mr. Curtis Gibson, entered the mine at the Contrary Portal at approximately 8:00 a.m., following a

safety meeting held on the surface, and traveled to the 12 Right Section. The 12 Right crew arrived on the section at approximately 8:45 a.m. The 12 Right Section is being developed right off the 3 East Mains, approximately 20,250 feet from the Contrary Portal shaft bottom. The 12 Right Section is advancing four entries developed on 150 feet centers and the section had advanced to crosscut No. 30.

After arriving on the section, the 12 Right crew gathered in the No. 2 entry, at the section supply storage area (dinner area), located adjacent to the section loading point, approximately two crosscuts outby the face, and waited for Mr. Gibson to conduct an examination of the section working places, which is a standard practice. Mr. Gibson examined the four working places on the section and returned to the dinner area where he instructed Mr. Rick Koger, section repairman, to energize electrical power on the face equipment. A brief safety talk was conducted with the crew and a general description of the production cycle was discussed. The production crew included a continuous miner operator and two roof bolting machine operators working on the left and right sides of the section, respectively. The crew proceeded to their assigned jobs to begin coal production, as directed by Mr. Gibson.

Initial production on the left side of the section included mining the connecting crosscut in the No. 2 entry left crosscut to complete the development of the crosscut cut through, which connected the No. 1 entry and No. 2 entry working places. Production on the right side of the section was limited to completing the right crosscut started by the third shift production crew to begin development of the No. 3 entry right crosscut. The development of the No. 4 entry working place was discontinued until the development of the No. 3 entry right crosscut could be completed.

Shortly after production work began on the 12 Right Section, two Mine Safety and Health Administration (MSHA) mine inspectors arrived and Mr. Gibson accompanied the inspectors as they examined the working places on the section. After the working place examinations were completed, the MSHA inspectors departed the section and Mr. Gibson resumed his normal supervisory activities.

While production was being performed on the left side of the section, Mr. Bill Brown, fill-in, right side continuous mining machine operator, positioned the right side mining machine in the No. 3 entry right crosscut. Mr. Brown's normal assigned job was a faceman and he regularly worked on various sections as a roof bolter operator. The preceding third shift had taken a partial cut from the No. 3 entry right crosscut. The partial cut was completed and the continuous mining machine was moved from the No. 3 entry right crosscut and positioned in the No. 3 entry outby the last line of open crosscuts. Mr. Todd Meadows and his brother, Rocky Meadows, roof bolting machine operators, moved the right side, Fletcher dual boom, roof bolting machine from the outby No. 3 entry left crosscut, referred to as the big block, to the No. 3 entry right crosscut. The right side, roof bolting machine was positioned for installing permanent roof supports in the No. 3 entry right crosscut. Mr. Brown assisted with roof bolting operations during this time. The roof bolting operations were completed in the No. 3 entry right crosscut and the roof bolting machine was moved back to the big block crosscut.

The battery scoop, operated by Mr. William Rasnake, was brought to the No. 3 entry right crosscut and the crosscut was cleaned, rockdusted and set up for the next mining cycle, with assistance from Todd, Rocky and Mr. Brown. Mr. Brown moved the continuous mining machine back to the No. 3 entry right crosscut and prepared the miner to mine the second cut from the crosscut. Mining operations had started on the left side of the section and Mr. Brown departed to have dinner.

The No. 2 entry left crosscut on the left side of the section had cut through connecting the No. 1 and No. 2 entries and then the mining machine was positioned in the No. 2 entry to mine the off-set face, commonly referred to as the pie cut. The crew began work to remove the line curtain and installation material from the No. 2 entry and to clean this area, as supervised by Mr. Gibson.

At this time, mining operations were ready to resume on the right side of the section. Mr. Brown asked Rocky to assist him with mining the No. 3 entry right crosscut because the first cut, which had been started by the previous third shift, had been mined off the projected centers. According to Mr. Brown, Rocky was more experienced with operating the continuous mining machine during such conditions. Rocky operated the mining machine and completed the right side of the cut and then prepared to depart the working place to eat dinner. Before leaving, Rocky and Mr. Brown talked briefly about roof conditions in the miner cut being made in the No. 3 entry right crosscut, with both personnel concurring that the roof looked good, was smooth and that no loose draw rock had fallen during the mining operation.

Mr. Brown resumed mining operations and completed the left side of the No. 3 entry right crosscut and then moved the mining machine out of the working place. Mr. Brown positioned the miner back at its former location, in the No. 3 entry. At this time, mining operations resumed on the left side of the section. Mr. Brown had observed a hydraulic oil hose leak on the mining machine while mining the No. 3 entry right crosscut and he thought that a hydraulic hose may have ruptured on the machine's conveyor boom circuit. Mr. Brown contacted Mr. Koger, section repairman, and requested his assistance in helping him repair the leaking hydraulic hose.

After the continuous mining machine was moved outby the last open crosscut in the No. 3 entry, Todd and Rocky moved the roof bolting machine from the big block to the miner cut just completed by Mr. Brown and began roof bolting operations in the No. 3 entry right crosscut. Meanwhile, Mr. Koger and Mr. Brown tightened a hydraulic hose fitting on the conveyor boom circuit to repair the oil leak on the mining machine and then Mr. Brown checked the condition of the ripper head cutter bits. Mr. Brown then got a shovel and began shoveling coal from along the ribs in the No. 3 entry working place. As he was returning to the mining machine, Mr. Gibson arrived at his location. Mr. Gibson had been performing routine foreman work on the left side of the section. Mr. Brown continued servicing the mining machine and checking the condition of the water spray system. The continuous mining machine was located in the No. 3 entry, approximately 170 feet outby the No. 3 entry right crosscut (where the accident occurred).

While roof bolting operations were being performed in the No. 3 entry right crosscut, Todd was operating the operator side (left side) drill station and Rocky was operating the right side drill station, as normal. Todd and Rocky installed two rows of roof and rib bolts and then advanced the bolting machine forward to begin installing the third row of roof and rib supports. The left side and right side drill stations on the bolting machine were left in the center position after completing the second row of roof and rib supports, when the machine was advanced. The machine was positioned for installing the third row of roof and rib supports and the ATRS was engaged firmly against the mine roof.

While the roof bolting machine was in position for the installation of the third row of roof and rib supports, the left side, drill station canopy on Todd's side was located approximately 20 inches below the mine roof, and the right side, drill station canopy on Rocky's side was located approximately 7 and ½ inches from the mine roof. Todd, apparently, began marking the location where the roof bolts would be installed on the left side of the bolting machine, using a chalk marking stick. At this time, Rocky was marking the roof bolt placement on the right side of the bolting machine using his chalk marking stick. Todd apparently marked the rib bolt placement on the left rib and the location of the first pattern roof bolt to be installed. While Todd was standing between the left side, drill station canopy and the ATRS, a section of mine roof fell, striking him and causing his head to strike the drill station canopy. The accident resulted in Todd sustaining serious head injuries. Rocky was turned away from Todd and was facing the right rib when he heard the roof material fall. Rocky was unable to see Todd and immediately began calling for him, then ran to the left side of the bolting machine to check on his brother. Todd was unresponsive and lying on the mine floor. The section of roof material that fell, knocked Todd to the mine floor and he was observed with his head located near the left side, drill station, operator controls. The fallen roof material did not entrap Todd.

Mr. Brown, Mr. Gibson and Mr. Koger were located outby the No. 3 entry right crosscut at the continuous mining machine when they heard the roof bolting machine stop operation. At this time, they heard Rocky calling for help. Mr. Brown and Mr. Gibson immediately ran to the No. 3 entry right crosscut (accident location) to evaluate the situation. Mr. Koger traveled immediately to the section dinner area to obtain first aid equipment. Upon his arrival at the accident scene and realizing the seriousness of Todd's injuries, Mr. Gibson instructed Mr. Brown to get help. Mr. Brown traveled immediately to the section feeder and called surface security personnel reporting the accident. While enroute to the feeder, Mr. Brown met Mr. Rasnake and informed him of the emergency situation. After notifying security, Mr. Brown instructed Mr. Tim Boggs, coal hauler operator, who was located near the section feeder, to call Mr. Mack Ruble, mine foreman and other mine personnel and inform them of the accident and make arrangements for clearing the track for emergency transport. Mr. Brown departed the feeder area and traveled back to the accident scene where Mr. Rasnake, certified in Advanced First Aid, had arrived and took control, directing the first aid treatment, stabilizing and preparing Todd for transport to the surface. Other section crew members had also arrived to assist. Mr. Rasnake, Mr. Gibson and other crew members secured Todd on a spineboard and prepared him for immediate transport to the surface. After assisting with the initial first

aid treatment for Todd, Mr. Koger departed the accident scene to assist Rocky until Todd could be transported to the surface.

Mr. Brown operated the mantrip as Todd was being transported from the 12 Right Section to the surface. Mr. Rasnake and Mr. Boggs continued to provide first aid treatment for Todd while traveling along the trackway on the 12 Right Section. Near the junction of the 12 Right Section and the 3 East Mains trackway, Mr. Rasnake instructed Mr. Brown to stop the mantrip so he could assess Todd's vital signs. At this time, Mr. Rasnake could not detect a pulse or breathing and initiated Cardiopulmonary Resuscitation (CPR). As the mantrip continued traveling toward the surface, Mr. Ruble boarded the mantrip near the 11 Right Panel and started assisting Mr. Rasnake with performing CPR, as they traveled on towards the surface. Upon arrival on the surface, emergency medical service personnel affiliated with Dismal River Rescue Squad, Inc., assumed control and continued treating Todd. Dismal River Rescue Squad, Inc, transported Todd to Clinch Valley Medical Center, Richlands, Virginia, where he was pronounced dead.

STATEMENTS FROM MINE PERSONNEL AND OTHER FACTORS

Statements from mine personnel interviews and other factors determined during the investigation revealed the following:

- There was no eye witness to the accident. Mr. Rocky Meadows, Todd's brother and co-worker, was operating the right side, drill station of the roof bolting machine when the accident occurred. Other section crew members stated that after the accident occurred, Mr. Meadows informed them that he heard the noise created by the fall of roof material and ran immediately to his brother's location and observed him seriously injured and lying on the mine floor near the left side, drill station, operator controls.
- Mr. William Rasnake, scoop operator, was the certified Advanced First Aid person assigned to the 12 Right Section, as required by the Coal Mine Safety laws of Virginia. Mr. Rasnake was responsible for directing the first aid treatment and stabilization of Todd.

The following includes statements of mining personnel and events that were factors before and after the accident occurred:

1. Mr. Rocky Meadows, roof bolting machine operator, stated that he had worked with his brother Todd at this mine and other mining operations for a number of years. Mr. Meadows stated that Todd operated the left side, drill station and he was operating the right side, drill station and they had completed roof bolting operations in the first miner cut in the No. 3 entry right crosscut, that had been started by the third shift. Rocky and Todd had installed two rows of roof bolts in the second miner cut, prior to the accident. Mr. Meadows stated that Todd trammed the roof bolting machine into position in the second miner cut, in the No.

3 entry right crosscut, and that Todd installed three roof bolts on the left side and he installed one inside (center) roof bolt and drilled a roof test hole for the first row of roof bolts installed. This roof bolt pattern for the first row of bolts was necessary to align and straighten the rows of roof bolts for installation. Mr. Meadows stated that he conducted a visual examination of the roof conditions in the second miner cut and did not observe any loose drawrock or other adverse or hazardous roof conditions. Mr. Meadows stated that after the second row of roof bolts was installed, Todd moved the bolting machine into position for the installation of the third row of roof bolts. Prior to moving the bolting machine, Mr. Meadows lowered the right side drill station canopy and used the extension canopy stops, which are installed on top of the drill canopies, to align the position of the bolting machine at the third row of roof bolts. Mr. Meadows stated that when the ATRS was engaged against the roof at the third row of roof bolts to be installed, he (Mr. Meadows) raised the right side, drill canopy close to the mine roof. Mr. Meadows stated that when the ATRS contacted the roof, at the third row of roof bolts, he did not hear the sound of any abnormal roof conditions nor did he observe any drawrock. Mr. Meadows used his chalk marking stick to begin marking roof bolt placement locations for the right side, drill station. Mr. Meadows stated that at this time, he observed Todd marking the roof bolt placement for the left side of the bolting machine, using his marking stick. Mr. Meadows stated that he normally began marking the roof bolt placement starting at the right rib and marking the bolt placement from the right rib bolt inward towards the center position of the right side, drill head and that Todd normally marked the roof bolt placement on the left side of the bolting machine, starting at the center position of the left side, drill head and marked the bolt placement outward toward the left rib. Mr. Meadows stated that he had his back turned to Todd and was placing his marking stick against the right rib when he heard the roof fall. Mr. Meadows stated that he could not see Todd after the roof material fell and that he ran to the left side of the bolting machine where he observed Todd lying on the mine floor and that he was unresponsive. Shortly thereafter, other section personnel arrived at the accident scene to provide assistance. Mr. Meadows stated that he did not notice that Todd had not raised his canopy close to the roof after the bolting machine was positioned at the third row of roof bolts and that Todd had always had a practice of keeping the drill canopy raised close to the roof. Mr. Meadows stated that a normal practice was to lower the drill canopy prior to moving the bolting machine to the next row of roof bolts to be installed and then raise the drill canopy into position, close to the roof, after the ATRS was engaged against the mine roof. Mr. Meadows stated that sluggy or loose, drawrock roof conditions had been encountered recently on the 12 Right Section. Mr. Meadows stated that additional roof supports were being installed when these conditions were encountered, which included installing additional roof bolts and oversized bearing plates and roof support pans.

2. Mr. Curtis Gibson, day shift section mine foreman, 12 Right Section, stated that he conducted an examination in the No. 3 entry right crosscut at the beginning of the shift and again while accompanying the Mine Safety and Health Administration (MSHA) mine inspectors and did not observe any unusual or

abnormal roof and rib conditions. Mr. Gibson stated that he had conducted onshift and preshift examinations of the 3 entry right crosscut where the accident occurred between 12:00 p.m. and 1:00 p.m. and did not observe any unusual or abnormal roof or rib conditions. These examinations were conducted prior to mining the second cut from the No. 3 entry right crosscut. Mr. Gibson stated that during the past two weeks of being assigned to the 12 Right Section, he had not observed any substantial changes in the mine roof conditions except that the mining height had increased on the left side of the section. Mr. Gibson stated that soon after the shift started that he accompanied two MSHA mine inspectors as they examined the working places on the section and then the inspectors departed the section. Mr. Gibson stated that he was located in the No. 3 entry at the right side, continuous mining machine with Mr. Brown and Mr. Koger, approximately 170 feet outby the location of the roof bolting machine, when the accident occurred. Mr. Gibson stated that he heard the roof bolting machine stop operating and then he heard Rocky calling for help. Mr. Gibson stated that upon arrival at the accident scene, he observed Todd seriously injured and lying on the mine floor near the left side, drill station, operator controls. Mr. Gibson stated that he did not observe any roof rock material lying on top of Todd. Mr. Gibson instructed Mr. Billy Brown, faceman and fill-in continuous miner operator, to go to the mine telephone and call to the surface for help. Mr. Gibson stated that he assisted Mr. Rasnake in providing first aid treatment and preparing Todd for transport to the surface. Mr. Gibson stated that Todd and his brother, Rocky, were excellent roof bolter operators.

3. Mr. William Rasnake, scoop operator, stated that he was certified in Advanced First Aid and was the medical person assigned to the 12 Right Section, day shift production crew. Mr. Rasnake stated that he was located in the No. 3 entry preparing the section water line for a belt move when he was informed of the accident by Mr. Brown. Mr. Rasnake stated that upon his arrival at the accident scene, he took control and began directing the first aid treatment, stabilization and preparation for transportation of Todd. Mr. Rasnake stated that Todd was unconscious but had a pulse and had shallow breathing at the accident scene and again when checked upon arrival at the mantrip, while the crew was making preparations to transport Todd to the surface. Mr. Rasnake stated that the mantrip was stopped at the entrance to the 12 Right Section so he could evaluate Todd's vital signs (breathing and pulse). At this time, Mr. Rasnake initiated CPR because Todd was not breathing and did not have a pulse. Mr. Rasnake stated that Mr. Mack Ruble, mine foreman, boarded the mantrip near the 11 Right Panel and started assisting him with performing CPR on Todd. Mr. Rasnake stated that the mine roof on the 12 Right Section varies from cut to cut. Sometimes the drawrock stays up and the mine roof appears smooth as compared to other times when the drawrock falls. Mr. Rasnake stated that both Todd and Rocky were extremely safe, roof bolter operators.
4. Mr. Billy Brown, faceman, stated that he had been assigned to operate the right side continuous mining machine on the day of the accident. Mr. Brown stated that he was with Mr. Gibson and Mr. Koger at the right side, continuous mining machine, located approximately 170 feet outby the location of the right side, roof

bolting machine, when the accident occurred. Mr. Brown stated that he heard the right side, roof bolting machine stop operating and then he heard Rocky calling for help. Mr. Brown stated that upon his arrival at the accident scene, Mr. Gibson instructed him to go to the mine telephone and call to the surface for help. Mr. Brown stated that he informed Mr. Rasnake of the accident, while enroute to the mine telephone. Mr. Brown stated that he assisted Mr. Rasnake and Mr. Gibson in administering first aid and securing Todd to a spineboard. Mr. Brown stated that he operated the mantrip while transporting Todd to the surface. Mr. Brown stated that while he and Rocky were cutting the No. 3 entry right crosscut, where the accident occurred, that they discussed how good and smooth the mine roof appeared and that no draw rock had fallen out during the mining operation. Mr. Brown stated that the mine roof on the 12 Right Section, in particular the No. 3 entry right crosscut where the accident occurred, appeared to be good and smooth with very little draw rock. Mr. Brown stated that Todd was one of the safest roof bolter operators employed at the mine.

5. Mr. Rick Koger, section repairman, stated that he was with Mr. Gibson and Mr. Brown at the right side, continuous mining machine located in the No. 3 entry, approximately 170 feet outby the location of the right side, roof bolting machine when the accident occurred. Mr. Koger stated that he heard the right side, roof bolting machine stop operating and then he heard Rocky calling for help. Mr. Koger stated that upon hearing Rocky calling for help, he traveled to the section dinner area to retrieve the first aid equipment to take to the accident scene. Mr. Koger stated that after arriving at the accident scene with the first aid equipment and unwrapping bandages to secure the victim to the spineboard, he returned to the last open crosscut between the No. 2 and No. 3 entries to be with Rocky and tried to comfort him as much as possible. Mr. Koger stayed with Mr. Rocky Meadows until the crew members arrived on the surface with the victim and then assisted in helping other crew members transport Rocky to the surface. Mr. Koger stated that he had worked with Todd for three to four years and that he was one of the safest workers that he had worked with. Mr. Koger stated that the section mine roof on the left side of the section was more broken and had more draw rock, as compared to the right side of the section.
6. Mr. Roby Thomas, left side continuous mining machine operator, stated that while the crew was gathered at the section dinner area, Mr. Gibson provided a general description of the day's production plans. Mr. Gibson informed the crew that the No. 2 entry left crosscut had two cuts mined from the crosscut and that the left side crew would have a cut through. Mr. Thomas stated that he was completing mining operations in the No. 2 entry pie-cut when Rocky came to the left side of the section, calling out for help. Mr. Thomas stated that he immediately traveled to the No. 3 entry right crosscut (accident scene) to provide assistance.
7. Mr. Danny Asbury, roof bolting machine operator, third shift, stated that he had worked with Todd approximately two years and that he was a very safe roof bolter operator. Mr. Asbury stated that drawrock on the 12 Right Section most often falls with little or no warning. Mr. Asbury stated that as a normal practice, additional roof supports that exceed the minimum requirements of the approved

roof control plan are installed by the roof bolter operators when deemed necessary to adequately support the mine roof.

PHYSICAL FACTORS AND OTHER FACTORS

The investigation revealed the following:

1. The accident occurred at approximately 1:05 p.m. on July 25, 2008, and was located in the No. 3 entry right crosscut on the 12 Right Section, approximately 35 feet inby and adjacent to survey station No. 25490.
2. The right side, roof bolting machine involved in the accident was a Fletcher DDR 13/15A Roof Ranger II, dual boom bolting machine, serial No. 2006008. The bolting machine was equipped with an L-Style Temporary Roof Support (TRS) assembly. The bolting machine was positioned with the ATRS engaged firmly against the mine roof in the No. 3 entry right crosscut face where the third row of roof and rib supports would be installed.
3. The accident occurred in the second continuous mining machine cut mined from the No. 3 entry right crosscut while permanent roof and rib supports were being installed. Todd and Rocky Meadows had completed installing permanent roof supports in the first miner cut extracted from the No. 3 entry right crosscut and had installed two rows of roof and rib supports in the second miner cut in the crosscut, when the accident occurred. The first row of roof bolts installed in the second miner cut consisted of four roof bolts and one left rib bolt to straighten the roof bolt pattern remaining from the first cut, roof bolting cycle. The second row of roof bolts installed in the second miner cut consisted of five roof bolts and two rib bolts.
4. With the roof bolting machine located to install the third row of roof bolts in the second miner cut in the No. 3 entry right crosscut, Todd was positioned on the left side of the roof bolting machine and apparently had marked the location where the left rib bolt and first roof bolt would be installed using the left side, drill station.
5. The mining height in the No. 3 entry right crosscut ranged from 78 inches to 81 inches. The width of the crosscut in the second cut where the accident occurred measured approximately 18 feet and nine inches and the height of the area at the location of the roof cavity (accident location) was approximately 74 inches. Due to the angle of the last row of permanent roof supports installed in the first miner cut, the depth of the second miner cut measured approximately 21 feet and nine inches on the right side of the cut and 23 feet and 11 inches on the left side of the cut.
6. The cavity where the section of mine roof fell was located approximately 26 inches from the left rib and measured approximately 64 inches in width, 56 inches in length and 6 inches in height. A smaller roof cavity extended from the larger roof cavity and was located between the permanent roof supports in the last row supports, installed on the left side. A number of small rocks were also lying on the mine floor near the left side, drill head.

7. On July 26, 2008, a roof evaluation was conducted at the accident scene and included other working places on the 12 Right Section. The mine roof consisted generally of gray shale with overlying sandstone. A number of slickensided roof surfaces were observed in the immediate roof outby the accident area, in the No. 3 entry, and at other locations on the 12 Right Section. A stratascope was used to evaluate the roof in a roof bolt test hole, located near the accident area. The test hole, measuring 84 inches in depth, revealed the roof strata to be comprised of thinly bedded, gray shale descending from 84 inches to 42 inches in depth. Descending from a depth of 42 inches to the roof surface, the bedding of the shale changed to more laminated strata. No horizontal or vertical fractures were observed in the roof strata within the test hole.
8. The section of dislodged mine roof consisted of laminated shale and sandy shale rock strata. The section of roof that fell was weakened by fossilized material located along the outer edges of the rock, creating a smooth surface between the edges of the rock and the immediate roof strata. The cavity created in the mine roof from the fallen material revealed a low-angle, slickenside condition, with the thickest end of the rock breaking apart from the roof along the last completed row of permanent supports installed on the left side, and the section of rock tapered off in thickness towards the ATRS. The roof conditions in the first and second cut in the No. 3 entry right crosscut consisted of laminated dark, gray shale and gray, sandy shale rock strata.
9. The two sections of roof that fell from the mine roof between the ATRS and left side, drill canopy of the roof bolting machine were located on the mine floor. One section of rock that fell had a chalk mark on its surface which was apparently placed on the roof by Todd with a marking stick that he was using to mark the placement location of roof bolts to be installed in the third row, in the No. 3 entry right crosscut. This section of rock that fell was located approximately 25 inches from the front edge of the left drill canopy and measured approximately 37 and ½ inches in width, 49 inches in length and nine inches in thickness. The left coal rib adjacent to this section of fallen rock also had a chalk mark on the rib indicating the rib bolt placement location.
10. Another section of roof that fell was positioned on the mine floor inby the ATRS support jack, near the center of the ATRS, and measured approximately 40 inches in width, 31 inches in length and nine inches in thickness. In addition, two smaller sections of rock that had fallen were located on top of the left side, drill station canopy. Several small sections of rock were also lying on the mine floor near the left side, drill head.
11. The ATRS was observed firmly engaged against the mine roof for the installation of the third row of roof bolts. The left side ATRS pad was positioned approximately 22 inches from left rib and the right side ATRS pad was approximately 39 and ¼ inches from the right rib. The distance between the ATRS and the remaining unsupported roof area measured approximately 11 feet and six inches.
12. The left side, drill station was observed in the retracted, center position and the distance between the overlying drill station canopy and the ATRS measured approximately 41 and ¾ inches. The left side, drill station canopy was positioned

approximately 20 inches below the mine roof and the canopy was positioned approximately 40 inches from the left rib. The right side, drill station canopy was positioned seven and one-half inches from the roof and the distance between the drill station canopy and the ATRS measured approximately 43 inches. The starter drill steel was positioned in each drill head at the left and right drill stations.

13. The drill station canopy provides overhead protection for the machine operator while installing roof bolts. The left side, drill station canopy assembly was identified as model No. MK-370159 and was equipped with Swing-Out Extension No. 370196 (canopy slide extension). The dimensions of the left side, drill station canopy measured approximately 42 inches in length and 43 and 11/16 inches in width. The left and right side, drill station canopies were equipped with canopy slide extensions and the canopy extensions were partially deployed on each canopy. The left side, drill canopy extension was in a fixed position, partially deployed and the slide mechanism was immobile. According to J.H. Fletcher & Co., Fletcher Mining Equipment, the roof bolting machine manufacturer, the purpose of the canopy slide extensions is to provide the machine operator as much overhead protection as possible. The canopy extensions are optional and are not a permanent part of the canopy design, due to pinch point potential. The use of the canopy slide extension is left to operator discretion. The manufacturer also recommends that the drill station canopies not be pressurized against the mine roof, due to the potential for metal structural fatigue or other damage to the canopies.
14. The marking stick apparently being used by Todd to mark rib and roof bolt placement locations was a section of PVC pipe with a piece of chalk affixed in one end. The marking stick measured 46 inches in length. The marking stick was found lying on the mine floor between the left side, drill station canopy and the ATRS, near the left side, drill head. The safety glasses, worn by Todd at the time of the accident, were lying on the mine floor near the marking stick and were positioned near the left side, drill head.
15. Mr. Gibson stated that upon arrival at the accident scene, he observed Todd seriously injured and lying on the mine floor near the left side, drill station, operator controls. The left side, drill supplies storage tray was located above the operator drill controls. The distance between the supplies tray and the left rib at this location was approximately 55 inches.
16. The equipment on the 12 Right Section consisted of two 14-15CM continuous mining machines, two Joy 10SC shuttle cars, two Model 816 DPT coal haulers, one Fletcher 13/15 CF Roof Ranger II, dual boom, roof bolting machine and one Fletcher 13/15A Roof Ranger II, dual boom, roof bolting machine and two battery scoops.
17. The line curtain was installed along the right rib in the No. 3 entry working place and in the No. 3 entry right crosscut.
18. The mine roof in the No. 3 entry working place and the first miner cut extracted from the No. 3 entry right crosscut were fully supported with point anchor, tension rebar roof bolts, six feet in length and installed in a five bolt-wide pattern. Point anchor, roof bolts were also being installed to support the ribs. Oversized

bearing plates were also being installed in conjunction with the point anchor, roof bolts.

19. The approved roof control plan for the mine requires a minimum of four permanent roof supports to be installed per row on four feet maximum spacing during development of entries and crosscuts. Permanent roof supports on the 12 Right Section were being installed on five and six bolt-wide patterns, which exceeded the minimum requirements of the approved roof control plan.
20. Mining personnel, including one employee certified in Advanced First Aid (Mr. Rasnake) provided first aid treatment for Todd at the scene of the accident and provided stabilization and CPR while he was being transported to the surface.
21. Mr. Rasnake and other mine personnel stated that Todd was unconscious at the scene of the accident and while being transported to the surface.
22. The hard hat that was worn by Todd at the time of the accident was a low profile style hard hat. The hard hat was lying on the mine floor near the left rib, inby the left side, operator drill controls. The hard hat was damaged from the impact of the fallen roof and the damages included scuff marks / scratches on the left side of the hard hat, a vertical fracture line on the left side, front part of the hard hat exterior, measuring approximately four (4) inches in length and a broken hat brim, on the left side, front part of the hard hat. The mining belt, battery light and the self-contained self-rescuer device (SCSR) being worn by Todd were also observed lying on the mine floor near the left side, drill station.
23. The 12 Right Section crews are developing to the right off the 3 East Mains and the section had advanced to crosscut No. 30. The overburden at the present location of the 12 Right section was 1,549 feet. The depth of overburden of the mine generally ranges from 1,600 feet to 2,400 feet.
24. The preshift and onshift mine examinations, record book provided for the 12 Right section did not reveal any hazardous conditions observed on July 25, 2008, on the preceding third shift. Mr. Gibson, received the preshift mine examination report for the 12 Right Section on July 25, 2008, at 6:17 a.m. that was reported by Mr. Richard Perkins, 12 Right Section foreman on the third shift. The preshift mine examination report did not reveal any hazardous roof conditions or other hazardous conditions observed on the section.
25. As a corrective measure, the mine operator revised the existing Safe Work Instructions (SWI) established for roof bolting operations and included a revision entitled “Safety Precautions for Roof Bolting”. Safety meetings were held with the mine employees on each shift to review the SWI revision. The safety meetings were conducted as the miners returned to work, following the completion of the accident scene investigation. Job safety observations were also conducted following the review with the roof bolter operators and the SWI revision was incorporated in the mine’s newly employed miner training program. The following precautions were implemented:
    - During roof bolting installations, the ATRS will be installed inby the last row of bolts as specified in the approved roof control plan and no one will be allowed to mark roof bolt locations for installation of roof bolts inby the last row of permanent roof supports.

- No one will be allowed inby the drill operator's canopy except for installation or removal of drill steel, installation of resin and roof bolts and in the event of a breakdown of the ATRS, required maintenance.
- On a trial basis, when advancing the drill station, drilling and installing roof bolts, the canopy extension will be extended.
- After the bolting machine is advanced and immediately after the ATRS is installed, the canopies will be raised as close to the roof as possible without coming in contact with the roof.

CONCLUSION

On July 25, 2008, at approximately 1:05 p.m., an underground fall of roof material accident occurred at the Consolidation Coal Company, Buchanan Mine No.1. Mr. Todd Meadows, roof bolting machine operator, was seriously injured in a fall of roof material accident while installing permanent roof supports in the No. 3 entry right crosscut on the 12 Right Section. Mr. Meadows received serious head injuries when he was struck by a piece of rock that fell from the mine roof. Mr. Meadows was positioned between the left side, drill station canopy and the Automated Temporary Roof Support (ATRS) system when the accident occurred.

The investigation revealed that, apparently, Mr. Meadows was marking the location where he would be installing a left rib bolt and installing the first roof bolt, using the left side, drill station. The investigation revealed that the section mine foreman had examined the mine roof at least three times in the No. 3 entry right crosscut, on the day of and prior to the accident, and did not observe any unusual or abnormal roof conditions. Mr. Rocky Meadows also stated that while conducting roof bolting operations in the No. 3 entry right crosscut, prior to the accident, he did not observe any hazardous roof conditions or other adverse roof conditions. Apparently, Mr. Todd Meadows had lowered the left side, drill station canopy more than normal, as verified by statements made from other 12 Right Section crew members. Emergency medical services personnel affiliated with Dismal River Rescue Squad, Inc., transported Mr. Meadows to Clinch Valley Medical Center, located in Richlands, Virginia, where he was pronounced dead.

ENFORCEMENT ACTION

The following enforcement action was taken as a result of the investigation:

- An order of closure, No. TAR0004390, was issued under 45.1-161.91A(ii), of the Coal Mine Safety Laws of Virginia, on the 12 Right Section to preserve the scene of the accident pending an investigation. The order of closure was modified to allow mining operations to resume on the left side of the section and general work to continue on the right side of the section pending completion of the accident scene investigation. The order was later corrected upon completion of the investigation.

RECOMMENDATIONS

1. Miners exposed to danger from falls of roof, face and ribs shall visually examine and, if conditions permit, test the roof, face and ribs by sounding the roof before starting work or before starting a machine and as frequently thereafter as may be necessary to ensure safety.
2. The roof bolter operators should position the drill canopy just above the operator's head and the canopy should be placed in operating position following the installation of the ATRS. The canopies should be installed as close to the roof as possible without coming in contact with the roof.
3. Roof bolter operators should avoid marking the placement location of roof bolts to be installed, to prevent exposure potential. The bolting machine should be marked or other means of machine reference should be utilized to allow alignment for installation of roof bolts, to minimize exposure potential.
4. The roof bolter operators should evaluate the use of the drill station canopy extensions and utilize the additional protection afforded by the canopy extensions when possible, using both caution and good judgment.
5. The mine operator should evaluate the use of advancements in ATRS technology such as the use of ATRS Rocker Pad Deflectors to provide additional roof support for the machine operator.

SIGNATURE SHEET

This report is hereby submitted by Terry A. Ratliff and approved by Frank A. Linkous.

Terry A. Ratliff Coal Mine Inspector **Date**

Frank A. Linkous, Chief **Date**

APPENDIX

VICTIM DATA SHEET

PERSONS PRESENT DURING THE INVESTIGATION

MINE LICENSE INFORMATION

VICTIM DATA SHEET

Name:	Elden Todd Meadows
Occupation:	Roof Bolting Machine Operator
Mailing Address:	P.O. Box 2814 Lebanon, Virginia 24266
Date of Birth:	May 15, 1964
Total Mining Experience:	22 years and four months
Experience with Present Company:	Seven years and six months
Employment at Present Operation:	Seven years and six months
Certification History:	First Class Mine Foreman Underground General Coal Miner Gas Detection

PERSONNEL

The following personnel provided information and/or were present during the investigation:

CONSOL ENERGY, INC.

John Zachwieja	Vice President Coal Operations
Jack Richardson	Vice President Central Appalachia Operations
Rick Marlowe	Director Safety Awareness
Michael Canada	Manager of Safety

CONSOLIDATION COAL COMPANY, BUCHANAN MINE NO. 1

Tim Underwood	Superintendent	
Bill Meade	General Superintendent	
Craig Chadwell	Assistant Superintendent	
Archie Ruble	Mine Foreman	
Kim Noah	Supervisor of Safety	
John Teets	Absolute Zero Mentor, Safety	
Jeffrey Ball	General Maintenance Foreman	Day Shift
Danny O'Quinn	Transitman	Day Shift
Tommy Taylor	Transitman	Day Shift
Curtis Gibson	Section Mine Foreman	Day Shift
Billy Brown	Faceman	Day Shift
Rick Koger	Section Repairman	Day Shift
Thomas Arms	Shuttle Car Operator	Day Shift
William Rasnake	Scoop Operator	Day Shift
Matthew Sutherland	Roof Bolter Operator	Day Shift
Roby Thomas	Continuous Miner Operator	Day Shift
Danny Asbury	Roof Bolter Operator	Third Shift

MINE SAFETY AND HEALTH ADMINISTRATION

Ray McKinney	District Manager, District 5
Nick Rasnick	Assistant District Manager, Inspection Division
James Vadnal	Mining Engineer (Roof Control Division, Pittsburg Technical Support)
Hagel Campbell	Field Office Supervisor
Daniel Johnson	Conference Litagation

Hubert Payne	Supervisory Mine Safety and Health Specialist
Bryan Keith Ray	Mining Engineer, Ventilation
Gerry L. Lowe	Mining Engineer, Ventilation
Scott Beverly	Coal Mine Safety and Health Inspector
David Smith	Roof Control Specialist
Kevin Cline	Ventilation Specialist
Preston White	Educational Field Service Supervisor

VIRGINIA DIVISION OF MINES

Frank Linkous	Chief, Division of Mines
Carroll Green	Mine Inspector Supervisor
Opie S. McKinney	Mine Inspector Supervisor
David Elswick	Technical Specialist, Roof Control
Gary Davis	Technical Specialist, Electrical
Terry A. Ratliff	Coal Mine Inspector
Rusty Ward	Coal Mine Inspector

MINE LICENSE INFORMATION

Official Corporation	Consolidation Coal Company
Official Business Name of Operator	Buchanan Mine No. 1
Person with Overall Responsibility	Tim Underwood
Person in Charge of Health and Safety	Tim Underwood