



# Mining Accident News No.1026

4 to 17 September 2010

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Monday 6 September 2010

## Chilean mine owners accused of ignoring warnings

*Extract from Telegraph.co.uk*

**Owners of the mine where 33 workers have been trapped underground for a month have been accused of ignoring warnings that it was vulnerable to collapse.**

A miner had his leg severed off in a rockfall in the San Jose mine on July 3 but his colleagues were ordered back to work within hours of the incident and no investigation was launched.



Gino Cortez believes the accident that cost him his left leg was a tragic warning of what was to come Photo: LORENZO MOSCIA

Four weeks later another cave-in sealed the route to the surface trapping the miners 2,300 ft below the Atacama desert where they may remain until Christmas.

Relatives gathered yesterday to mark the grim milestone of a month since the 33 miners were trapped in the underground chamber in Chile.

Gino Cortez, 40, believes the accident that cost him his left leg was a tragic warning of what was to come and that the mining company

**NOTE:** Views expressed in this newsletter are those of the individual sender, and are not necessarily the views of Industry & Investment NSW.

ignored safety regulations in the pursuit of profit.

"What happened to me wasn't a surprise," he said from his modest breeze block home in one of the poorest districts of Copiapo. "The mine has a reputation as the most dangerous in the region but it should have been a wake-up call."

He heard about the collapse that trapped his friends and colleagues from his hospital bed in Santiago. "I felt sick with rage - the whole thing could have been avoided if they had investigated properly after my accident. But the company ignored the warning and it was business as usual," he said.

Mr Cortez's name was brought up during a congressional hearing last week when the owners of the San Esteban Mining company, Alejandro Bohn and Marcelo Kemeny, were questioned over his accident and their failure to investigate its causes.

"Everyone knew that work to strengthen the walls of the shafts hadn't been finished, fissures were not treated seriously," relates Mr Cortez. "To do so would mean concentrating on safety rather than production and that doesn't produce profits."

Last week the company began bankruptcy proceedings amid claims there are insufficient funds to pay even the salaries of the trapped miners let alone any compensation.

Both the company and Sernageomin, the government body responsible for supervising mining safety standards are now being investigated by the Chilean government and the families of 27 of trapped miners have launched legal action.

Mr Gomez, whose wife gave birth to their third child this week, - a daughter, Julia - will also seek legal redress against the company. "They never came to see me, or sent a message to the hospital and I have got nothing in the way of compensation," he said.

Meanwhile, at Camp Hope at the entrance to the mine A 30-ton drill installed last Monday continued its painfully slow boring of a shaft to reach the men, a job that is expected to take between three and four months.

Engineers were also preparing to begin a second rescue option, to use another drill to widen a communication shaft in the hope it may provide a quicker exit for the men.

A 'Plan C' has also been devised that involves the creation of a football-pitch sized oil drilling platform which should be ready within two weeks to start work on a third shaft.

Thursday 9 September 2010

## **USA: Feds say pumping continues at W.Va. mine**

*Extract from Bloomberg Businessweek, USA*

CHARLESTON, W.Va. Investigators searching for clues to the worst U.S. coal mining explosion in 40 years said Thursday that pumps still have not drained three flooded sections of West Virginia's Upper Big Branch mine.

Flooding has kept investigators from exploring areas of the Raleigh County mine where the April 5 blast may have originated, including one where they suspect methane gas is bubbling up through the water. The explosion killed 29 miners and injured two.

The federal Mine Safety and Health Administration suspects a combination of methane gas and coal dust fueled the explosion, but has yet to release an official cause of the blast, which is the subject of criminal and civil investigations.

The news that parts of the mine remain flooded was included in an update on the investigation posted on MSHA's web site. The agency said teams also are revisiting parts of the mine to search for additional evidence. However, efforts to find a missing remote control for Upper Big Branch's main mining machine and additional

methane detectors have been fruitless, MSHA said.

Richmond, Va.-based Massey Energy Co. again denied wrongdoing and criticized the investigation as "flawed" and focused on assigning blame rather than searching for a cause.

"If MSHA were truly interested in examining the possible causes of this accident it would focus on the ventilation changes it mandated in the days leading up to the explosion," spokesman Jeff Gillenwater said.

Massey was repeatedly fined for alleged violations of the mine's ventilation plan in the months before the explosion. MSHA said the mine still has ventilation problems, including one that recently Massey to install ventilation controls to make one area safe for investigators.

Friday 10 September 2010

## **China: Pit Bosses between a Rock and a Hard Place**

*Extract from CriEnglish.com*

The latest central government regulation to take effect on Oct 7 might place coal mine leaders in a position where they are forced to choose whether they value their lives or their assets, if they remain reluctant to improve pit safety.

The regulation, issued on Thursday by the State Administration of Work Safety (SAWS) and the State Administration of Coal Mine Safety, requires mine leaders to descend below ground and ascend to the surface again at the same time as miners.

Otherwise, the mine will face a fine up to 5 million yuan (\$737,000) if any accident occurs, the regulation stipulates.

In the event of an accident, mine leaders will also be fined up to 80 percent of their annual income from the previous year, the Beijing-based Mirror Evening News reported on Thursday, citing sources from the SAWS.

Pit leaders who neglect to accompany miners below ground and back to the surface will face a fine of 150,000 yuan, even if no accident has taken place, and receive administrative punishments ranging from warnings to dismissal, according to the report.

Industry insiders said compensation for a miner's loss of life in a private pit runs from 400,000 to 500,000 yuan, slightly higher than in State-owned enterprises, though the amount may vary by region.

The State Administration of Coal Mine Safety further requires that at least five mine leaders accompany miners into the shaft every month on a rotation basis, the Mirror Evening News reported.

Duty leaders' names and records of compliance with the regulation are to be publicly displayed in prominent positions at mine entrances, the report said.

Work safety in China is in a grave condition. SAWS director Luo Lin said the death toll from major accidents in the country from January to late August this year has been "equal to or closing in on" the 1,128 people killed all of last year.

The latest mining accident occurred on Thursday in Southwest China's Yunnan province, when a gas explosion ripped through a coal mine, leaving seven miners dead and 12 others injured, according to local authorities.

The accident occurred at about 9:40 am in a pit at the Ma'anshan Coal Mine in Luxi county, the county publicity department said.

Twenty-nine miners were working underground at the time of the explosion. Ten escaped without injury, while another 12 were treated in hospital after being rescued.

The remaining seven were brought to the surface after dying from suffocation. The cause of the accident remains under investigation.

The regulation has been issued amid rising public concern that there are no serious

punitive measures to compel mine leaders to descend into the shafts with miners - as the State Council had required earlier.

Even if mine leaders go below ground with the miners, whether they stay at the coalface with them and share the same level of risk has yet to be resolved.

The issue has come to the fore after two mine leaders managed to escape death when water gushed into a coal mine on July 31 in Heilongjiang province, killing the other 24 workers still underground.

China Central Television reported that the officials were not remaining at the same level of risk as the miners at the coalface, situating themselves "close to the exit".

Saturday 11 September 2010

## **Giant drill at Chile mine greeted with cheers**

COPIAPO, Chile — Scores of flatbed trucks began unloading a huge oil drilling machine Friday to dig a third rescue tunnel to 33 trapped miners, as one drill was nearly one-third of the way down and another lay idle for repairs.

The families of the trapped miners cheered and waved flags as they welcomed the first of 42 trucks that rolled in around 8:30 am (1230 GMT).

"These trucks are enormous," marveled Maria, sister of trapped miner Dario Segovia. "We were up all night here in the camp waiting for them."



Workers with cranes mount the drilling rig at San Jose mine

Several of the six-axle trucks limped in with flat tires, a result of driving to the mine on a steep hillside dirt road filled with potholes and sharp rocks.

Their arrival was delayed as excavators and bulldozers had to broaden the entrance to the San Jose mine near Copiapo, a city some 800 kilometers north of Santiago, to accommodate the giant trucks.

The trapped miners have become national heroes since they were found alive on August 22, 17 days after a mine cave-in in the remote Atacama desert. The miners are trapped some 700 meters (2,300 feet) below the surface.

However euphoria over their discovery was dampened by news it could take months, possibly until Christmas, to drill a shaft to rescue the miners.

Rescuers are dropping food and water down narrow shafts to the miners to keep them alive, along with medicines and games to keep them healthy and occupied.

One of the delivery shafts Friday was fitted with a multi-use conduit reaching all the way down to the miners' shelter, providing them with permanent supplies of oxygen, water, and a telephone line.

"Now they can speak by telephone via the conduit," the lead engineer in the rescue effort, Andres Sougarret, told reporters Friday.

The trucks bringing the new equipment, designed to drill oil wells and operated by Canada's Precision Drilling, arrived from Iquique in waves because the camp work zone is too small to park them all together.

The giant drill "RIG-422" they were bringing can tunnel up to 2,000 meters below the surface at a speed -- depending on the density of the ground -- of between 20 and 40 meters a day, according to Chilean officials.

Officials have dubbed the effort "Plan C," and if all goes according to schedule workers will drill

down just 597 meters (1,958 feet), shortening the rescue time to perhaps two months.

The drill requires a football-pitch sized base to set up and is expected to begin tunneling down toward the trapped miners around September 18, the bicentennial of Chile's independence from Spain, President Sebastian Pinera said over the weekend.

Separately, the main drilling machine involved in "Plan B" effort, a Schramm T-130, shut down for repairs late Wednesday after digging some 268 meters (880 feet), said Sougarret.

"We're still trying to remove" a broken part from the drill, he told reporters on Friday, adding that the repair would likely take another 48 hours.

The T-130 is working to widen an existing 630-meter (2,000 foot) shaft. Once the shaft is enlarged, workers will use an even wider drill bit and repeat the whole process to make a hole big enough to lower a special cage and pull up the workers one by one.

"Plan A" involves a smaller Strata 950 machine that aims to first bore a 33-centimeter (13-inch) wide pilot hole that will then be doubled using a special drill bit to 66 centimeters.

The Strata 950 has managed to drill 195 meters (640 feet) by Friday morning. "When it reaches 250-300 meters (820-985 feet) it'll have to stop" for routine parts changing, said Sougarret.

The trapped miners Friday received a message of support from six European Space Agency members who, like them, have been living in isolation inside a mock spaceship at a Moscow research institute, in an experiment to simulate a voyage to Mars.

This advice was offered to the miners: "Stay busy, be careful with your health and keep a normal day-night schedule."

Sunday 12 September 2010

## **USA: Doomed W.Va. miners' notes warned of coal dust**

*Extract from Associated Press, USA*

About the time Michael Elswick was wrapping up work deep inside the Upper Big Branch mine, he phoned a colleague on the surface with an ominous if relatively routine report.

Three conveyer belts needed to be sprinkled with pulverized stone to cover a layer of combustible coal dust and reduce its danger, the veteran coal miner said, according to a copy of a log book The Associated Press obtained through an open records request.

Just 32 minutes later, Elswick and 28 other men were dead.

Authorities say they died instantly in an April 5 explosion that investigators suspect began with methane, then gorged on coal dust as it turned 90-degree corners, rounded a 1,000-foot-wide block of coal and built enough force to kill men more than a mile away.

The information Elswick and his co-workers dutifully recorded in the hours, weeks and months before the worst coal mining disaster in 40 years shows it struck in what could be considered a predictable place: a mine with a chronic, stubborn coating of coal dust, which can make a minor flare-up much, much worse.

According to the log book, provided to the AP by the West Virginia Board of Coal Mine Health and Safety, Elswick's co-worker Scott Halstead reported problems with five of the six belts he inspected the day of the explosion. The reports show the need for rock dust along belts stretching more than three miles underground in the southern West Virginia mine owned by Massey Energy Co.

Elswick called the surface at 2:30 p.m. with the latest safety update. Most workers were getting ready to head to the surface and home to their families. It was the day after Easter.

Elswick, Halstead and others had made similar reports for months, noting that vast areas of the mine needed rock dusting. And shift after shift, they reported that the problem areas had been treated.

But the page that would list corrective actions taken for the issues Elswick and Halstead reported that afternoon is blank. Shane Harvey, Massey's general counsel, conceded the problems probably could not have been fixed between Elswick's call and the time of the blast. However, Harvey said the log book observations are meant as more of a reminder than as a cause for concern.

"You make a notation of it so that it gets done, and the fact that a notation was made doesn't mean it was a problem," Harvey said. "That's the way the company looks at it. Just like you'd make notations, at least mental notations, to vacuum your floor."

Officially, the cause of the Upper Big Branch disaster remains undetermined. But 10 days after the explosion, in a preliminary report to President Barack Obama, the federal Mine Safety and Health Administration blamed a combination of methane gas and coal dust.

Massey is pushing a far different scenario — one that potentially relieves the company of blame and pushes responsibility onto MSHA. Massey claims millions of cubic feet of methane rushed in from a floor crack and overwhelmed the ventilation system weakened by MSHA-mandated changes and other safeguards.

Regulators have disclosed that gas detectors sensed explosive amounts of methane inside the mine at the time of the blast. But they've kept most other details secret.

Massey officials insist coal dust had nothing to do with the tragedy, citing feedback from personnel who have been inside Upper Big Branch since the disaster. The mine "appears to have been very well rock dusted, with rock dust still in place," Harvey said.

And an explosion does not need coal dust to turn corners, Massey board member and mining engineer Stan Suboleski said.

"Maybe it was just a lot of methane," he said.

But thousands of pages of handwritten reports support the government's suspicions.

People who have been inside the mine since the blast continue to be stunned at the destruction. Former MSHA chief J. Davitt McAteer, who's conducting an independent investigation for Gov. Joe Manchin, said the explosion spread across more than two miles, packing lethal power most of the way.

Much of the area is dotted with giant pillars of coal, left standing in a checkerboard pattern to hold up the mountain above the Eagle coal seam and prevent the mine's ceiling from collapsing.

A map plotting where rescuers found the bodies of victims shows the blast spread north, east, south and west simultaneously, and repeatedly turned 90-degree corners when it encountered coal pillars and passageways.

Experts say that's precisely how explosions behave in the confined space of a mine — if fuel is available.

"The best way to describe it, it follows the source of fuel," said Michael Sapko, who studies coal mine explosions at the National Institute for Occupational Safety and Health, the government's chief mine safety research organization.

Mines use complex ventilation systems powered by enormous fans to push fresh air in and methane out. Experts say the effect is usually a breeze ranging from mild to stiff.

Since the 1920s, mines have also been required to use pulverized rock to cover coal dust with a protective layer of inert material.

In a properly dusted coal mine, Sapko said, an explosion can be stopped almost in its tracks. But research by Sapko's agency shows even the thinnest coating of coal dust is dangerous enough to instantly transform a small explosion into a giant one.

"Once it gets in the air, and if there's an ignition source present, it's uncontrollable at that time," Sapko said.

Months of examination reports written by Massey employees and years of violations cited by federal inspectors indicate Upper Big Branch miners routinely struggled to keep the mine dusted.

MSHA records show inspectors have slapped Massey with at least 475 citations, including not having enough rock dust to prevent explosions and allowing combustible materials pile up at Upper Big Branch since it opened in 1994.

One of the most serious came less than a month before the explosion. During a routine inspection, MSHA scooped up eight samples and sent them to a lab to make sure they contained enough rock dust.

Lab tests determined one of the samples contained less noncombustible material than required by law, according to a citation issued eight days after the explosion.

MSHA rated the mid-March dust violation "significant and substantial," saying it was "reasonably" likely to cause a fatal accident if not corrected.

"This standard/condition has been cited 8 times in the last two years," an unnamed MSHA employee wrote as justification on a form dated April 13.

The samples came from a spot called Headgate 22, an area that was being prepped as the next section to be mined using Massey's longwall mining machine. It was about three miles from the nearest entrance.

"Needs dusted," says a report from that area earlier in the day April 5.

The problem was reported, but there's no indication it was fixed.

The final notation in the record book for Headgate 22 notes small concentrations of

methane in four locations and the same problem with one of them: "Needs Dusted."

### Quote of the week



"You take people as far as they will go, not as far as you would like them to go."

Jeannette Rankin  
(1<sup>st</sup> woman in US Congress, 1880-1973)

Monday 13 September 2010

## Chile Mine Rescue: Major Setback as Drill Head Breaks

*Extract from RTTNews*

(RTTNews) - The operation to rescue 33 Chilean miners, trapped some 700 meters (2,300 feet) below the surface after a mine cave-in in the remote Atacama desert, suffered a major setback on Sunday after a drill working its way toward them broke inside the mountain.

Mining Minister Lawrence Goldborne said plan B's drill head was broken and that in the second attempt they were able to extract some stone particles. A third attempt was being made to get the drill out, failing which they would have to abandon Plan B, he added.

Meanwhile, a more powerful drill is being assembled at the mine head but it is not due to begin working for another ten days.

The miners remain underground at exactly the point in their confinement since they were found alive on August 22, 17 days after the accident. It is feared they may not be rescued until Christmas as the drilling is estimated to take at least two to three more months.

Besides being provided with food supplies through a metal shaft to the surface, the men

now have lighting and are also able to watch football match via a fiber optic cable.

Health Minister Jaime Manalich told reporters that the miners would start on Monday a daily hour-long exercise regime via closed circuit television under the guidance of a personal trainer to help them stay in "good physical condition" and also "prepare them for their rescue."

The announcement came a day after Atacama Governor Ximena Matas said cigarettes were being made available to the trapped miners after improvements were made in the air ventilation inside the mine shaft.

The group will be given two cigarette packs a day, or 40 cigarettes, to share between them though the request by some of the miners for alcohol has been turned down by the authorities.

## This week in mining accident history

**11 September 1878**

**Abercarn Colliery**

**Abercarn, Monmouthshire, Wales, UK**

**Underground coal mine**

**268 killed, explosion and fire**

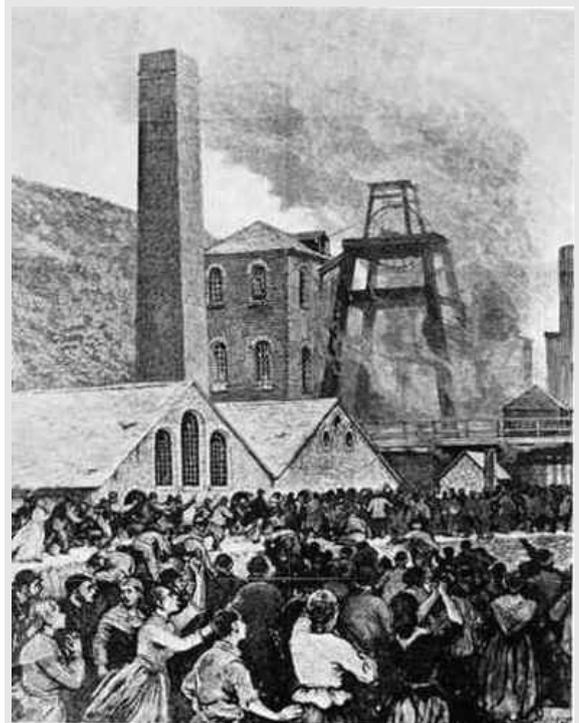
Source: [www.welshcoalmines.co.uk](http://www.welshcoalmines.co.uk)

On the morning of September the 11th, 1878, there were 325 men and boys working underground when a massive explosion ripped through the workings, 268 of them perished in the worst colliery disaster recorded in Gwent.

Because of the ensuing raging underground fires and with the fear of further explosions, the two rescue teams, one of who had descended the Cwmcarn shaft were ordered back to the surface. The colliery manager along with government mines inspectors made the unenviable decision to flood the mine with waters from the nearby Monmouthshire Canal. It took two months and 35 million gallons of water before the engineers were satisfied that the fires had been extinguished. The water

then had to be pumped out before the grim task of removing the bodies could begin. Not all the bodies were recovered many were left entombed. One skeleton was uncovered some 27 years later complete with working clothes and boots.

A first class gold Albert Medal was presented to John Harris for saving lives in this disaster. He went down the pit with a rescue team but having descended to a depth of 295 yards, the cage became stuck in the damaged shaft. Harris bravely climbed out of the cage and slid down one of the guide-ropes, remaining at the bottom for many hours until he knew that all those still alive had been rescued. Two gold and seven bronze medals were awarded for bravery after this explosion, which was considered to be Gwent's worst.



[The scene at the time of the explosion](#)

Tuesday 14 September 2010

## Chile miners: engineers unveil 21ins wide rescue capsule

*Extract from [Telegraph.co.uk](http://Telegraph.co.uk)*

Chilean authorities have approved the design of a 21 inch wide rescue capsule that will eventually transport each of the 33 trapped

miners 2,300 feet to the surface of the Atacama desert.

After enduring what is expected to be between three and four months trapped within the San Jose mine the men will have to climb into a narrow cylindrical pod for the ascent - a journey that will take at least an hour.

A technical team from the Chile's Navy will start constructing the bullet-shaped chamber so it is ready when one of three drilling efforts finally bores through the solid rock to create a shaft wide enough to raise the men, who have been trapped since the mine collapsed on August 5.

The steel rescue cage will have an external diameter of just 54 cms (21 inches) and a reinforced roof to protect its passenger against any rocks or debris that may be dislodged during the journey to the surface.

This week the miners started an exercise regime to ensure they are kept slim enough to fit into the capsule.

The men, who will be raised one by one in an operation expected to last several days, will be strapped into the chamber in a harness that will keep them in a secure standing position even if they faint.

A guidance system using wheels to guide it up the shaft should help minimise friction and video link will allow rescuers to communicate with the miner throughout the ascent.

The 2.5m (8ft 2in) long capsule will also be provided with an oxygen supply and a special lighting system and will include an escape hatch and a safety device that the passenger can use to lower himself back to the starting point should it get stuck along the way up.

The device was designed by a naval technical team at the Maestranzas shipyard on the specific orders of Chile's president Sebastian Piñera.

Meanwhile only one of three drilling efforts at the gold and copper mine near Copiapo, 450

miles north of Santiago, was operational at the start of the week.

The so-called Plan A had bored 750ft through solid rock by Monday afternoon but Plan B, which uses a higher velocity drill had been halted since last week after the drill bit shattered after reaching a depth of 880 feet when it struck an iron support beam within the mine.

Engineers had been unable to remove pieces of the broken drill and were considering abandoning the shaft and starting afresh elsewhere.

Plan C is currently underway and will see the installation of a petroleum drill on a platform the size of a football pitch that should be ready to start later this month.

Wednesday 15 September 2010

## **Trapped Chilean miners' next challenge: Celebrity**

*Extract from Canada.com*

COPIAPO, Chile - Once completely cut off from the outside world, 33 miners trapped for more than a month deep below the Chilean desert could face their next big challenge on the surface — dealing with the media furor.

The long bid to rescue the men has kept Chileans glued to their televisions and catapulted them to fame since their mine caved in on Aug 5.

The miners, now known in Chile as "Los 33" (The 33), have received job offers, rosaries blessed by Pope Benedict and messages of support from World Cup soccer stars to presidents.

As rescuers drill two escape shafts that could take months to reach them, doctors are working to keep the miners mentally fit in a cramped space the size of an apartment buried 2,300 feet (700 meters) below the surface.

The miners have set up daily work shifts and are simulating night and day conditions with red

lights. They are able to exchange letters with relatives by sending the messages in plastic tubes through narrow supply chutes.

But doctors have yet to prepare the men for their return to life in the outside world.

"When these miners come out . . . there will be a lot of pressure on them from society, the media, others wanting part of their time," said Michael Duncan, NASA's deputy chief medical officer, who advised the rescuers on the effects of prolonged isolation in confined spaces, as in space travel.

"I think the Chileans have not got to the point of thinking how difficult this post-rescue effort is going to be."

That fame has already turned into a double-edged sword for some of their relatives above ground who are becoming familiar faces on television with around-the-clock news coverage.

Sisters have publicly bickered over who gets the spotlight while others accuse relatives of making a profit from the tragedy by appearing on paid chat shows.

Maria Segovia, who makes a living selling pies, is taking her new-found fame in her stride.

"I get recognized everywhere I go, even when I'm off selling meat pies in the market," said Segovia, who has been dubbed the mayor of "Hope Camp" — the makeshift settlement for relatives near to the mine. "They're always asking me if I'm the sister of the trapped miner who is always on TV."

## **USA: Investigators struggle to put Montcoal timeline together**

*Extract from the Charleston Gazette, USA*

CHARLESTON, W.Va. -- Shortly after 3:30 p.m. on April 5, a Massey Energy official called West Virginia's industrial accident hot line to report what sounded at the time like a relatively minor problem at the company's Upper Big Branch Mine in Raleigh County.

"I want to report an emergency," the caller said. "It is an air reversal on the beltlines."

The Massey caller reported increasing levels of carbon monoxide gas, but said there were no injuries. The mine was being evacuated as a precaution.

"Thank you, sir," the operator said. "You have a great day."

"You do the same," the Massey official responded.

It would turn out to be anything but a great day for Massey Energy and especially for the families of 29 miners who died in what turned out to be the worst U.S. coal-mining disaster in 40 years.

Within an hour, Raleigh County emergency officials were warning of at least 10 injured. Reports from various emergency agencies quickly spread, indicating that many miners might be dead.

But over the next eight or nine hours, solid information was hard to come by, even for mine rescue and emergency officials charged with responding to -- and trying to rescue any survivors of -- the massive explosion deep underground.

More than five months after the Upper Big Branch Mine Disaster, federal and state investigation teams are still struggling to put together even a basic timeline of the events of those crucial hours after the blast.

When did the explosion itself occur? How quickly after that did Massey realize the gravity of the situation? When did specially trained mine rescue teams first make it underground? How long did it take for those teams to learn exactly how many survivors they were searching for?

"I think there was an awful lot of confusion as to what was going on," said Ron Wooten, director of the West Virginia Office of Miners Health, Safety and Training.

Internal Massey records, government documents and interviews reveal a variety of conflicting information that investigators might not be able to sort out for months -- if ever.

For example, in a briefing 10 days after the explosion, Labor Secretary Hilda Solis told President Obama that the explosion happened at 3:02 p.m.

Solis and Joe Main, assistant labor secretary for the U.S. Mine Safety and Health Administration, said carbon monoxide alarms had triggered underground at that time "indicating this was the likely time of the explosion."

But internal Massey monitoring data obtained by the Gazette includes no carbon monoxide alarms at 3:02 p.m. Instead, the data shows that carbon monoxide alarms throughout the mine began going dead at 3:08 p.m.

And reports from MSHA and the state mine safety office indicate Massey told officials at those agencies the incident occurred at 3:27 p.m.

Even a few minutes can be precious when it comes to responding to a mining accident. After response delays at the Sago Mine disaster and the Aracoma Mine fire in 2006, state and federal lawmakers required mine operators to report such incidents within 15 minutes.

Asked to explain the 3:02 p.m. report, MSHA officials initially referred back to the report to Obama. Later, in an e-mail response, MSHA district manager Bob Hardman said he listed the explosion time as "approximately 3:27 p.m. due to the uncertainty of the exact occurrence time."

A draft MSHA timeline, obtained by the Gazette, shows the agency is trying to "verify" the 3:02 time it included in its report to the White House.

Shane Harvey, Massey's general counsel, said it took some time for mine officials to determine

that the "air reversal" reported to state and federal officials was caused by an explosion.

"Communication and power were lost immediately and no one knew what caused this," Harvey said. "The presence of CO, to my understanding, is not immediately reportable. Unplanned fires and explosions are, but no one knew for sure that there was a fire or explosion.

"However, the persons present quickly realized that the elevated CO levels, the loss of power and the loss of communications were very likely due to a serious problem and they reported it to MSHA -- even if they were not required to do so.

"The determination that there had been an explosion was not made until later," Harvey said. "I do not know what time."

Wooten, the state mine safety chief, first learned of the Upper Big Branch incident in a cell phone call he received from Elizabeth Chamberlin, Massey's corporate vice president for safety and health. In an interview last week, Wooten said he wasn't sure of the time of that call.

"It broke up, but I heard her say, 'this is very serious,'" Wooten recalled.

Wooten called one his top staffers, Terry Farley, and that call began a cascade of further phone calls. A full timeline of those calls has not yet been made public.

Wooten said his agency's records indicate that no official rescue teams went underground until after 7:30 p.m. -- four hours after Massey first reported the problem to MSHA and the state.

But Massey says one of its in-house teams was at the mine by around 4 p.m., and federal records indicate teams were underground by at least by 6:15 p.m., and perhaps as early as 5:30 p.m.

Meanwhile, though, a crew of six miners led by Chris Blanchard, president of Massey's Performance Coal subsidiary, and Jason Whitehead, director of underground operations,

were in the mine for several hours between the time of the explosion and the time official rescue teams were deployed.

Investigators have questioned what Blanchard and Whitehead were doing, and both men have been asked to testify about their activities underground.

Harvey said Blanchard and Whitehead first encountered miner Timothy Blake, who had survived the explosion but was dazed, and helped him out of the mine.

Then they continued into the mine, discovering a mantrip that had been carrying eight miners out of the operation at shift change. The six miners traveling with Blanchard and Whitehead took those miners out, Harvey said. Two of those workers initially had survived, but one of those two, along with the six others who were dead at the scene, later died.

Harvey said that Blanchard and Whitehead remained underground, attempting to reach an airtight rescue chamber near the longwall section. "Subsequently, they did locate victims at the longwall who did not survive," Harvey said.

It's not clear exactly when the three possible survivors -- one of whom later died -- reached the surface. MSHA's draft timeline lists two possible times -- one between 4 p.m. and 5 p.m. and another at 7:26 p.m.

Emergency response records from Raleigh County, however, indicate that the mine asked for helicopter service at 4:44 p.m. to transport three potential survivors who "are now at the surface."

Throughout the evening, the reports varied about how many miners had died and, more importantly, how many might still be trapped underground waiting for rescuers.

At about 5:14 p.m., a state Homeland Security dispatcher called Massey officials to try to get details about possible injuries.

"I've heard anywhere from 200 men underground," the dispatcher told Massey spokesman Jeff Gillenwater. "I've had 50 people injured. I've had 20 people dead on the scene."

Gillenwater referred the dispatcher to a Massey press release, issued at 4:57 p.m., that said "information about injuries is uncertain at this time."

The dispatcher responded, "When you get something, my director is all over my backside wanting information."

Massey's first public confirmation of any deaths came shortly after 8 p.m., in a press release that reported seven miners had died and 19 were "unaccounted for" at the mine.

But as early as 5:02 p.m., a Performance Coal official had told the Raleigh County 911 office that the company had counted at least 28 miners missing.

At 10 minutes after midnight, Labor Department officials issued their own news release, announcing that 12 workers had died, two were hospitalized and 17 unaccounted for.

That release appears to be the first count that contained the right figure -- 31 -- for how many miners had been either killed, injured or were still missing.

But in an interview with investigators, MSHA's Bob Hardman said that at 12:22 a.m. -- 12 minutes after that news release -- agency officials were still trying to get an accurate count.

An hour and 20 minutes later, Massey issued a statement to announce 25 miners had died and four more were still unaccounted for. Four days later, those four were found, also dead.



Industry & Investment

The 20<sup>th</sup> Electrical Engineering Safety Seminar will be held at Sydney Olympic Park, on Wednesday 10 November and Thursday 11 November 2010.  
[http://www.dpi.nsw.gov.au/\\_\\_data/assets/pdf\\_file/0010/354538/EESS-2010-reqo-brochure.pdf](http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0010/354538/EESS-2010-reqo-brochure.pdf)

Thursday 16 September 2010

## **Qld: Horse stud owner honoured for mine rescue effort**

*Extract from ABC Online, Aus*

The operator of a central Queensland horse stud that was hit by a hendra virus outbreak last year has been recognised for his contribution to the mining industry.

John Brady says his stud business at Cawarral, north-east of Rockhampton, was almost destroyed by the hendra virus outbreak, which also claimed the life of local vet Dr Alister Rodgers.

Mr Brady was involved with the rescue operation during the Moura mine disaster of 1986.

The Mine Managers Association of Australia has presented Mr Brady with an award for his achievements, including developing gas monitors after the Moura explosion.

"So that we could measure the levels of gas that we had in the mine," he said.

"One of the things that sort of troubled me over the years, I was the person that had to call-off the rescue attempts at the Moura Number 4 mine because we didn't know the concentration or gas levels were, we had nothing on site to measure or determine what the gas levels were."

## **QLD: Ministerial statement - Miners' Memorial Day, Sunday 19th September**

*Extract from [mysunshinecoast.com.au](http://mysunshinecoast.com.au)*

Mining has come a long way in Queensland since the days of the canary, pick and shovel.

There have been significant advances in technology, knowledge and attitudes towards safety over three centuries, but it has been a long and difficult road.

That road has led us to have the best mine safety legislation in Australia and one of the best mining safety records in the world.

Our goal is to maintain the highest safety standards for the industry and its workers so that every worker can return safely to their family at the end of every shift.

To do this we must remember every life lost, and the lessons of our past.

Mining is a significant driver of the Queensland economy; it creates many thousands of jobs and provides lifeblood to our regional communities.

Sadly, it is an industry not without risk or tragedy.

That's why this Sunday (19 Sept.) we gather in Blackwater to commemorate the lives of more than 1450 miners who lost their life over three centuries of mining in Queensland.

Miners' Memorial Day is an important day in the mining calendar.

It remembers that awful day 89 years ago this Sunday when 75 miners were killed in a coal dust explosion at Mount Mulligan mine in far north Queensland.

This incident remains our state's worst mining disaster and is indelibly written into Queensland's mining history.

We also remember those miners who died in other mining tragedies over the years: at Collinsville, Box Flat, Kianga and Moura No 4 and Moura No 2 mines.

Blackwater - the coal capital of Queensland - has itself not been immune to tragedy.

In recent weeks, a contractor lost his life following a surface motor vehicle accident at the Curragh Mine. In 2009, another contractor died following an accident at the Blackwater mine.

This is the third Miners' Memorial Day we have held in Queensland and the first in a regional mining community.

It is an opportunity to recognise not only the loss of miners who have built a great industry but to recommit ourselves to working harder to improve safety standards.

In recent years both fatalities and injuries in the mining industry have declined as everyone works to ensure mine site safety and health matters are taken seriously.

But we must all continue to work together to minimise risk and ensure our mine workers return home safe to their families at the end of every shift.

*Minister for Natural Resources, Mines and Energy and Minister for Trade*

*The Honourable Stephen Robertson*

## **Africa: Miners plan strike to ensure safety**

*Extract from Eyewitness News*

The National Union of Mineworkers on Thursday said it planned to strike in response to the death of a miner at an Anglo Gold mine in Carletonville earlier in the week.

The miner died from his injuries after being involved in an underground tram accident on Tuesday.

The union said Anglo Gold has the highest number of mining accidents in South Africa.

Num spokesperson Lesiba Seshoka said that workers planned to 'down tools' next week to force the industry to start prioritising safety.

"Next week we will have a day of mourning to ensure that the company gets the message loud and clear that if you continue to claim the lives of innocent workers, we will claim your profit," he said.

## **USA: UBB fireboss reported burning eyes prior to blast, family says**

*Extract from the Charleston Gazette, USA*

CHARLESTON, W.Va. -- A Massey Energy fireboss who warned of a buildup of explosive

coal dust shortly before the company's Upper Big Branch Mine blew up also complained of a strange burning sensation in his eyes and said he couldn't see, state and federal investigators have been told.

About a half-hour before he and 28 other miners were killed in the explosion that rocked the Raleigh County mine, Michael Elswick phoned a safety report to co-worker Scott Halstead on the surface.

Jami Cash, Elswick's daughter, said Halstead told her family that Elswick said his eyes were burning and he couldn't see.

"That's when Scott Halstead said he was on his way in to get him," Cash said in an interview with the Gazette. "Scott made it to the mouth of the mine and it blew. He didn't get a chance to go in."

Cash said Halstead recounted for her his last conversation with her father, a story she says he also told Upper Big Branch investigators. Through his lawyer, Halstead has so far declined media interview requests, but did answer questions from government investigators.

"He was the voice dad couldn't be," Cash said of Halstead. "I'd like to thank him, if I could ... He's been having a rough time since all of this happened."

That final safety check at Upper Big Branch was in the news earlier this week, when The Associated Press first reported that mine records showed Elswick warned that conveyor belts in the mine needed to be cleaned and treated with powdered limestone, or "rock dust," to control the buildup of explosive coal dust.

The final safety report from Elswick and Halstead came at 2:30 p.m., a little more than 30 minutes before the deadly explosion is believed to have occurred.

In that report, the two men noted that 10 of the mine's conveyor belts either needed to be cleaned of excess coal dust or treated to avoid

a buildup of the dust. The next page in the mine's logbook, where notations about hazards being corrected would be entered, is blank.

Shane Harvey, Massey's general counsel, conceded that the dust issues outlined in the final safety report could not have been fixed between Elwick's call out of the mine and the time of the blast. However, Harvey told the AP that the logbook observations are meant as more of a reminder than as a cause for concern.

"You make a notation of it so that it gets done, and the fact that a notation was made doesn't mean it was a problem," Harvey told the AP.

"That's the way the company looks at it. Just like you'd make notations, at least mental notations, to vacuum your floor."

Elswick's widow, Bobbie, took exception to those remarks.

"That really made me mad, to say something like there's no big deal about it," she said. "If I don't dust my floor, it's not going to kill me. If I have a gas leak in my house, I'm going to do something about it. That's just about how I feel about it. It's dangerous."

Coal dust is highly explosive, as is methane gas, which is naturally liberated by geologic formations underground. If methane builds up to explosive levels and is ignited, coal dust can be tossed into the air and explode -- making underground blasts 10 times more powerful.

When methane ignites in the presence of excessive dust, an explosion that might have caused minor damage or injured miners can easily shoot through mine tunnels, killing dozens of workers.

Government investigators and mine safety experts believe that may have been exactly what happened at Upper Big Branch on April 5. Traced on a map, the belt tunnels in question follow a path from production areas of the mine toward the portal, heading directly at the spot

where seven miners were killed while on the way out of the mine at the end of their shift.

Massey officials have begun a public relations campaign arguing that coal dust was not involved in the disaster. They blame a massive inundation of methane gas.

Massey records show that one shift prior to the explosion, during a safety check between 3 a.m. and 6 a.m. on April 5, two other Massey workers reported that eight different tunnels needed cleaned or rock dusted. That report indicates work was completed on seven of those areas, but not on the longwall section belt area.

The official Massey reports list the belt problems as "violations or other hazardous conditions." Federal regulations require them to be fixed "immediately."

## Chile mine rescue ahead of schedule

*Extract from ABC Online, Aus*

Rescue workers in Chile could reach 33 trapped miners by early November, well ahead of the initially projected date of Christmas.

The two drills digging rescue shafts have both passed the 300-metre mark of the 700 metres they must dig to reach the men who have been stuck below ground since August 5.

The project's rescue coordinator, Rene Aguilar, says in the best-case scenario they could reach the miners by the first days of November.

But he says once the drills reach the men, both shafts need to be re-drilled and widened enough to bring them out.

The fastest drill, a T-130 machine dubbed the Plan B option, resumed work Tuesday (local time) after engineers extracted broken drill pieces that had forced the machine to stop work for nearly a week.

Mr Aguilar says the shaft is 368 metres deep.

A smaller Strata 950 drill, part of Plan A, also continued tunnelling down, reaching 308 metres.

Rescuers still plan to launch a third effort, Plan C, which involves a massive drill used for oil exploration that is being assembled on a football pitch-size base near the mine.

Mr Aguilar says the installation of the drill is 70 per cent complete and it should be operational by Monday.

The trapped miners have become national heroes since they were found alive on August 22, 17 days after they were trapped by a cave-in at the San Jose gold and copper mine.

Their spirits were lifted this week by news that one of the miner's wives had given birth to a daughter via caesarean section.

On Wednesday miner Ariel Ticona managed to see his daughter's birth a day later, via video, an official said.

## **USA: MSHA Releases Report in Fatal Mining Accident**

*Extract from MetroNews, W.Va, USA*

Investigators of a fatal mining accident in Raleigh County from this past spring say the victim in the accident failed to observe a known dangerous area around the continuous miner machine.

Twenty-eight year old John King was operating a continuous miner when he was pinned between the machine's boom arm and the mine rib at the Beckley Pocahontas Mine operated by International Coal Group.

The accident happened during the evening shift of April 22, 2010. Investigators say the underground crew was in the process of moving the machine from one section to another when the accident occurred.

According to the MSHA accident report released Thursday, King was operating the machine and waiting for a signal from coworkers that he'd run out of slack cable

during the move. While watching for the signal, the machine arm struck him.

King was brought to the surface and transported to Raleigh General Hospital in Beckley and eventually on to CAMC in Charleston where he underwent several surgical procedures. He died the next morning.

Investigators say King was in the "red zone" at the time of the accident. The red zone is an area of danger where workers are not supposed to be during the movement or operation of equipment. ICG was cited for the violation. King had been working at the mine for 2 and a half years.

Friday 17 September 2010

## **Chile: Shaft to trapped miners could be drilled in days**

*Extract from ABC Online, Aus*

The fastest of three drills burrowing toward 33 trapped miners could reach its goal this weekend, Chilean officials say.

"The T-130 machine is advancing quite well. It's going to reach the 500-metre mark, we hope, in the next few hours... if present rock conditions continue, it could reach its goal this weekend," energy minister Laurence Golborne told a press conference.

Known also as "Plan B," the T-130 is opening a narrow shaft to a workshop the trapped miners can access 630 metres below the ground.

However, Mr Golborne said once the drill reaches the workshop, the shaft will have to be redrilled and widened to 70 centimetres to pull the men up.

The T-130's drill bit broke apart a week ago and it took five days to remove the broken pieces from the shaft before it could resume work again on Tuesday.

Relatives of the trapped miners meanwhile broke out in cheers and applause on Thursday as workers at the San Jose gold and copper mine finished assembling a huge, 15-storey oil

platform that will be used to drill another tunnel to their loved ones below.

Dubbed "Plan C," the giant drill, RIG-422, on a football-pitch sized base, can tunnel up to 2,000 metres below the surface at a speed of between 20 and 40 metres a day, Chilean officials said.



Relatives of the trapped miners have set up a camp above the mine, called Camp Hope. (AFP: Ariel Marinkovic)

Disassembled components for the drill arrived last week, transported on dozens of flatbed trucks from Iquique, a coastal town 1,000 kilometres away.

Although trapped deep underground, the miners have been provided with food, water, communication and entertainment through several narrow shafts reaching down to their hot and dank shelter.

Their families are waiting for them in a tent city pitched outside the mine they have called Camp Hope.

## S.Africa: Safety 'army' on the march

*Extract from iafrica.com*

The National Union of Metalworkers of SA (Numsa) marked Thursday's 24-year anniversary of the Kinross mining disaster by launching a R2.7-million occupational health and safety programme.

The 1986 tragedy was not only South Africa's worst gold mine accident, Numsa president Cedric Gina said in a speech prepared for delivery at the launch in Johannesburg.



Miners retrieve the body of a worker. AFP

"It [also] reaffirmed to many that the safety and lives of workers were secondary to management's pursuit for profits," he said.

A total of 177 miners died when foam used as a sealant caught alight during welding at the Eastern Transvaal mine.

### Union still not satisfied

Gina said Numsa was still unhappy about working conditions at mines.

He said labour department inspections in March last year of 2410 iron and steel workplaces throughout South Africa found that 1171 did not comply with health and safety regulations.

"In simple language: close to half of companies that inspectors visited were breaking the laws of the country," he said.

The tragedy, he said, was that employers did not go to jail for negligence or violation of these laws.

Numsa had decided that it could not rely on labour department inspectors for enforcement of regulations.

### Taking a lead on safety

Instead it was launching its own health and safety campaign with the union's central committee approving a budget of R2.69-million for the first phase.

Between Thursday and the end of October it hoped to reach 6000 shop stewards through workshops, manuals, DVDs and posters.

It planned to ensure compliance with health and safety regulations, with shop stewards reporting any violation.

They would be seen as an "army of health and safety reservists", said Gina.

The union would also make sure that every workplace had a Numsa-negotiated health and safety policy and an emergency plan.

It would ensure that there were negotiations with the union on election and training of health and safety representatives, and that it had a right of access to department inspectors' findings.

Gina said people criticised strikers for days lost to the economy, but during the early 1990's twice as many working days were lost through accidents at work as through industrial action.

"This can't be good for the economy as not only working days are lost but vital skills disappear through injury, sickness and death," he said.

## **S.Africa: Multimillion-rand plan to improve enforcement, prosecutions**

*Extract from [engineeringnews.co.za](http://engineeringnews.co.za)*

The mining industry is under intense pressure to reduce mining deaths, following the Minister of Mineral Resources Susan Shabangu's announcement of a multimillion-rand plan to improve enforcement and prosecutions.

"A huge amount of about R145-million has been allocated for mine health and safety (H&S) in the 2010/11 financial year. It is clear from the Minister's remarks that a significant portion of this will be focused on getting prosecutions right in the near future as an incentive to prevent accidents," says Werksmans Attorneys director and mine safety law expert Wessel Badenhorst.

In her budget speech, the Minister noted that, although there had been a slight reduction in mining fatalities in 2009, when 165 employees died, compared with the 171 fatalities in 2008,

the fatality rate remained a matter of great concern.

Badenhorst says that the onus rests with employers to comply with H&S legislation. He reports that the Minister intends to spend the allocated money in three ways.



**HOT TOPIC** Mining houses in South Africa are coming under increased pressure to enforce more stringent health and safety policies. **Picture by:** Bloomberg

"Firstly, the Mine Health and Safety Act was amended last year to improve enforcement and facilitate prosecutions, and money will be allocated to achieve this goal this year. Secondly, a new chief directorate for occupational health will be established and more health inspectors appointed. Thirdly, increased emphasis will be placed on assessing the action taken by mines to deal with high-risk areas prone to seismic events," he says.

The reason for the latter is that fall-of-ground accidents are the leading cause of mining fatalities, some of which are triggered by seismic events. "These accidents are also caused by human error or negligence, particularly when short cuts are taken during drilling or blasting. It is these accidents that leave mine management exposed to the risk of charges of criminal negligence," he warns.

Mining fatalities are also the result of accidents related to transportation and machinery. This is a broad category and could involve accidents caused by anything from the operation of mining equipment underground to the operation of cages, or the improper use of conveyor belts. Often, these accidents happen owing to the safety mechanisms for machines not being

properly tested, or the operators taking short cuts in operating mining equipment.

Following the amendments to the Act last year, the financial penalty that can now be imposed for a breach of safety procedures is an administrative fine of R1-million for each incident, which is a significant increase on the previous administrative fine structure, Badenhorst explains.

Further, these new fines cannot be appealed against and a review application, challenging the fine imposed, would not suspend the fine implementation. Criminal prosecution of persons who contributed to the accident may also follow.

“While infrequent and, in many cases, clumsy prosecutions took place under the previous version of the Act, we can expect the rate and efficiency of prosecutions to increase once the amendments to the Act filter through and the department applies its powers to appoint experts to assist in the investigation and prosecution of mining accidents,” Badenhorst says.

He adds that, in the past, the prosecution process was flawed, owing to prosecutors not being trained in technical geological issues. “After thorough investigations had been concluded by the DMR, it was left up to the National Prosecuting Authority to prosecute the offenders; but a lack of experience and knowledge of the mining industry often led to cases failing. However, a lot of progress has been made to rectify the situation and, with additional resources made available to appoint capable prosecutors, the situation should see a turnaround in the near future,” he says.

Further, Badenhorst says that the prosecution process takes too long. If an accident takes place now, the chances are that prosecution will only take place in 2018, creating opportunities for the material evidence to deteriorate.

He warns that the entire chain of command – from the CE to the employee at the rock face – can be held liable for a fatal accident involving negligence.

“Considering the clear signals coming from the Minister about improving enforcement and increasing the frequency and efficiency of prosecutions, employers are advised to be proactive in bringing their safety standards up to standard and averting systemic failures. A systemic failure leads to heavy penalties and results in a record that could negatively impact on the future granting of mining rights,” he says.

Further, the South African mining industry has a 150-year-old colonially driven history. The country’s mines are more labour intensive than most mines abroad, owing to the availability of cheap labour. “Our mining industry wants to pride itself as a First World mining industry but, in H&S related issues, it lags behind, owing to a higher incident rate,” Badenhorst adds.

South Africa’s mining milieu is unique in that it comprises deep-level mines and hard-rock mines, contributing to severely hostile environments at local mines.

However, Badenhorst notes that the labour force is well organised through trade unions and that the unions have an important part to play in training their members in all H&S-related issues. “The number of accidents may be dramatically reduced if underground employees know what danger signs to look out for and what action to take to avert disaster,” Badenhorst concludes.

## **USA: Red Oak Man Pleads Guilty to Mining Safety Violation**

*Extract from NewsOn6.com*

MUSKOGEE, Oklahoma -- A Red Oak man entered a guilty plea in federal court to a charge of failure to provide new miner training, according to Sheldon J. Sperling, U.S. Attorney for the Eastern District of Oklahoma.

Gregory Bryce, 50, knowingly allowed miners to work without first receiving the required number of hours of introductory training, according to an investigation by the District 9 Mine Safety and Health Administration.

The investigation found that Bryce failed to provide the training in November, 2007, while working as a mine superintendent for Farrell-Cooper Mining Company.

"Untrained miners are a hazard to themselves and to those working around them. Assigning untrained miners to work is to invite an accident, and the devastating consequences which often result," said Gregory R. Wagner, M.D., Deputy Assistant Secretary for Policy, Mine Safety and Health Administration.

Bryce's guilty plea was accepted by Judge Steven P. Shreder at the Federal Courthouse in Muskogee. Sentencing guidelines are not more than one year imprisonment and up to a \$100,000 in fines.

## USA: High coal dust levels found in W.Va. mine where 29 died

*Extract from Pittsburgh Post-Gazette*

Nearly 80 percent of the samples from inside the Upper Big Branch mine showed illegal levels of explosive coal dust, something that could have contributed to the power of the April 5 blast that killed 29 coal miners there, federal inspectors said today.

Investigators from a joint state-federal team took 1,800 samples during the course of the blast investigation and 79 percent of them showed insufficient amounts of neutral rock dust required under federal safety laws. Rock dust is used to dilute loose coal dust in order to tamp down the possibility of explosion or fire.

"It would give it more potential to be involved in the explosion," said Kevin Stricklin, director of coal safety for the federal Mine Safety and Health Administration.

The revelation comes after news that Michael Elswick, one of the miners killed in the explosion at the West Virginia mine, reported a need for additional rock dust in the working area of the mine.

Mr. Stricklin also said today that investigators are looking at a series of doors set up inside the mine and whether they had been used to shift the air flow inside the mine, splitting fresh air between the mine's longwall section and an adjacent section being developed for the next phase of longwall mining.

Investigators believe a blast, likely triggered by methane gas, erupted either along the longwall or the adjacent development, and rolled more than two miles underground, killing the miners, some as they were heading back above ground at the end of the shift.

Both Mr. Stricklin and MSHA director Joe Main spent Thursday briefing families of the dead miners about progress in the probe.

Mr. Stricklin today described the investigation as 90 percent complete.

## Mining dictionary

### A guide to common mining terminology

#### W

##### winze

A shaft that connects levels in underground working, but does not reach the surface. Winzes are excavated downwards, as opposed to rises which work upwards.



-Ed