New Zealand Police

STATEMENT

Section 82 Criminal Procedure Act 2011

Statement of: [redacted] Age *(if under 18)*: _____

Date statement taken: 11-10-18 Time: _____

Location: Auckland, New Zealand

I, [redacted], state:

1. That is my full name. I am often known as [redacted].

2. At the time of the first explosion at Pike River in November 2010 , I was the [redacted]. At the time of the explosion I was working on the West Coast at the Spring Creek mine.

3. I have been asked by [redacted] to comment on the conveyor belt at Pike River.

4. This conveyor belt was installed and owned by [redacted] It had been installed in 2007 and gradually extended as the adit was until it reached any area known as the grizzly at pit bottom in stone.

5. As the [redacted] part of my duties was to visit the Pike River Mine site and I did this at least twice a month and often on a weekly basis.

6. The maintenance of the belt and the controlling of the belt was managed by [redacted]

7. This belt went from the portal up to the grizzly at the end of the mine access adit. At the grizzly the main belt was fed from a loading hopper via a secondary feeder belt.

8. The control room for the belt was a small hut situated on the right hand side of the portal. (Looking in-bye). The belt was controlled by a PLC laptop computer. The control sequence for the belt was to electronically undertake a number of safety systems checks through the pull wires, motors and other safety features before the start sequence could start. The start sequence has a delay to the start where audio alarms

[redacted] ... witness initials

New Zealand Police

STATEMENT CONTINUED

Section 82 Criminal Procedure Act 2011

Statement of: [redacted] Age *(if under 18)*: _____

sounded along the belt including at the portal. There was also a visual alarm at pit bottom and stone. Once the safety systems check was complete the belt started in a slow mode before winding up to design speed. Only when the main belt reached full speed did the feeder belt start.

9. If the test sequence from the PLC laptop identified a fault such as the emergency pull wire being damaged or the alarms not receiving power, the belt could not start. It was not possible to turn off the audio and visual alarms and then start the conveyor belt.

10. All the motors, switches and equipment which controlled and ran the conveyor belt, and were positioned inside the adit, were intrinsically safe to coal mine design standards. This equipment was designed in Australia to Australian standards and approved to be installed in the Pike River Coal Mine.

11. If any of the pull wire or connectors that also acted as the audio alarm were broken or damaged and the belt would not work.

12. If the safety sequencing of the checks to run the belt was not completed satisfactorily then the belt would not start.

13. I am aware of the risk assessment completed for the running of the belt post the first explosion and have seen the list of people involved in the risk assessment. There were no [redacted] staff involved in this risk assessment.

14. From my memory there were no [redacted] people at the portal or running the conveyor belt after the first explosion. I was in Greymouth through this time and was in constant contact with the [redacted] crews following the first explosion and am confident that I would have been contacted if any attempt had been made by [redacted] staff to start the conveyor belt.

15. I have recently been involved in a conversation about the Pike conveyor belt. The conversation was whether the conveyor belt could be started and run in reverse. I

[redacted] .. witness initials

New Zealand Police

STATEMENT CONTINUED

Section 82 Criminal Procedure Act 2011

Statement of: [redacted] Age *(if under 18)*: .....

understood that this was contemplated as part of the risk assessment, so that equipment could be taken into the mine. This was not possible, the belt would not run in reverse.

16. From my memory no-one from [redacted] had access to the portal after the early hours of the 20 November 2010 and before the second explosion on the 24 November 2010 or was requested to start the conveyor belt from the portal area during this time. It was not possible to control the conveyor belt from the control room at Pike River.

I confirm the truth and accuracy of this statement. I make the statement with the knowledge that it is to be used in court proceedings. I am aware that it is an offence to make a statement that is known by me to be false or intended by me to mislead.

[redacted] 24 October 2018

Date

Date statement finished: 24/10/18 Time: 19:35

Signature witnessed by: [redacted]

Signature [redacted] *Date* 24/10/18 *Time* 19:35

Statement taken by:

(If different to person witnessing signature) *Print name and QID*

Signature *Date* *Time*

..... witness initials

New Zealand Police

STATEMENT

Section 82 Criminal Procedure Act 2011

Statement of: [redacted] Age *(if under 18)*:

Date statement taken: Wednesday 31 October 2018 Time: 10.45 am

Location: Christchurch

[redacted] state:

1. That is my full name.
2. I am an [redacted] and I work fo[redacted]
3. In about July or August of 2010 I worked at the Pike River Mine on the West Coast of New Zealand.
4. I was the [redacted] the early stages until Pike River took over the operations and from that stage on I worked in th[redacted] and occasionally for a while I returned to Pike River to assist as the underground [redacted]
5. I understand that the conveyer belt in the Pike River Mine which was owned and run by [redacted] was first installed in July and August 2007. It was just after the 300 metres of tunnelling. I remember this because the first length of conveyer was 300 metres long.
6. Electrical components for the conveyor belt were purchased as a complete system from Australia. I cannot recall the company name as I was not involved in the procurement process.
7. The controls for operating the conveyer belt were in the small control room next to the conveyor outside of the tunnel entrance and the [redacted] on shift were responsible for operating these controls.
8. The controls' location were at the conveyor operating room outside the tunnel however it could also be started from inside the mine at the Grizzly.

..... witness initials

New Zealand Police

STATEMENT CONTINUED

Section 82 Criminal Procedure Act 2011

Statement of: [redacted] Age *(if under 18)*: .....

9. The procedure for the belt start-up was relatively simple. You accessed the shed and touched the green START button on the touch screen which was situated on the PLC panel. It was just a matter of pushing either of the start buttons. The start and stop buttons worked on a touch screen on the PLC panel. The shed was not locked as the operator just needed to access the control room to start up and stop the conveyor from outside the tunnel. This was the case while we were tunnelling and I cannot comment on this from after the time I left. The PLC password was only required for a trained Technician to make changes to programming of the PLC and since this was done by the automation engineer no one accept me had access to the password. I had to make changes at one stage when the touch screen was broken to enable the conveyor to be started from physical stop and start buttons until the broken touch screen was replaced. I have never passed knowledge of the password to anybody else.

10. The PLC starting system was programmed by the automation engineer from Australia who designed the control and commissioned the conveyor system. The conveyor programme should still be available for download in the PLC.

11. I don't know if any Pike River employees had access to the belt controls or not as this happened after I left.

12. During the time [redacted]used the belt we had the normal issues where some of the warning devices got wet because of water ingress and the belt would fail to start.

13. Electronic safety devices that monitored and activated the pull cord along the belt at times also failed and this would cause the belt not to start as well.

14. At a later stage I installed a variable speed drive on the motor to give it a smooth slow start because the design only had a soft starter installed which caused a jerky movement when the loaded belt started.

15. To my knowledge there was a safety device alarm which alarmed when the system was started up and this could not be turned off unless it was intentionally disconnected by a

..... witness initials

New Zealand Police

STATEMENT CONTINUED

Section 82 Criminal Procedure Act 2011

Statement of: [redacted] Age *(if under 18)*:

qualified electrician who could understand the electrical schematics and who had access into the conveyor control panel.

16. The alarm system had a sounder outside the control room and Piezo alarms along the belt that sounded and from the drift onwards, red lights that flashed for 30 seconds to warn people that the belt was about to start.

17. I am not aware of any [redacted] staff who were at the mine on the 24th of the 11th 2010. I was working in Christchurch at this time.

18. I have viewed the video of the second explosion at Pike River and it is my expert opinion it looks like the shockwave from the explosion caused movement of the belt. The belt was elevated at the drift to allow access into the crusher area and I would think it would have been like a huge blow against a flat surface of the belt and that surely would have caused this movement.

I confirm the truth and accuracy of this statement. I make the statement with the knowledge that it is to be used in court proceedings. I am aware that it is an offence to make a statement that is known by me to be false or intended by me to mislead.

Signature [redacted] *Date* 31/10/2018

Date statement finished: Time:

Signature witnessed by:

Print name and QID

Signature *Date* *Time*

Statement taken by:

(If different to person witnessing signature) *Print name and QID*

..... witness initials

New Zealand Police

STATEMENT CONTINUED

Section 82 Criminal Procedure Act 2011

Statement of: [redacted] Age *(if under 18)*: .....

Signature [redacted]	*Date* 31/10/2018	*Time* 13H39.

..... witness initials

New Zealand Police

STATEMENT

Section 82 Criminal Procedure Act 2011

Statement of: [redacted] Age *(if under 18)*: _____

Date statement taken: _____ Time: _____

Location: _____

I [redacted] state:

1. That is my full name.

2. I am engineer and have previously worked for [redacted] at the Pike River Mine Site in Greymouth.

3. I started at the mine on 9 November 2009, my job there was to maintain the conveyor belt and other equipment [redacted] had on site.

4. I have been asked by [redacted] to comment on facts I know around the conveyor belt and the systems which controlled it.

5. The belt could be started from two places if I remember correctly, one place is at the Grizzly and the other was outside the portal.

6. Grizzly is an area approximately situated in pit bottom in stone a significant distance into the tunnel.

7. The tunnel Superintendent, the shift boss and myself were be the only people that would normally start the belt.

8. At times it was a little bit difficult to start as the duple line would get tripped and I would spend an hour to two finding the trip switch to reset it.

9. My professional opinion about the tripping is that the first blast would have tripped a few of these switches.

..... witness initials

New Zealand Police

STATEMENT CONTINUED

Section 82 Criminal Procedure Act 2011

Statement of: [redacted] Age *(if under 18)*: _____

10. The Pike employees would ask the tunnel supervisor and or shift boss if they could use the belt.

11. When starting the belt an alarm would sound then the transfer belt would start up and when it got to 80% speed the main tunnel belt would start.

12. If starting from the portal only the transfer and the tunnel belt would start, if starting from the Grizzly all belts would start in order.

13. I am aware that the alarm could be turned off but not by Pike staff as this would only be done by using a laptop with the belt programme and the skill and the knowledge of the operation of the belt programme.

14. [redacted] had a laptop locked up in their office and Pike River staff would not be able to access it.

15. The only [redacted] staff member I know on site at the time of the second explosion was a person from [redacted] and he was there as a member of Mines Rescue.

16. I am unsure of his name.

17. In examining the portal video the video does not show the belt starting up as it starts very slowly, I think it took about ten minutes to ramp up to full speed.

18. A further examination of the video shows if you look closely at the left top you can see the belt in the take up section goes slack at the same time as the return side, if the belt was starting it would not go slack before the motor drive kicked in.

19. My examination of the belt in the portal video shows that both the return and the carry sides of the belt go slack at the same time, this is not consistent with how the belt would start up under normal operations.

..... witness initials

New Zealand Police

STATEMENT CONTINUED

Section 82 Criminal Procedure Act 2011

Statement of: [redacted] Age *(if under 18)*: _____

I confirm the truth and accuracy of this statement. I make the statement with the knowledge that it is to be used in court proceedings. I am aware that it is an offence to make a statement that is known by me to be false or intended by me to mislead.

[redacted]
Signature

24/11/2018
Date

Date statement finished: Time:

Signature witnessed by: _____
Print name and QID

Signature *Date* *Time*

Statement taken by: _____
(If different to person witnessing signature) *Print name and QID*

Signature *Date* *Time*

..... witness initials [redacted]

New Zealand Police

STATEMENT

Section 82 Criminal Procedure Act 2011

Statement of: [redacted] Age *(if under 18)*:

Date statement taken: Thursday 17 January 2019 Time: 2.30 pm

Location: Christchurch

I [redacted] state:

1. That is my full name.

2. I am employed as a [redacted]

3. My previous employment was as the [redacted] for [redacted] at Pike River Coal on the West Coast of New Zealand.

4. I have a substantial history and experience in underground tunnelling including work at Manapouri, Clyde Dam, I have worked on tunnelling in both New Zealand and Australia.

5. I began my employment at Pike River at the same time that the tunnel was first being planned and [redacted] ontracted to Pike River Coal to build the tunnel. I was the first [redacted] t Pike River and started there about 2006. At this time I had an A Certificate as a Tunnel manager and a coal miner deputies certificate.

6. In addition to being responsible for building the tunnel and a lot of the infrastructure at the tunnel I was responsible for building and maintaining the conveyor belt at Pike River. I have a good knowledge of the tunnel and conveyor belt at Pike River, I know how it was run, how it was built and the infrastructure around the belt and its operations.

7. The conveyor belt was built from an Australian design and we built it in increments. As the tunnel got longer so did the conveyor belt.

8. The engineering for the belt was done by [redacted] t Greymouth.

[redacted] itness initials

New Zealand Police

STATEMENT CONTINUED

Section 82 Criminal Procedure Act 2011

Statement of: [redacted] Age *(if under 18)*: .....

9. At the time of the explosion at Pike River on 19 November 2010, the tunnel went from the portal to the grizzly.

10. The conveyor belt at this time could be started from both the grizzly and at the portal. The grizzly was approximately 200 metres in-bye of Pit Bottom an area In stone. The container office for [redacted] was situated on the right hand side of the Portal (looking into the tunnel), the office in which the conveyor control computer was situated was at the back of this container office.

11. The procedure for starting the conveyor belt was that you would go to the [redacted] container. At the back of this container was a shed which contained the computer which was used to start the conveyor belt. The computer required a log-on and password access.

12. The [redacted] staff who had access and the ability to start the conveyor belt were as follows: [redacted] myself, the electricians and some deputies for Pike River. The Pike employees would always ask myself or the other [redacted] or permission to use the belt.

13. Once the log-on access was entered, there was a procedure to start the conveyor belt which was preceded by a warning buzzer throughout the mine which went for either 30 seconds or a minute prior to the belt starting.

14. The conveyor belt required regular maintenance and I would drive or walk the conveyor belt almost on a daily basis to establish what maintenance was required. There was often something such as rollers or belts which needed repairing or replacing. The belt itself was kept under an extreme tension, as you can imagine, the weight on the belt was many tonnes of rock so the tension required to keep the belt taught was many tonnes.

15. On the day of the second explosion, I was at Pike River Mine. Myself and several staff had been contracted to get the Shotcrete plant running and this involved us going to the portal and retrieving materials from our container there. The items we retrieved were placed into my Ute.

[redacted] ness initials

New Zealand Police

STATEMENT CONTINUED

Section 82 Criminal Procedure Act 2011

Statement of: [redacted] Age *(if under 18)*: .....

16. I and several others were at the container approximately an hour before the second explosion. From memory there was [redacted] and maybe [redacted] I think there were also two Mines Rescue staff in and around the portal area. Their names were [redacted] Coal and I think [redacted]. (Although I can't be sure it was him).

17. All the [redacted] staff and I think Mines Rescue staff left the portal area approximately an hour before the explosion. This should be shown in the CCTV footage from the camera at the portal. I think we had been given some information that the gas levels (methane levels) were rising in the mine and so it was becoming unsafe to be at the portal area.

18. I was not involved in the preparation of any risk assessments or the discussion around starting the conveyor belt post the first explosion. I had heard talk around doing a risk assessment for the belt but nothing more than that. The conveyor belt could not run in reverse. I recall, but was not involved in the preparation of a risk assessment, however, there were no safe operating procedures (SOPs) completed with respect to this assessment and consequently as far as I know there were no immediate plans to start the conveyor belt. I would have thought that if there were any plans to start the conveyor belt then I, as the person in charge of the belt, would have been consulted.

19. At the time of the second explosion I was at the office at Pike river (at the administration area), not at the portal. The conveyor belt was not able to be started from the control room.

20. I don't believe there were any staff at the portal as we had received information that the gas readings inside the mine were high and that we should leave this area.

21. With respect to the ability to start the conveyor belt after the first explosion, there are many trip wires along the length of the conveyor belt. These were sometimes damaged which rendered an inability to start the belt.

[redacted] witness initials

New Zealand Police

STATEMENT CONTINUED

Section 82 Criminal Procedure Act 2011

Statement of: [redacted] Age *(if under 18)*: .....

22. My thoughts are it is highly likely that the first explosion would have damaged these trip wires or other areas of the belt and rendering it incapable for the conveyor belt to be started.

23. I have viewed the media footage which shows the second explosion and listened to the clunk that was made by the conveyor belt. The belt would often go clunk by itself but would not make any noises at start-up. The clunk was caused by the pressure on the belt from further in the mine.

24. It is my opinion that the movement of the belt which was under a huge amount of pressure was caused by the explosion and not by anybody trying to start it. Certainly myself or none of my staff had anything to do with attempting to or starting the conveyor belt.

25. The other experts with respect to the belt are [redacted]

I confirm the truth and accuracy of this statement. I make the statement with the knowledge that it is to be used in court proceedings. I am aware that it is an offence to make a statement that is known by me to be false or intended by me to mislead.

Signature [redacted] *Date* 21 1 2019.

Date statement finished: 21 1 2019 Time: 800 AM.

Signature witnessed by:

Print name and QID

Signature *Date* *Time*

Statement taken by:

(if different to person witnessing signature) *Print name and QID*

[redacted] s initials

New Zealand Police

STATEMENT CONTINUED

Section 82 Criminal Procedure Act 2011

Statement of: [redacted] Age *(if under 18)*: .....

Signature	*Date*	*Time*

..... witness initials

New Zealand Police

STATEMENT

Section 82 Criminal Procedure Act 2011

Statement of: [redacted] Age *(if under 18)*: _____

Date statement taken: 30-10-18 Time: _____

Location: _____

I [redacted], state:

1. That is my full name.

2. I am an [redacted] and I previously worked for [redacted] the Pike River Mine in 2010.

3. I've been asked by [redacted] o give my knowledge around the conveyor belt system installed at the Pike River Mine.

4. From my recollection the conveyor belt system was first installed and used in 2007.

5. The conveyor belt was owned and managed by [redacted].

6. The controls which operated the conveyor belt were in a shed next to the portal entrance.

7. Only [redacted] staff were permitted to start the belt.

8. Pike River employees had access to the shed but were not allowed to start the belt and had no need to do so.

9. Prior to the explosion in the mine there were no problems with the conveyor belt and it was in good operating condition.

10. There was an alarm which sounded at the starting of the belt, to my knowledge this alarm was not able to be turned off and was connected to the electric starting mechanism.

11. I am not aware that there were any [redacted] staff who were present at the mine on 24 November 2010 at the time of the second explosion.

..... witness initials

New Zealand Police

STATEMENT CONTINUED

Section 82 Criminal Procedure Act 2011

Statement of: [redacted] Age *(if under 18)*: .....

12. I was not on site after the first explosion.

13. I also have no knowledge of any [redacted] staff being around the portal of the mine at this time.

14. There are certain other matters which obviously are of relevance with the conveyor belt.

15. The conveyor belt motor was started through a soft starter system, this means that it started at a slow speed and gradually increased.

16. In the video footage of the second explosion showing the conveyor belt only a clunking noise can be heard and no noise from the motor gearbox which controlled the belt.

17. The large Bonfiglioli gear boxes are renowned from the noisiness and especially the one at Pike River had a typically loud gear box noise as it was being started.

18. The clinking noise heard on the video is not a noise from this gear box.

19. In the footage showing the second explosion seconds after the clunking noise the force of the blast can be seen.

20. My expert opinion about this is that the clunking noise was caused by the blast force from inside moving the belt and not the start-up of the belt.

21. The blast force travelled from 2.3 kilometres in the drift outside the portal in two seconds is not possible.

22. I have given thought to the stretch factor of the belt and the distance to the return drum, no idliers or rollers would have moved at the tail end of the conveyor belt at the portal for at least three seconds.

23. It is my opinion this means no parts would have been moving to cause an ignition source that far up the drift and correspondingly show the blast at the portal at the same time. The time frame is way too short.

..... witness initials

New Zealand Police

STATEMENT CONTINUED

Section 82 Criminal Procedure Act 2011

Statement of: [redacted] Age *(if under 18)*: .....

24. The only persons I believe that might be able to shed further light on this are [redacted] the [redacted] at Pike River and [redacted] who was a [redacted] Electrical Engineering at Pike River.

25. The belt was started via the use of a laptop program, only [redacted] staff were permitted to use this laptop, when not being used the laptop was locked up on site.

I confirm the truth and accuracy of this statement. I make the statement with the knowledge that it is to be used in court proceedings. I am aware that it is an offence to make a statement that is known by me to be false or intended by me to mislead.

Signature *Date*

Date statement finished: Time:

Signature witnessed by:

Print name and QID

Signature *Date* *Time*

Statement taken by:

(If different to person witnessing signature) *Print name and QID*

Signature *Date* *Time*

..... witness initials

New Zealand Police

STATEMENT

Section 82 Criminal Procedure Act 2011

Statement of: [redacted] Age *(if under 18)*:

Date statement taken: 3 October 2018 Time: 4 pm

Location: Greymouth

I, [redacted] state:

1 That is my full name.

2 I am a Coal miner, I started mining when I was 16 years old, my mining has been in coal mining, and in September 2008 I started work at Pike River in the Control room.

3 At the time of the second explosion at about 2.37 p.m on the 24 November 2010, I was working in the control room at Pike River.

4 At the time of the explosion I was in the control room with [redacted]

5 I was showing him the video of the first explosion and although this was a week after the first explosion [redacted] ad not actually viewed the footage before this time. He told me he had never seen it and asked me to show him through it.

6 We were the only two people in the control room at the time.

7 I have completed a sketch for [redacted] showing where we were in the control room.

8 I recall the time and the incident really well, and I will tell you why. I didn't realise it at the time but there was a news article with John KEY and I recall him talking about the first explosion.

9 As soon as the second explosion occurred [redacted] came in and told me to turn the camera on. I turned the portal camera on and viewed the video of the explosion.

10 [redacted] umped up and said, "This is why I wouldn't let anyone else go in."

[redacted] witness initials

New Zealand Police

STATEMENT CONTINUED

Section 82 Criminal Procedure Act 2011

Statement of: [redacted] Age *(if under 18)*: _____

11 I then phoned down to the office block and I got [redacted] [redacted] came up and saw the video and he burst out crying.

12 At that time there were only three of us in the control room.

Conveyor Belt

13 I have been asked by [redacted] to explain the conveyor belt starting procedure.

14 There was a procedure for starting it, and that was when you pushed the button to start the belt there was a two or three minute alarm which went off. This was an audibale alarm at the portal.

15 The alarm and the sound of the alarm would have been recorded on the portal video.

16 The conveyor belt was under the control o[redacted] It was their belt. If the Pike staff wanted to use it they would use it in conjunction with [redacted] staff. Pike staff would not use it without them.

17 I remember it was a bit of a nightmare to start the belt and sometimes there were difficulties with actually getting it going.

18 I cannot recall what [redacted] staff were up at the mine during this time. I don't think there were too many [redacted] guys left at Pike River at all at this time.

19 The portal at this time was a no-go zone and it was a restricted area.

20 Obviously if there has been one explosion the risk of a second explosion is then much higher and that is why nobody was allowed to go down by the portal area.

21 I have drawn a diagram for [redacted] showing where the conveyor belt was and where the start controls were as well.

22 I don't think at the time anyone was down in the portal area, it was sort of a cordoned off area.

[redacted] witness initials

New Zealand Police

STATEMENT CONTINUED

Section 82 Criminal Procedure Act 2011

Statement of: [redacted] Age *(if under 18)*: .....

23 Once everyone realised that the first explosion had happened no-one was going to go down there.

24 Mines rescue staff were back at the amenities block at this time and they were preparing their equipment for a trip into the mine.

25 There was no ability to start the conveyor belt from the control room at Pike, it had to be started from the little office room or starting room at the portal area.

I confirm the truth and accuracy of this statement. I make the statement with the knowledge that it is to be used in court proceedings. I am aware that it is an offence to make a statement that is known by me to be false or intended by me to mislead.

[redacted] 16/10/18

Date

Date statement finished: 16/10/18 Time: 0845h

Signature witnessed by:

Print name and QID [redacted]

Signature [redacted] *Date* 16/10/18 *Time* 0845h

Statement taken by:

(If different to person witnessing signature) *Print name and QID*

Signature *Date* *Time*

..... witness initials

Starting the Tunnel Belt

RISK ASSESSMENT V2

(DRAFT DOCUMENT)

PIKE RIVER COAL

DEPARTMENT:	ENGINEERING		DATE
ORIGINATOR:	[redacted]	[redacted]	22/11/2010
TITLE:	ENGINEERING MANAGER		
AUTHORISER:	[redacted]	[redacted]	22/11/2010
TITLE:	GENERAL MANAGER		

Phone 135

PIKE 12513

POLICE.BRF.19

PIKE.00294

UNCONTROLLED DOCUMENT WHEN PRINTED

Document Title:	Page:	Issue Date:
SEND TO [redacted] TO GET A NUMBER	1 of 10	22 November 2010

1.0 EXECUTIVE SUMMARY

A risk assessment was conducted on the 21st of November 2010 in response to unplanned explosion underground and consequent trapping of 29 crew members and contractors on the 19th of November 2010.

The risk assessment was facilitated by the Pike River Management Team in accordance with AS/NZS 4360:2004 Risk Assessment standard.

The key risks identified AFTER controls are in place are:

Key Risk	Controls	Revised Risk Rating
Secondary Explosion	• Checking gas trends, using only trained Emergency Response Personnel	Moderate

3.2 Risk Assessment by the Expert Team

The Expert Team Meeting commenced with introductions by the facilitator. The team consisted of:

Name (print)	Position	Company
[redacted]		Pike River Coal
		Pike River Coal
		Pike River Coal
		Key Mining Services
		Pike River Coal

3.3 Compliance to Scope and Objectives

The expert team were reminded of the scope and objectives of the risk assessment and the need to remain within the established context throughout the process of the assessment.

3.4 Identify Risks and Potential Impact

Each consideration was brainstormed and analysed to determine the risks and the impacts on the mine operation. All risks were recorded for each consideration including the detail of what could happen.

3.5 Estimating Probability and Consequences

An estimation of the probability of occurrence and the consequences was agreed by the team for each identified risk. The basis of the rating was provided by Pike River Coal's Risk Matrix System. (Tables 1, 2and 3 on following pages)

4.0 RESULTS FROM THE RISK ASSESSMENT

Impact HS - Health & Safety EQ - Equipment BS - Business ENV - Environment CL - Cultural Analysis: Probability A-E Consequences 1-5 Risk Rating 1-25

Action	Hazard	Impact	Prob	Cons	Risk rating	Proposed Controls	Prob	Cons	Res Risk rating	Resp
Check that the Belt can be started	Personal injury when crossing portal					• Minimise time and number of people • Check gas trending	D	5	19	R Ridl
	Electrocution					• PPE • Electrician to check	D	5	19	Rob Duncan
Mark the Belt	Personal injury when crossing portal					• Minimise time and number of people • Check gas trending	D	5	19	R Ridl
	Electrocution					• PPE • Electrician to check	D	5	19	Rob Duncan
						• All people involved to be on the compressor side of the portal to stop continual movement across the portal	D	5	19	R Ridl
						• Time the belt in case of burn mark identified on the belt etc. This can gave an indication of how far in the mark was up the drift • Use Mines Rescue Team	D	5	19	R Ridl

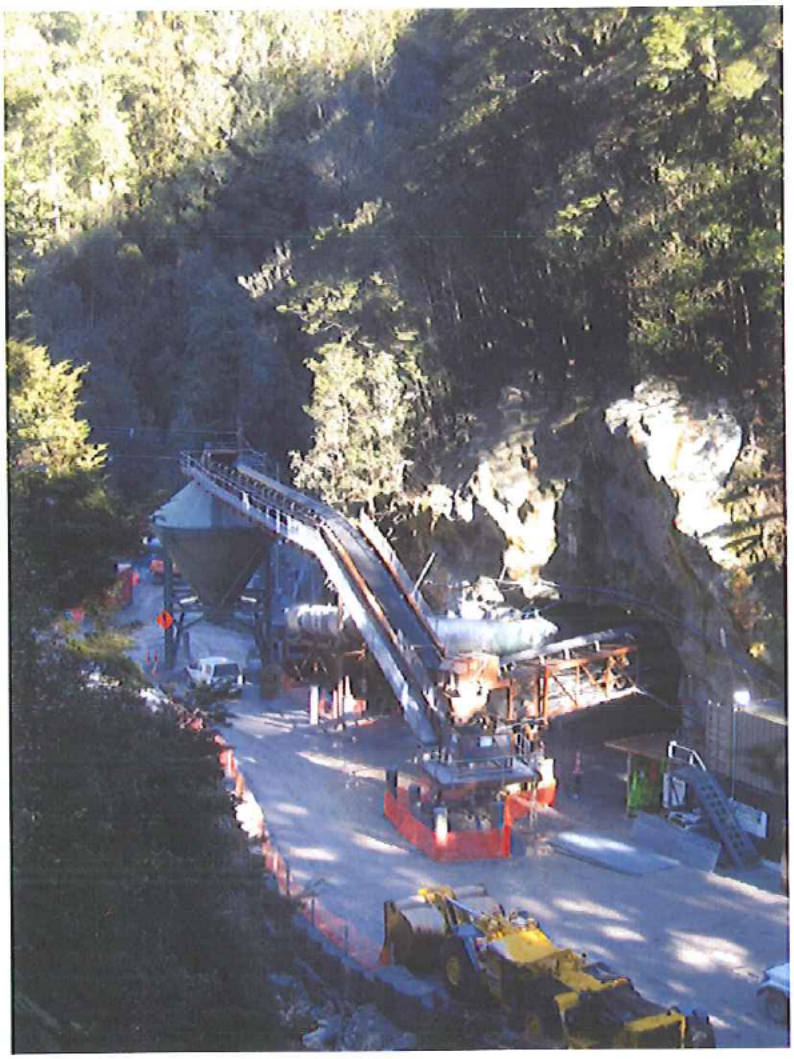
Action	Hazard	Impact	Prob	Cons	Risk rating	Proposed Controls	Prob	Cons	Res Risk rating	Resp
Placing camera on belt to feed in to tunnel	Potential for patient/body/ part thereof coming out					• Prior to feeding the belt in to the mine it should be drawn out first • [redacted] & Police Officer to suitable site to view belt • Body Recovery Police on site • In the event of a patient, [redacted] will provide treatment • Helicopter or onsite ambulance to location. • Take air readings at the portal	E	5	15	Police and emergency services

5.1 RESULTS FROM THE RISK ASSESSMENT

RISK ASSESSMENT ACTION PLAN						
Additional Controls	Action Required	Accountable Person	Responsible Person	Due Date	Completion Date	Signature

PIKE RIVER COAL

MACHINERY GUARDING HAZARD SURVEY OF THE CONVEYOR AT THE PIKE RIVER COAL TUNNEL



Conducted by [redacted]

Monday 18th June 2007

[redacted]

PIKE RIVER COAL

INTRODUCTION

The identification of hazards and their control through elimination, isolation, or minimisation of risk to employees, temporary staff, visitors, contractors or the general public at large, is a principle aim of Safety Management.

Hazards related to workplace safety generally and machine safety specifically, have frequently been identified early enough so that controls or procedures may be put in place to eliminate, isolate or mitigate the risk, thus avoiding the possibility of a fatality or serious workplace injury.

All persons in any place of work have a responsibility to follow Regulations, Industry Standards, Work Procedures and Approved Codes of Practice or OH&S Guidelines as introduced to the workplace in consolation with Industry experts, OHS committee and/or workers' representatives.

BACKGROUND

Pike River Coal Limited is developing a new coal mine on the West Coast of the South Island near the town of Greymouth. The construction of a 2.3Km tunnel has progressed to a stage where a conveyor system was required to ensure an efficient means of removal of tunnel spoil. The system developed needed to be of a modular design so that its length could keep pace with tunnel advancement.

The tunnel was widened and conveyor system installed at a chainage of 650 m. It is anticipated that further advancement of the conveyor system will occur as required. The system was designed by Enginuity from Australia and manufactured locally by [redacted]n Greymouth. It was noted during the audit process, that the equipment has been installed with a pre-start warning system, protective stop control, emergency stop controls, stop start controls and emergency pull wire

SCOPE

It should be acknowledged that this type of audit is simply a snap-shot of the activity and situation at a specific given time. Such an exercise will only reflect the hazards, work-practice and equipment in place on that day. With that in mind, [redacted] the [redacted] and [redacted] were requested to complete a general hazard survey and guarding audit of the newly installed conveyor system at the Pike River Tunnel.

These instructions included confirming that the system meets the design requirements to fully conform to the Australian Standard, AS 1755. 2000. Additional references were used in the production of this report and these can be found listed on page 5.

[redacted]

PIKE RIVER COAL

Definitions

Control circuit isolation the interruption of the control circuitry of the drive motor(s) of a conveyor system.

Conveyor system An installation comprising one conveyor or multiple conveyors used in connection with the conveyor.

Danger zone Any zone in or around a conveyor or conveyor system in which a person is subject to risk to health and safety.

Emergency stop A manual or automatically operated system designed to stop a conveyor system in the shortest practicable time in an emergency.

Fixed Guarding Guarded which can only be removed by the use of tools.

Guarded by location or position Moving parts which are protected by their remoteness from the floor, platform, walkway or other working level or which by their location with reference to frame, foundation, or structure remove the foreseeable risk of accidental contact by people or objects.

Inching means limited motion of machinery where dangerous parts of machinery are exposed during cleaning, setting, adjustment or feeding material and, depending on the machine and industry, may include the terms jog, crawl and pulse.

Machinery means an engine, motor or other appliance that provides mechanical energy derived from compressed air, the combustion of fuel, electricity, gas, gaseous products, steam, water, wind, or any other source; and includes-

(a) Any plant by or to which the motion of any machinery is transmitted; and
(b) A lifting machine, a lifting vehicle, a machine whose motive power is wholly or partly generated by the human body, and a tractor.

Nip Point That point at which a moving conveyor element meets a fixed or moving element so that it is possible to nip, pinch, squeeze or entrap parts of the human body coming into contact with one of the two elements.

Plant includes any-

(a) Appliance, equipment, fitting, furniture, implement, machine, machinery, tool, and vehicle; and
(b) Part of any plant, the controls of any plant, and any thing connected to any plant.

Prime mover means an engine, motor, or other appliance that provides mechanical energy derived from steam water, wind, electricity, gas, gaseous products, or any other source, and includes any device which converts stored or potential energy into movement or mechanical energy.

[redacted]

Pull wire A wire connected to a device, normally provided for emergency stop control which, when pulled, activates the device.

Securely fenced means so guarded that the arrangements provided ensure that the dangerous part is no longer dangerous in the sense that there is no longer a reasonably foreseeable risk of injury to any person employed or working in the place of work, even a person who is careless or inattentive while in the vicinity of a machine or using a machine.

Safe by position means so positioned that any person cannot reach or gain access to the dangerous parts.

A ***supplier*** – with regard to the responsibilities they have in relation to machinery – includes any person who sells or hires plant or who offers plant for sale or hire.

Transmission machinery means any shaft, wheel, drum, pulley, system of fast and loose pulleys, gearing, coupling, clutch, driving belt, chain, rope, band, or other device by which the motion of a prime mover is transmitted to or received by any machine or appliance.

Machine guarding and ergonomics When guards and barriers are used to provide secure fencing for machinery these guards and barriers should be designed so that people cannot reach over, around or through them and come into contact with the prime movers, transmissions and other dangerous parts of any plant or machinery.

Exposed person - means, any person wholly or partially who is in an area or danger zone where that person is within or around machinery that any person may be subject to a risk to their health or safety.

[redacted]

PIKE RIVER COAL

References:

The Health & Safety in Employment Act 1992

The Health & Safety in Employment Regulations 1995

(Section 6 (c) directly applies. As do Regulations 17, 66 and 67 from the HSE Regulations 1995).

Excerpts from the Machinery Act 1950; (now repealed in New Zealand) Appendices relating to the ergonomics and overall principles of machine guarding (are still applicable and used in New zealand).

(AS/NZS) 4801; 2001 OH&S Management Systems

(AS 4024.1 Safeguarding of machinery 1996

(AS 1755) Emergency Stop Controls

(AS 4024) Safe Guarding

(AS 1755) 2000 Conveyors Safety requirements

(NZS/AS 1319) Safety Signs

(AS 1318) (AS 1345) (AS 4024) Colour Coding

(AS 4024) Machine Safe on Power Failure

(AS 4024) Machine Safe on re Powering

(NZS/AS 1269) Noise Level Below 85dB(A)

(AS 1680) Adequate Lighting

(AS 4100) Structural

(NZS/AS 30001) Electrical

[redacted]

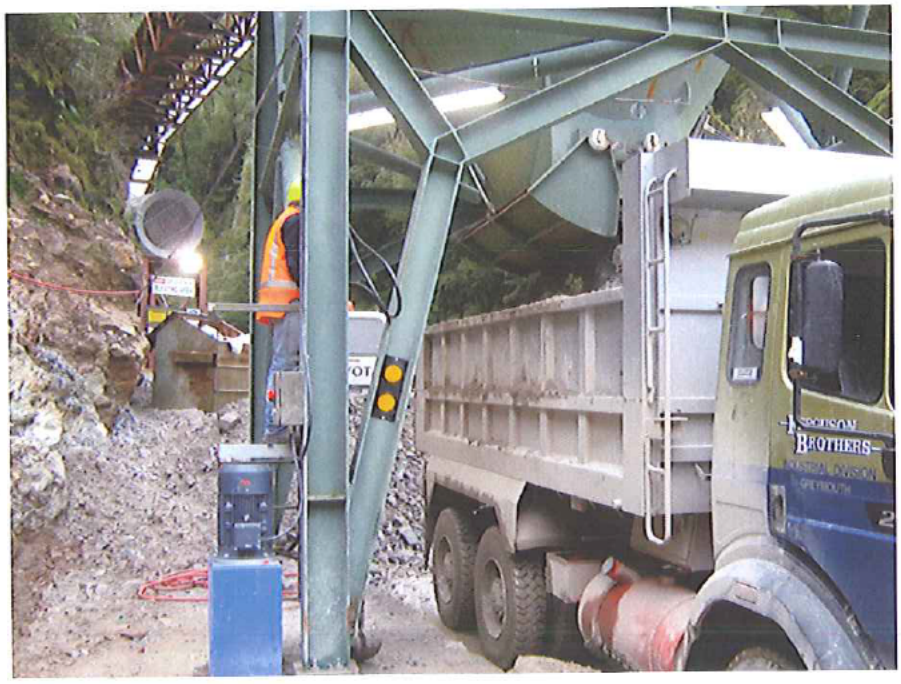
PIKE RIVER COAL

1) **After commissioning of the conveyor is completed:**
Reportedly, there will be in place daily pre-operational checks including mechanical checks, electrical check lists and emergency stop operational checks., (which will involve physically, "pulling the cord" each shift). These will be fully documented and logged for evidential purposes.

2) **Effective Barrier Required:**
Fencing should be installed around the hopper to prevent access from foot traffic while truck not under the hopper or while reversing onto the concrete pad.

[redacted]

3) **Safety Signage**
This area should also be sign posted with a sign that reads "No Unauthorised Entry" or similar. An additional safety feature was noted, that being that the top transverse conveyor belt will not start while the hopper doors are open. Consideration should be given to testing this function, not on a daily basis but perhaps as part of any preventative maintenance programme to be set up?



4) Hose Reel required mitigating the risk of a slip trip or falling injury by the person assigned the responsibility and conducting any clean-up work.

[redacted]

PIKE RIVER COAL

5) The standard, AS 1755 at 3.2.1 talks about guarding being in place to prevent conveyed materials accidentally falling or being projected onto persons. As a consequence, consideration should be given to the installation of mesh guarding on underbelly of hopper or transverse conveyor to prevent wastage falling onto persons walking beneath.

6) Reflective tape and appropriate fencing around bollards should be considered that protect the legs of the conveyor system at portal entrance.

[redacted]

7) The main access ladder should be secured in position. This is the ladder that leads up and onto the transfer conveyor to the hopper. There is what appears to be a welded stand and platform. This modified platform should be installed.

8) Largest rocks into grizzly and reportedly around 300mm. Potential hazards associated with these catching on tunnel roof causing potential blockage or pulling electrical cable down. This should be further investigated to ensure appropriate clearance is maintained.

[redacted]

PIKE RIVER COAL

9) The outside handrail fencing should be continued to mesh all the way along the top conveyor walkway to hopper. Currently this protection only extends half way across the gantry

10) The main drive motor on transfer conveyor on top of hopper requires a guard around the drive shaft couplings.

[redacted]

11) A Hand rail is required on the top access stairs on transfer conveyor. Where you descend onto the lower level.

12) Fire protection needs to be considered for drive motors. The appropriate extinguisher should be installed near each of the drive motors. These should be placed 4 - 6 meters away to ensure the safety of those attempting to extinguish any electrical fire.

13) Warning to persons entering the tunnel that throw material may fall from suspended conveyor if overloaded at grizzly. Consideration should be given to including this in any induction process or training given and is relevant to the first twenty or so metres of the tunnel where tension control is operated from. This does not present as a hazard from the point where the belts come back together.

14) Guard gaps in the mesh around controls of in-bye take up legs. These need to be extended to isolate the equipment properly. A person should not physically be able to reach through or around any guarding device and come into contact with any moving machinery.

15) It was noted as the conveyor was walked that there are water hose outlets x 6 – at approximately every 100 meters. These should have reflective fire signs installed to clearly identify them for any emergency situation.

[redacted]

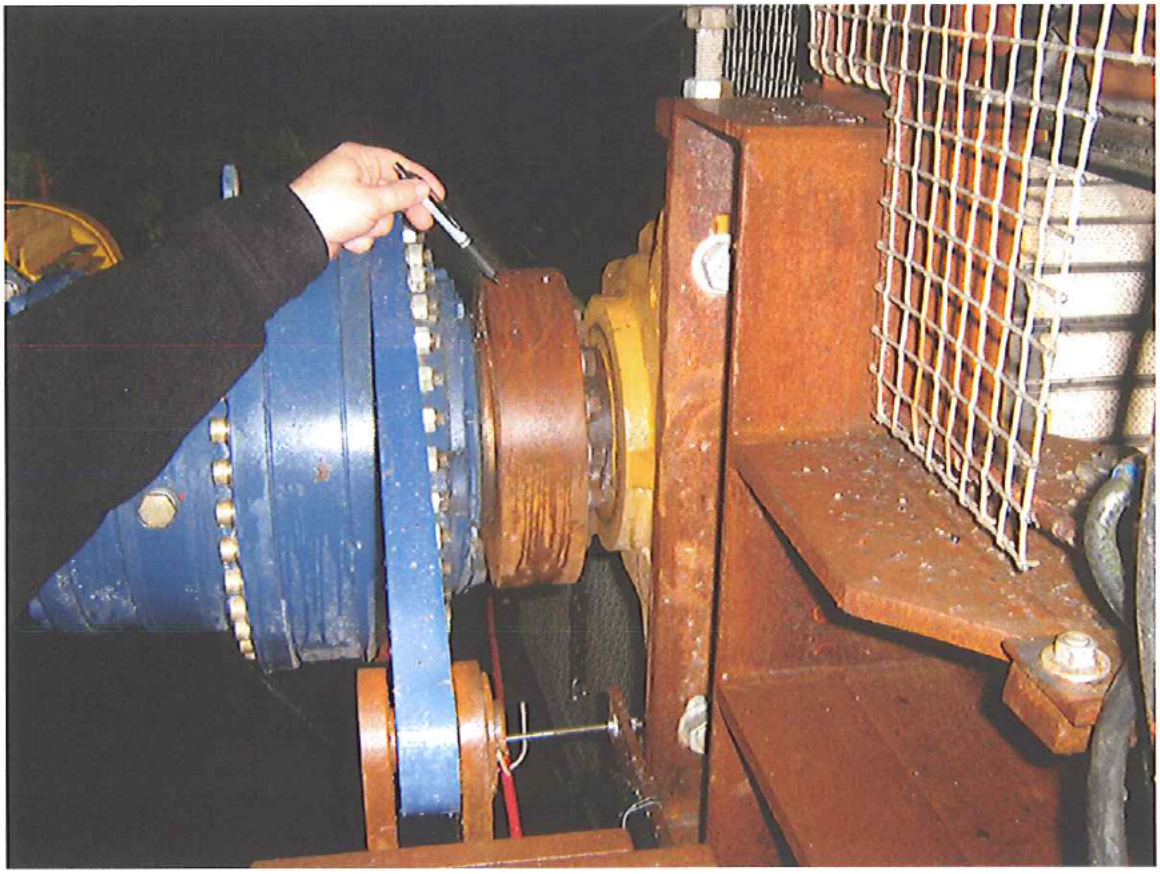
16) Grizzly tracking interlocks - access to moving machinery - guard needs to be extended so that people cannot reach into this danger zone..

17) Below to the back of bootend can reach in to moving machinery, this access need's to be guarded.

[redacted]

18) To much mesh has been cut away around the tracking safety devices. This should be guarded in such a manner as to prevent access to moving parts and/or pinch points.

[redacted]



19) Main bootend motor - guard spinning shaft on couplings. A protective cover should be designed and installed over this spinning drive so as to prevent any person from being seriously injured by getting their hand caught.

SUMMARY

It is acknowledged that the conveyor system at the Pike River Tunnel is still being commissioned so additional hazards and risks may be identified during or post that process. As an interim and after all remedial actions identified in this document, it is our joint professional view that this conveyor system has been built and installed according to the specified standard and by following sound work practice.

[redacted] **Signature** [redacted]

[redacted] Signa [redacted]

New Zealand Police

STATEMENT

Section 82 Criminal Procedure Act 2011

G

Statement of: [redacted] Age *(if under 18)*: ----------

Date statement taken: 20-11-18 Time: ----------

Location: ----------

I, [redacted] state:

1. I am currently a [redacted], [redacted]

2. At the time of the Pike River Coal Mine explosion on 19 November 2010 I was an [redacted] with the New Zealand Police.

3. Following an explosion at the Pike River Coal Mine on 19 November 2010, I was appointed by the New Zealand Police [redacted] to the role of [redacted] responsible for strategic oversight.

4. The [redacted] at the scene was [redacted].

5. [redacted] was the officer in charge on the ground at the Pike River Coal Mine. At the 'tactical level' Forward Commanders were appointed to work at the coal mine with the various mining experts and associated emergency services.

6. On the 20th November 2010 I was in regular contact with [redacted]. It was established that any critical decisions (in particular any entry to the mine, by persons or critical equipment, critical changes in the atmosphere of the mine and any change from rescue to recovery) would be referred to me. [redacted] was facing a very fluid and challenging operating environment and my involvement in the decision making process provided for further objectivity and critique of that process. It was also very clear that both Mines Rescue and the Department of Labour were key players in the decision making process in relation to any attempt to enter the mine. It was the case that as the

 ..... witness initials

New Zealand Police

STATEMENT CONTINUED

Section 82 Criminal Procedure Act 2011

Statement of: [redacted] Age *(if under 18)*: _____

mine was a workplace the Department of Labour would have the power to issue a prohibition notice if the Inspectors decided entry should not be attempted. Viewed in this way it was appropriate for the Department of Labour to sign off any entry attempt to what was a dangerous and unpredictable workplace.

7. Oversight of the risk assessments was implemented and risk assessments were required in regard to major decisions impacting the rescue and recovery phase of the operation.

8. The tactical level risk assessments were prepared under oversight of [redacted] at the forward base by a panel of experts comprising NZ Police, NZ Mines Rescue Officers, mining experts and representatives of the Pike River Coal Mine company. However the exact composition and expertise may have changed from time to time.

9. These risk assessments covered a wide variety of issues and occurred on a regular basis throughout the entire operation.

10. I understand that a 'proposal' to start the mine's conveyor belt was made by a representative or representatives of the River Coal Mine company through to the night shift [redacted] of Police [redacted] and the proposal to turn it on was not supported by Police.

11. At the handover between the Night Shift Response Coordinator ([redacted]) and the Day Shift Response Coordinator [redacted] f), around 0700hrs on 22 November 2010, the issue of turning on the conveyor belt was raised and not supported due to the possibility of it acting as an ignition source.

12. Emphasis was on an alternative approach that was implemented namely deploying the intrinsically safe robot with video recording capability into the mine to gather information.

..... witness initials

New Zealand Police

STATEMENT CONTINUED

Section 82 Criminal Procedure Act 2011

Statement of: [redacted] Age *(if under 18)*: _____

13. The risk assessment with regard to activating the conveyor belt was written by staff from the Pike River Coal Mining Company and forwarded to Police National Headquarters for consideration.

14. The risk assessment action plan at 5.1 of the document is blank. The risk assessment doesn't adequately address the risk of a further explosion.

15. Although it does include signatures of the representatives of the Pike River Coal Mine Company it contains no signatures or approval notation from members of the New Zealand Police which indicates this risk assessment was not finalised or approved.

> *"The risk assessment for the running of the conveyor belt within the mine is to be reviewed following entry of the robot into the mine"*
>
> *(23/11/2010 0001hrs Pike.19795 smart board notes Pike River Mine …….events page 55).*

16. On 26 November 2010 an interagency briefing document contained the following reference relating to deployment of the robot into the drift. The briefing likely occurred at Greymouth or at the Pike River Mine. This further indicates consideration regarding activation of the conveyor belt was not to be pursued until after information from the robot was available.

> *"it was able to show that the conveyor belt is now off its rails so we now know that we can't start that (conveyor belt) safely and we can't use that to move gear or anything as far as deployment. This was a particular point we had to cover off in terms of overall operation in terms of safety and in terms of giving us a bit of a look"*
>
> *(Pike 0235 briefing document at the Pike River Coalmine)*

17. [redacted] gave evidence at the Royal Commission of Inquiry into the Pike River coalmine disaster. He was being examined by [redacted] and was questioned regarding the conveyor belt.

..... witness initials

New Zealand Police

STATEMENT CONTINUED

Section 82 Criminal Procedure Act 2011

Statement of: [redacted] Age *(if under 18)*: _____

18. Essentially [redacted] said in evidence that he wanted to turn the conveyor belt on however the Police didn't support the proposal and it didn't occur.

    (Reference Royal Commission of Inquiry transcript number Phase two Search and Rescue Hearings 9.00 a.m Friday 9 September 2011).

19. In relation to Tasking number 35, this sought further information in relation to the conveyor belt.

20. In relation to the Risk Assessment Panel, this was established and included representatives from Police, Department Labour, New Zealand Fire Service and other experts however this may have been fully established after this particular risk assessment and in part arising out of issues identified during the consideration for this specific risk assessment.

21. In relation to the procedure for the signing off of the risk assessments it was (broadly):

    Once the risk panel had been established they would consider risk assessment documents to approve or not approve with feedback. Approval of all members was required. Independent quality assurance was required in terms of risk assessments and this was made clear in emails dated 22/11/2010.

22. I did not have detailed knowledge of the physical process of starting the conveyor belt. Practical operation of the conveyor belt would be a matter for Pike River Coalmine Company staff or the contractors employed by them.

23. In summary, operating the conveyor belt was a proposal suggested by some staff members from the Pike River Coalmine Company (refer Risk Assessment), and wasn't supported by Police (refer oral evidence [redacted] Royal Commission of Inquiry).

..... witness initials

New Zealand Police

STATEMENT CONTINUED

Section 82 Criminal Procedure Act 2011

Statement of: [redacted] Age *(if under 18)*: _____

I confirm the truth and accuracy of this statement. I make the statement with the knowledge that it is to be used in court proceedings. I am aware that it is an offence to make a statement that is known by me to be false or intended by me to mislead.

_____ _____

Signature *Date*

..... witness initials

Starting the Tunnel Belt

RISK ASSESSMENT V2

(DRAFT DOCUMENT)

PIKE RIVER COAL

		SIGNATURES	DATE
DEPARTMENT:	ENGINEERING		
ORIGINATOR:	[redacted]		22/11/2010
TITLE:	[redacted]		
AUTHORISER:	[redacted]		22/11/2010
TITLE:	GENERAL MANAGER		

CONTENTS

1.0 EXECUTIVE SUMMARY

A risk assessment was conducted on the 21st of November 2010 in response to unplanned explosion underground and consequent trapping of 29 crew members and contractors on the 19th of November 2010.

The risk assessment was facilitated by the Pike River Management Team in accordance with AS/NZS 4360:2004 Risk Assessment standard.

The key risks identified AFTER controls are in place are:

Key Risk	Controls	Revised Risk Rating
Secondary Explosion	• Checking gas trends, using only trained Emergency Response Personnel	Moderate

2.0 INTRODUCTION

2.1 Description Of Works

Tunnel conveyor belt installed in the main access drift at Pike River Coal Mine

2.2 Scope

The scope of this risk assessment is limited to starting and running of the [redacted] stone conveyor belt in order to confirm whether it is still intact as well as to ascertain whether any debris has fallen and accumulated on the belt.

3.0 METHODOLOGY

3.1 Establish Scope and Objectives

The Risk Assessment facilitator and relevant managers of PRCL established the scope and objectives of the assessment.

This involved determining the hazards that may be encountered when attempting to start the Tunnel Belt.

The main objective of the activity is;

- To ensure that effective controls are put in place to control the hazards identified.

The scope of this risk assessment is limited to starting and running the [redacted] stone conveyor belt in order to confirm whether it is still is intact as well as to ascertain whether any debris has fallen and accumulated on the belt.

3.2 Risk Assessment by the Expert Team

The Expert Team Meeting commenced with introductions by the facilitator. The team consisted of:

Name (print)	Position	Company
[redacted]	[redacted]	Pike River Coal
[redacted]		Pike River Coal
[redacted]		Pike River Coal
[redacted]		Key Mining Services
[redacted]		Pike River Coal

3.3 Compliance to Scope and Objectives

The expert team were reminded of the scope and objectives of the risk assessment and the need to remain within the established context throughout the process of the assessment.

3.4 Identify Risks and Potential Impact

Each consideration was brainstormed and analysed to determine the risks and the impacts on the mine operation. All risks were recorded for each consideration including the detail of what could happen.

3.5 Estimating Probability and Consequences

An estimation of the probability of occurrence and the consequences was agreed by the team for each identified risk. The basis of the rating was provided by Pike River Coal's Risk Matrix System. (Tables 1, 2and 3 on following pages)

Table 1

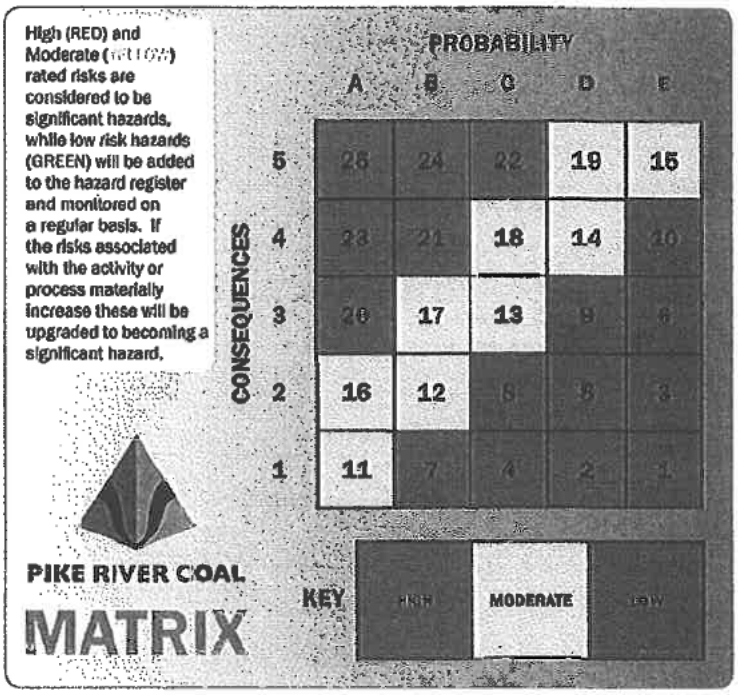
Rating	Probability	Description
A	Common	Quite possible and would not be unusual
B	Has happened/likely to	Unusual but possible sequence of events
C	Could Happen	Remotely possible coincidence
D	Not Likely	Has never been known to happen by anyone in the team after many years of exposure but is conceivably possible
E	Practically impossible	Has never happened before. Virtually impossible

Table 2

Rating	People Consequences	Cost Consequences
5	Fatality, para/ quadriplegia	> $1,000,000
4	Major injury, permanent disability	$500,000 to $1,000,000
3	Lost time injury	$100,000 to $500,000
2	Medical treatment injury	$1,000 to $100,000
1	Workplace, first aid treatment	< $1,000

Using the criteria shown above in table 1 and table 2, the risk rating for each risk was established from table 3.

Table 3



4.0 RESULTS FROM THE RISK ASSESSMENT

Impact HS - Health & Safety EQ - Equipment BS - Business ENV - Environment CL - Cultural Analysis: Probability A-E Consequences 1-5 Risk Rating 1-25

Action	Hazard	Impact	Prob	Cons	Risk rating	Proposed Controls	Prob	Cons	Res Risk rating	Resp
Check that the Belt can be started	Personal injury when crossing portal					• Minimise time and number of people • Check gas trending	D	5	19	[redacted]
	Electrocution					• PPE • Electrician to check	D	5	19	
Mark the Belt	Personal injury when crossing portal					• Minimise time and number of people • Check gas trending	D	5	19	
	Electrocution					• PPE • Electrician to check	D	5	19	
						• All people involved to be on the compressor side of the portal to stop continual movement across the portal	D	5	19	
						• Time the belt in case of burn mark identified on the belt etc. This can gave an indication of how far in the mark was up the drift • Use Mines Rescue Team	D	5	19	

Action	Hazard	Impact	Prob	Cons	Risk rating	Proposed Controls	Prob	Cons	Res Risk rating	Resp
Starting the Tunnel Belt	Wind Blast					• Check gas trends • Trained people • Emergency Response • Only in the portal area if crossing • The only people to be in front of portal is to be 2x Mines Rescue standing on Gantry (This is the only area not affected by the first blast as seen on the video)	E	5	15	[redacted]
	Secondary Explosion					• Check gas trends • Trained people • Emergency Response • Only in the portal area if crossing • The only people to be in front of portal is to be 2x Mines Rescue standing on Gantry (This is the only area not affected by the first blast as seen on the video)	D	5	19	
	Broken Belt					• Stand clear during Start-Up	B	3	17	
	Debris on Belt					• Stop if any unusual movements	A	2	16	
	Injury due to moving parts					• Bridge out Bin Belt	A	2	16	
	Men on Belt					• Stop Belt	D	5	19	
	Frictional Ignition					• Watch amps and watch for unusual movement	E	5	15	

Action	Hazard	Impact	Prob	Cons	Risk rating	Proposed Controls	Prob	Cons	Res Risk rating	Resp
Placing camera on belt to feed in to tunnel	Potential for patient/body/ part thereof coming out					• Prior to feeding the belt in to the mine it should be drawn out first • [redacted] & Police Officer to suitable site to view belt • Body Recovery Police on site • In the event of a patient, [redacted] will provide treatment • Helicopter or onsite ambulance to location. • Take air readings at the portal	E	5	15	Police and emergency services

5.1 RESULTS FROM THE RISK ASSESSMENT

RISK ASSESSMENT ACTION PLAN						
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Starting the Tunnel Belt

RISK ASSESSMENT V2

(DRAFT DOCUMENT)

PIKE RIVER COAL

DEPARTMENT:	ENGINEERING	SIGNATURES	DATE
ORIGINATOR:	[redacted]		22/11/2010
TITLE:	ENGINEERING MANAGER		
AUTHORISER:	[redacted]		29/11/2010
TITLE:	GENERAL MANAGER		

UNCONTROLLED DOCUMENT WHEN PRINTED

Document Title:	Page:	Issue Date:
SEND TO [redacted] TO GET A NUMBER	1 of 10	22 November 2010

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5.1 RESULTS FROM THE RISK ASSESSMENT

RISK ASSESSMENT ACTION PLAN						
Additional Controls	Action Required	Accountable Person	Responsible Person	Due Date	Completion Date	Signature

STARTING THE TUNNEL CONVEYOR BELT RISK ASSESSMENT

Date	Time	Police Witnesses	Briefs prepared - Not Filed	Other Parties Evidence	Document Ref - Not from Briefs	Document Type	Text	Page/Paragraph	Summation Reference
21/11/2010	1600 - 1800hrs			SO [redacted] NZFS	PIKE.00373	IAP	Front page: Use of conveyor belt for 2km into shaft	Point 128, Page 20	
21/11/2010	1600hrs	[redacted]				Brief	We discussed the possibility of trying to restart the conveyor belt with the idea that if any survivor was near the belt they maybe able to use it to assist them to get out of the mine. This was later ruled out as a possibility due to unacceptable risks.	Point 98, Page 22	
21/11/2010	2030hrs	[redacted]				Brief	There was also discussion around the use of the conveyor belt, in that if it was turned on it would possibly be an ignition source. It was not considered a good option by all in attendance during this briefing.	Points 36 and 37, Page 8	
21/11/2010	No time	[redacted]				Brief	A request was received from the Forward Command Base seeking authority to start the conveyor belt in the mine that ran from the portal to the Grizzly Point. There was a view that a brief running of the conveyor would indicate whether there were obstructions between the two points and particularly at the Grizzly Point which was situated close to the air vent shaft. I directed that the conveyor belt was not to be started until such time as a written risk assessment had been completed and signed	Point 55, Page 10	

STARTING THE TUNNEL CONVEYOR BELT RISK ASSESSMENT

Date	Time	Police Witnesses	Briefs prepared - Not Filed	Other Parties Evidence	Document Ref - Not from Briefs	Document Type	Text	Page/Paragraph	Summation Reference
							off. During the course of the evening I received a written risk assessment entitled "Starting the Tunnel Belt". After reviewing the risk assessment I on-sent it to PNHQ for review by a panel of experts.		
21/11/2010	No time	[redacted]				Brief	Electricians at the portal believed they could get the conveyer belt working, the purpose of this being to check if there was any damage to the belt up in the vicinity of the Ventilation shaft. A Risk Assessment was required before this could be considered.	Point 64, Page 11	
21/11/2010	No time	[redacted]				Brief	The Risk Assessment for starting the conveyer belt had been completed and was forwarded to Police National Headquarters for approval.	Point 251, Page 48	
22/11/2010	No time	[redacted]				Brief	Other ideas were also being discussed at the Forward Command Base. For example running the conveyor belt that ran through the main drift to check for damage and obstructions in that area was considered.	Point 255, Page 49	
22/11/2010	No time	[redacted]				Brief	At that time, the risk assessments for the Defence Force robot had been completed and the Mines Rescue risk assessment was still being worked on. It was		

STARTING THE TUNNEL CONVEYOR BELT RISK ASSESSMENT

Date	Time	Police Witnesses	Briefs prepared - Not Filed	Other Parties Evidence	Document Ref - Not from Briefs	Document Type	Text	Page/Paragraph	Summation Reference
							planned to produce risk assessment documentation in respect of the plan to run the conveyor belt in the mine. It was also intended to have the CAL scanner inserted into the small borehole later that morning		
22/11/2010	0110hrs	Unknown			PNHQ.01086	OP Pike Log Event Log	**Conveyor belt:** Electricians at the portal believe that they can get the conveyor belt working. However, PIC required a risk assessment before commencing this option.	Point 109, Page 24	
22/11/2010	0111hrs	[redacted]				Brief	Received further update from [redacted] which included "Risk assessment is required for the portal conveyor belt."		
22/11/2010	0200-0400hrs			SO [redacted] NZFS	PIKE.00286	IAP	Front page: Option to run conveyor belt risk assessment to be carried out. Possible run time 4-6am		
22/11/2010	0500hrs	Unknown			PIKE.12513	OP Pike Log	0500 Conveyor belt - risk assessment completed and sent through to HQ		
22/11/2010	0500hrs	Unknown			PNHQ.01086	OP Pike Log Event Log	**Conveyor belt:** PIC receiving pressure to allow activation of conveyor belt. Risk assessment received from F/Comm & emailed to PIC and Op Pike team. Consultation is ongoing at this stage (Mines Inspector opinion).	Point 114, Page 25	
22/11/2010	0500hrs	[redacted]				Brief	Updated by [redacted]		

STARTING THE TUNNEL CONVEYOR BELT RISK ASSESSMENT

Date	Time	Police Witnesses	Briefs prepared - Not Filed	Other Parties Evidence	Document Ref - Not from Briefs	Document Type	Text	Page/Paragraph	Summation Reference
		[redacted]					[redacted] which included: "Is receiving pressure to allow activation of the conveyor belt. Risk assessment has been received-consultation is ongoing at this stage and will get Mines Inspector's opinion";		
22/11/2010	0502hrs	[redacted]				Email	Email to [redacted] and [redacted] egarding signed startup risk assessment. Risk Assessment (Version 2) is attached and signed 22/11/2010 by [redacted] and [redacted] from PRC. "The proposal is to run the conveyor belt for about 5 to 10 metres to see if works. Currently we have the capacity to do the work while it is relatively quiet. It starts to get busy after 0600hrs. We need a decision"		PNHQ.11553
22/11/2010	0600-0700hrs			SO [redacted] NZFS	PIKE.00278	IAP	Front page: Option to run conveyor belt risk assessment to be carried out. Possible run time 4-6am		
22/11/2010	0601hrs	[redacted]				Email	Risk assessment completed for starting of conveyor belt. Request sent to ICP. Purpose of starting and running for 5-10 minutes to check if there is any damage at the end of the conveyor belt close to the air vent shaft.		PNHQ.11555
22/11/2010	0605hrs	Unknown			PNHQ.01086	OP Pike	Risk assessment completed	Point 115, Page 26	

STARTING THE TUNNEL CONVEYOR BELT RISK ASSESSMENT

Date	Time	Police Witnesses	Briefs prepared - Not Filed	Other Parties Evidence	Document Ref - Not from Briefs	Document Type	Text	Page/Paragraph	Summation Reference
						Log Event Log	for starting of conveyor belt. Request sent to ICP. Purpose of starting and running for 5-10 minutes to check if there is any damage at the end of the conveyor belt close to the air vent shaft.		
22/11/2010	0607hrs	[redacted]				Brief	Update received from Forward Command which included: "Risk assessment completed for starting of conveyor belt. Request sent to ICP. The purpose is to run it for 5-10 minutes to check if there is any damage at the end of the conveyor belt close to the air vent shaft;"	Point 119, Page 27	
22/11/2010	0700hrs	[redacted]				Brief	Briefing handover for [redacted] and informed him "...the conveyor belt was not to be turned on as it was a possible ignition source; use of the army robot was to be discussed to ensure it was not a possible ignition source:"	Point 71, Page 12	
22/11/2010	0700hrs	[redacted]				Brief	The Risk Assessment for the running of the conveyor belt was to be reviewed and it had been decided that the robot would be used to assess the situation first.	Point 47, Page 8	
22/11/2010	NO time	[redacted]				Brief	They also wanted to discuss the prospect of turning the conveyor belt on inside the mine. I told them that they would need to document their		

STARTING THE TUNNEL CONVEYOR BELT RISK ASSESSMENT

Date	Time	Police Witnesses	Briefs prepared - Not Filed	Other Parties Evidence	Document Ref - Not from Briefs	Document Type	Text	Page/Paragraph	Summation Reference
							plan and complete a risk assessment in respect of this and provide that to the [redacted]		
22/11/2010	0837hrs	[redacted]				Email	Email to [redacted] "Met with [redacted] and [redacted] Their purpose was to explain to us the unreliability of 1 gas sample point for making decisions on rescue team entry. Wanted to discuss and litigate the conveyor belt issue. Outcome of meeting; They are to provide us via you written plan / risk assessment regarding this. Also told them that you will be seeking a document as outlined in my previous e-mail. They undertake to do this."		
22/10/2010 (should be 22/11/10)	0925hrs	Unknown			PIKE.03447	Tasking Sheet	Tasking Number 35. [redacted] wants an update around the conveyor belt. The understanding is that the mining company are keen to start it up to help give them an appreciation of what it is in as an indicator as to the state of the mine. Four questions	Point 147, Page 38	

STARTING THE TUNNEL CONVEYOR BELT RISK ASSESSMENT

Date	Time	Police Witnesses	Briefs prepared - Not Filed	Other Parties Evidence	Document Ref - Not from Briefs	Document Type	Text	Page/Paragraph	Summation Reference
							raised 1. What is the state of action around conveyor. 2. Has it been agreed to or rejected because of safety. 3. If it is to be used what are the timelines around it. 4. What do we hope to achieve. Tasking sent to [redacted]		
22/11/2010	0935hrs	[redacted]				Brief	Around 9.35am I had sought an update on the state of action around the conveyor belt. The update I received a short time later was that there was interest at the mine site in turning the conveyor belt on. This was on the basis that if it did not work this would indicate a cave in. Pike River Coal had been asked to provide a written risk management plan for this possibility.		
22/11/2010	0937hrs	Unknown			PNHQ.01086	OP Pike Log Event Log	Confirmation of Tasking Sheet 35 sent to [redacted]		
22/11/2010	1041hrs	Unknown			PNHQ.01086	OP Pike Log Event Log	Update from [redacted] This has been referred forward for action to the forward base. They wanted to turn the belt on to see if it would work - i.e. not work indicated cave in, if the risks were determined to be too high. The mine company have been directed to come up with a written plan to cover risk management etc.		

STARTING THE TUNNEL CONVEYOR BELT RISK ASSESSMENT

Date	Time	Police Witnesses	Briefs prepared - Not Filed	Other Parties Evidence	Document Ref - Not from Briefs	Document Type	Text	Page/Paragraph	Summation Reference
22/11/2010	1041hrs	[redacted]				Email	Email to [redacted] and [redacted]: "They wanted to turn the belt on to see if it would work - i.e. not work indicated cave in. **The risks were determined to be to high.** The mine company have been directed to come up with a written plan to cover risk management." (RA version 2 reviewed and risks in RA identified as moderate)	Point 149, Page 39	
22/11/2010	1050hrs	[redacted]				Brief	Police briefed the officials on the current state of the mine advising that drilling was at 115 metres, a risk assessment was being prepared in relation to the conveyer belt		
22/11/2010	1106hrs	[redacted]				Email	Email to [redacted] advises for follow up: What are the timelines and [redacted] wants independent Quality Assurance regarding the Risk Assessment and will not be relying on the Company for the Go/No Go."		
22/11/2010	1112hrs	[redacted]				Email	[redacted] email from 1106rs forawrded to [redacted] for his information.		
22/11/2010	1115hrs	Unknown			PNHQ.01086	OP Pike Log Event Log	[redacted] advises by email to [redacted] that he has "met with [redacted] at 0801 along with his gas advisor [redacted]. They		

STARTING THE TUNNEL CONVEYOR BELT RISK ASSESSMENT

Date	Time	Police Witnesses	Briefs prepared - Not Filed	Other Parties Evidence	Document Ref - Not from Briefs	Document Type	Text	Page/Paragraph	Summation Reference
							raised this issue again. They have been instructed to provide [redacted] a written request outlining reasons and a risk analysis and risk mitigation plan for us to consider. They advised they will do this with urgency."		
22/11/2010	1354hrs	Unknown			PNHQ.01086	OP Pike Log Event Log	[redacted] emails [redacted] re the state of this request.		
22/11/2010	1400-1600hrs	Unknown			PIKE.00228	IAP	Page 5: Situation Report: Robot will assess conveyor belt before start up to assess any damage.		
22/11/2010	1750hrs	Unknown			PNHQ.01086	OP Pike Log Event Log	Update from [redacted] to [redacted] and [redacted] and [redacted] advising copy of response to task 35 sent earlier today (1115 above). Advised no update from this point. Tasking to [redacted] when he "takes over as Forward Commander please follow up with mine company."		
22/11/2010	1753hrs	Unknown			PNHQ.01086	OP Pike Log Event Log	Email from [redacted] to [redacted] notifying night shift tasked with following up tasking in regard to Mine Company completing written plan. Staff tasked being [redacted]		
22/11/2010	1915hrs	Unknown			PNHQ.01086	OP Pike Log Event	Conveyor belt is with them to do.		

STARTING THE TUNNEL CONVEYOR BELT RISK ASSESSMENT

Date	Time	Police Witnesses	Briefs prepared - Not Filed	Other Parties Evidence	Document Ref - Not from Briefs	Document Type	Text	Page/Paragraph	Summation Reference
						Log			
23/11/2010	0642hrs	Unknown				Email	"The mine company want to start the conveyor belt to check that it is still operating. If the belt does run, then it means the structure has not been damaged by the blast and the boot end (under the grizzly point) is still intact. There has been no agreement or rejection because of safety concerns". It is estimated that it will require up to 2 hours to start up and begin running. About four hours for observations and measure. They hope to achieve that by marking a position on the conveyor belt before starting it up they can establish at what point in the access tunnel that any potential events have occurred. This can be done by measuring the distance from the original mark to any other marks or damaged observed on the belt."		
23/11/2010	0857hrs	[redacted]				Email	"To get authority to turn on this machine we will require PNHQ authority, a risk assessment prepared and approved. My instruction to the mining company [redacted] at 0806 yesterday was specific. This must be in writing."	Point 194, Page 49	

STARTING THE TUNNEL CONVEYOR BELT RISK ASSESSMENT

Date	Time	Police Witnesses	Briefs prepared - Not Filed	Other Parties Evidence	Document Ref - Not from Briefs	Document Type	Text	Page/Paragraph	Summation Reference
23/11/2010	1257hrs	[redacted]				Brief	At 12.57pm I approved a Strategic Decision Document outlining the decisions that required consultation with the Response Coordinator including any change in the public message from rescue to recovery, operation of the conveyor belt and entry of Police staff or any equipment into the mine **[refer PNHQ.17017]**. This was a revision of the document created the day prior as mentioned in paragraph 161 above. This was to provide further guidance around the decision making process.		
23/11/2010	1829hrs	Unknown			PNHQ.17018	Strategic Decision Document	Operation of conveyor belt PNHQ see task 35		
24/11/2010	0615hrs	Insp [redacted]			PIKEMAIL.PST.00066	Email	Robot 1 is parked up against conveyor belt as to prevent obstruction of the drift.		
26/11/2010	No time	Unknown			PIKE.02354	Interagency briefing	Excerpt below taken from Paragraph 6 on Page 1. Quote starts at Line 4. "It was able to show that the conveyor belt is now off its rails, so we now know that we can't start that safely and we can't use that to move gear or anything as far as deployment. That was a particular point that we had to cover off in terms of the overall operation, in terms of safety and in terms of giving		

STARTING THE TUNNEL CONVEYOR BELT RISK ASSESSMENT

Date	Time	Police Witnesses	Briefs prepared - Not Filed	Other Parties Evidence	Document Ref - Not from Briefs	Document Type	Text	Page/Paragraph	Summation Reference
							us a bit of a look around."		

Starting the Tunnel Belt

RISK ASSESSMENT V2

(DRAFT DOCUMENT)

PIKE RIVER COAL

DEPARTMENT:	ENGINEERING	[redacted]	DATE
ORIGINATOR:	[redacted]		22/11/2010
TITLE:	ENGINEERING MANAGER		
AUTHORISER:	[redacted]	[redacted]	22/11/2010
TITLE:	GENERAL MANAGER		

CONTENTS

1.0 EXECUTIVE SUMMARY

A risk assessment was conducted on the 21st of November 2010 in response to unplanned explosion underground and consequent trapping of 29 crew members and contractors on the 19th of November 2010.

The risk assessment was facilitated by the Pike River Management Team in accordance with AS/NZS 4360:2004 Risk Assessment standard.

The key risks identified AFTER controls are in place are:

Key Risk	Controls	Revised Risk Rating
Secondary Explosion	• Checking gas trends, using only trained Emergency Response Personnel	Moderate

2.0 INTRODUCTION

2.1 Description Of Works

Tunnel conveyor belt installed in the main access drift at Pike River Coal Mine

2.2 Scope

The scope of this risk assessment is limited to starting and running of the [redacted] stone conveyor belt in order to confirm whether it is still intact as well as to ascertain whether any debris has fallen and accumulated on the belt.

3.0 METHODOLOGY

3.1 Establish Scope and Objectives

The Risk Assessment facilitator and relevant managers of PRCL established the scope and objectives of the assessment.

This involved determining the hazards that may be encountered when attempting to start the Tunnel Belt.

The main objective of the activity is;

- To ensure that effective controls are put in place to control the hazards identified.

The scope of this risk assessment is limited to starting and running the [redacted] stone conveyor belt in order to confirm whether it is still is intact as well as to ascertain whether any debris has fallen and accumulated on the belt.

3.2 Risk Assessment by the Expert Team

The Expert Team Meeting commenced with introductions by the facilitator. The team consisted of:

Name (print)	Position	Company
[redacted]		Pike River Coal
		Pike River Coal
		Pike River Coal
		Key Mining Services
		Pike River Coal

3.3 Compliance to Scope and Objectives

The expert team were reminded of the scope and objectives of the risk assessment and the need to remain within the established context throughout the process of the assessment.

3.4 Identify Risks and Potential Impact

Each consideration was brainstormed and analysed to determine the risks and the impacts on the mine operation. All risks were recorded for each consideration including the detail of what could happen.

3.5 Estimating Probability and Consequences

An estimation of the probability of occurrence and the consequences was agreed by the team for each identified risk. The basis of the rating was provided by Pike River Coal's Risk Matrix System. (Tables 1, 2and 3 on following pages)

Table 1

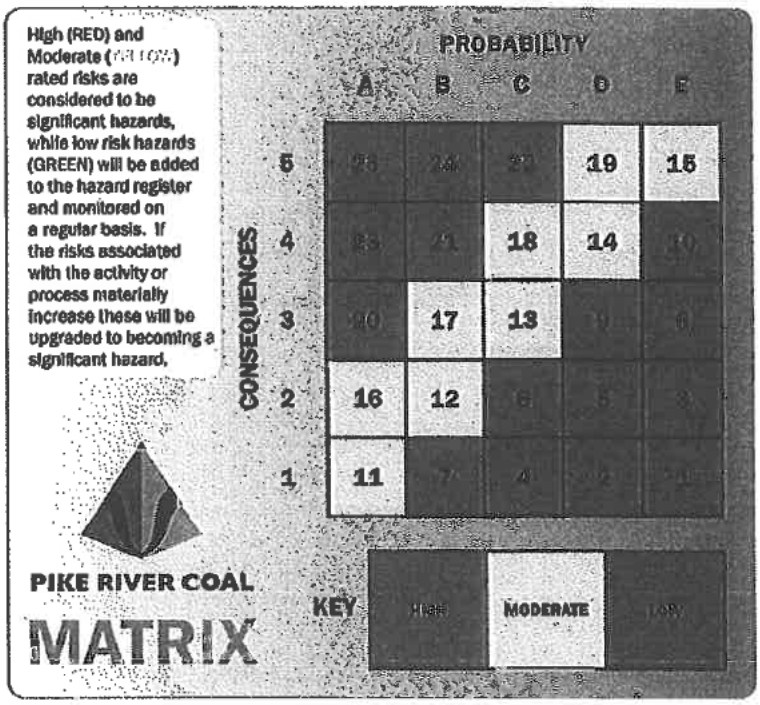
Rating	Probability	Description
A	Common	Quite possible and would not be unusual
B	Has happened/likely to	Unusual but possible sequence of events
C	Could Happen	Remotely possible coincidence
D	Not Likely	Has never been known to happen by anyone in the team after many years of exposure but is conceivably possible
E	Practically impossible	Has never happened before. Virtually impossible

Table 2

Rating	People Consequences	Cost Consequences
5	Fatality, para/ quadriplegia	> $1,000,000
4	Major injury, permanent disability	$500,000 to $1,000,000
3	Lost time injury	$100,000 to $500,000
2	Medical treatment injury	$1,000 to $100,000
1	Workplace, first aid treatment	< $1,000

Using the criteria shown above in table 1 and table 2, the risk rating for each risk was established from table 3.

Table 3



4.0 RESULTS FROM THE RISK ASSESSMENT

Impact HS - Health & Safety EQ - Equipment BS - Business ENV - Environment CL - Cultural Analysis: Probability A-E Consequences 1-5 Risk Rating 1-25

Action	Hazard	Impact	Prob	Cons	Risk rating	Proposed Controls	Prob	Cons	Res Risk rating	Resp
Check that the Belt can be started	Personal injury when crossing portal					• Minimise time and number of people • Check gas trending	D	5	19	[redacted]
	Electrocution					• PPE • Electrician to check	D	5	19	
Mark the Belt	Personal injury when crossing portal					• Minimise time and number of people • Check gas trending	D	5	19	
	Electrocution					• PPE • Electrician to check	D	5	19	
						• All people involved to be on the compressor side of the portal to stop continual movement across the portal	D	5	19	
						• Time the belt in case of burn mark identified on the belt etc. This can gave an indication of how far in the mark was up the drift • Use Mines Rescue Team	D	5	19	

Action	Hazard	Impact	Prob	Cons	Risk rating	Proposed Controls	Prob	Cons	Res Risk rating	Resp
Starting the Tunnel Belt	Wind Blast					• Check gas trends • Trained people • Emergency Response • Only in the portal area if crossing • The only people to be in front of portal is to be 2x Mines Rescue standing on Gantry (This is the only area not affected by the first blast as seen on the video)	E	5	15	[redacted]
	Secondary Explosion					• Check gas trends • Trained people • Emergency Response • Only in the portal area if crossing • The only people to be in front of portal is to be 2x Mines Rescue standing on Gantry (This is the only area not affected by the first blast as seen on the video)	D	5	19	
	Broken Belt					• Stand clear during Start-Up	B	3	17	
	Debris on Belt					• Stop if any unusual movements	A	2	16	
	Injury due to moving parts					• Bridge out Bin Belt	A	2	16	
	Men on Belt					• Stop Belt	D	5	19	
	Frictional Ignition					• Watch amps and watch for unusual movement	E	5	15	

Action	Hazard	Impact	Prob	Cons	Risk rating	Proposed Controls	Prob	Cons	Res Risk rating	Resp
Placing camera on belt to feed in to tunnel	Potential for patient/body/ part thereof coming out					• Prior to feeding the belt in to the mine it should be drawn out first • [redacted] & Police Officer to suitable site to view belt • Body Recovery Police on site • In the event of a patient, [redacted] will provide treatment • Helicopter or onsite ambulance to location. • Take air readings at the portal	E	5	15	Police and emergency services

5.1 RESULTS FROM THE RISK ASSESSMENT

RISK ASSESSMENT ACTION PLAN						
Additional Controls	Action Required	Accountable Person	Responsible Person	Due Date	Completion Date	Signature

Starting the Tunnel Belt

RISK ASSESSMENT V2

(DRAFT DOCUMENT)

PIKE RIVER COAL

DEPARTMENT:	ENGINEERING	[redacted]	DATE
ORIGINATOR:	[redacted]		22/11/2010
TITLE:	ENGINEERING MANAGER		
AUTHORISER:	[redacted]		22/11/2010
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Action	Hazard	Impact	Prob	Cons	Risk rating	Proposed Controls	Prob	Cons	Res Risk rating	Resp
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5.1 RESULTS FROM THE RISK ASSESSMENT

RISK ASSESSMENT ACTION PLAN						
Additional Controls	Action Required	Accountable Person	Responsible Person	Due Date	Completion Date	Signature

New Zealand Police

STATEMENT

Section 82 Criminal Procedure Act 2011

Statement of: [redacted] Age *(if under 18)*:

Date statement taken: 9/11/18 Time: 1:22 pm

Location: [redacted]

I, [redacted] state:

1. On Friday 19th November 2010 after the explosion at Pike River Mine I was instructed by [redacted] to travel down to the mine site and take command of the police operation.
2. I was instructed by [redacted] that NZP were to be the lead agency and would work in collaboration with other emergency service, mines rescue and the Pike River coal mining company staff.
3. I arrived at the mine just after midnight assessed the overall situation and then assumed command of the police operation.
4. The mining disaster was called Operation Pike for the purposes of the overall rescue and recovery phases.
5. I was the Incident Controller (IC) for the period of the operation. In the initial few weeks I was the day shift IC and [redacted] was the night shift IC.
6. We worked 12 hour shifts and had an overlap each morning where we would discuss events that occurred during our shifts.
7. The police operation had three layers of operational command. They were strategic, operational and tactical.
8. [redacted] was appointed the Police Response Co-ordinator and was responsible for all strategic decision making.
9. As IC I was responsible for operational decision making.
10. At a tactical level there were Forward Commanders appointed to work at the mine site with the various mining experts and associated emergency services. These

[redacted]

..... witness initials

New Zealand Police

STATEMENT CONTINUED

Section 82 Criminal Procedure Act 2011

Statement of: [redacted] Age *(if under 18)*: ____

positions were normally at Commissioned Offer level and were rotated throughout the period of the operation.

11. It was made clear to me by [redacted] from the outset of the operation I did not have authority to authorise entry into the mine any person, instrument, article or vehicle. This level of decision making sat with him at the strategic level.
12. A very robust process of risk assessments was adopted in regard to all major decisions impacting on the rescue and recovery phases of the operation.
13. At a tactical level risk assessments were prepared at the forward base by a panel of experts comprising of NZP, mines rescue, mining experts and the mining company. At times this group was joined by other subject matter experts.
14. These risk assessments would cover a wide range of issues and occurred on a daily basis throughout the entirety of the operation.
15. The risk assessments were then sent to me as IC at Greymouth police station to be reviewed and before being sent to [redacted] for sign off and checking by a panel of experts he had assembled.
16. If the risk assessments were agreed to then they were signed and returned to me for action. If they were rejected or need further analysis they were returned to the forward commander to be worked on.
17. In the early days of the operation there was a belief that the 29 men trapped under ground may still be alive. As part of the early process there were many suggestions put forward in an effort to make contact with those miners.
18. One such suggestion was to tap on the water pipes that ran into the mine to see if anyone responded. Another was to ring the various underground telephones to see if anyone answered.
19. I do vaguely recall during this early period someone from the mining company suggesting putting food and water onto the conveyer belt and sending it into the mine.
20. I do not recall who made this suggestion.
21. I do not recall signing a risk assessment or forwarding it to [redacted] to allow the conveyer belt to be activated.

..... witness initials

New Zealand Police

STATEMENT CONTINUED

Section 82 Criminal Procedure Act 2011

Statement of: [redacted] Age *(if under 18)*: .....

22. As I have previously stated this type of decision would need to be made at the strategic level by [redacted]
23. I had only visited or was in the control room at the mine site on less than 4 occasions throughout the entire operation. This was to view video footage from the portal. I don't recall who was in the room at each time.
24. On the 24th November 2010 I was contacted by a member of the police forward command team to say there was discussion of possibly being able to re-enter the mine. I found this extremely unusual as all the reading to date in the mine indicated it was not safe to re-enter.
25. I drove the mine site to access what was occurring. Whilst there the second explosion occurred.
26. I went to the control room and viewed the explosion of the camera from the portal. The room was full of various staff. Again I don't recall who present apart from myself and [redacted]
27. As I have I have outlined in paragraph 11 it was made clear to all those persons involved in the risk assessment process that [redacted] was the only person who could authorise any re-entry into the mine or the turning on of anything associated with the workings of the mine.

I confirm the truth and accuracy of this statement. I make the statement with the knowledge that it is to be used in court proceedings. I am aware that it is an offence to make a statement that is known by me to be false or intended by me to mislead.

Signature *Date*

..... witness initials

New Zealand Police

STATEMENT

Section 82 Criminal Procedure Act 2011

Statement of: [redacted] Age *(if under 18)*: _____

Date statement taken: 16 October 2018 Time: 10.45 am

Location: Pike River Mine

I, [redacted], state:

1. My full name is [redacted]. I am a [redacted] working for Pike River Recovery Agency.

2. At the time the Pike River Mine exploded, on 19 November 2010, I was working for [redacted] which took me between [redacted] Mine. I was the Project Engineer and I was also part of Mines Rescue.

3. I have been asked by [redacted] questions around the risk assessment to try and re-start the conveyor belt, known as the Tunnel Belt, at the mine after the first explosion.

4. I have seen the risk assessment titled "Starting the Tunnel Belt" and I have seen where my name appears under, '3.2 Risk Assessment by the Expert Team.'

5. I can say that I do not recall being involved in this conveyor belt risk assessment even though my name is on the document.

6. [redacted] would be a person to speak to in relation to this risk assessment document. He was responsible for many of the controls that had been put in place and according to the risk assessment document he would be have had to be present when the belt was started to monitor the amps on the conveyor motor.

7. [redacted] name also appears on this risk assessment document underneath mine. I have spoken to him and asked him if he recalled being part of the risk assessment, and he is in the same position as myself that he could not recall being part of the risk assessment for starting the tunnel belt.

..... [redacted] ... witness initials

New Zealand Police

STATEMENT CONTINUED

Section 82 Criminal Procedure Act 2011

Statement of: [redacted] Age *(if under 18)*: _____

8. I also spoke to [redacted] and asked him if he recalled releasing anyone to be on the Risk Assessment Team and he stated to me that he could not recall doing that.

9. I was not in the Control Room in the days leading up to the second explosion or at the time of the second explosion.

10. At the time of the first explosion I was in Christchurch and I came over to Greymouth the following morning on the Saturday to take up my role in Mines Rescue, I started on what is known as the 'back shift'. That would have been Saturday afternoon and then I was on back shifts until the second explosion.

11. The Mines Rescue staff work three shifts. There is a day shift, a back shift and a night shift. They are eight hour shifts and the 'back shift' starts at approximately 2.00pm.

12. At the time of the second explosion on the 24th of November 2010 I was working back shift. At the time of the second explosion both day shift and back shift Rescue teams were at the Mines rescue building located at the Main office block.

13. The back shift team was in the first aid tent getting their medicals completed for the possible re-entry when [redacted] came down the stairs to the medical tent and told us that the mine had blown up again.

14. On the Risk Assessment document one of the controls states that two Mines Rescue members to be standing on the Gantry conveyor, the only area not affected by the first blast as seen on the video footage. [redacted] would be responsible for this proposed control.

[redacted] 15. As I have previously stated both the day shift and the back shift were not up at the mine portal when the second explosion occurred.

I confirm the truth and accuracy of this statement. I make the statement with the knowledge that it is to be used in court proceedings. I am aware that it is an offence to make a statement that is known by me to be false or intended by me to mislead.

.. [redacted] ..... witness initials

New Zealand Police

STATEMENT CONTINUED

Section 82 Criminal Procedure Act 2011

Statement of: [redacted] Age *(if under 18)*: _____

Signature [redacted] *Date* 19-10-18

Date statement finished: Time:

Signature witnessed by:

Print name and QID [redacted]

Signature [redacted] *Date* 19-10-18 *Time* 10:30am

Statement taken by:

(If different to person witnessing signature) *Print name and QID*

Signature *Date* *Time*

..... [redacted] witness initials

New Zealand Police

STATEMENT

Section 82 Criminal Procedure Act 2011

Statement of: [redacted] Age *(if under 18)*: _____

Date statement taken: 20-12-2018 Time: 11.00am

Location: [redacted]

I [redacted], state:

1. That is my full name.

2. I am a [redacted]

3. At the time of the Pike River Mine explosion on 19 November 2010 I was a [redacted]

4. Immediately after the explosion at Pike River I was part of a specialist team assisting the Police, Pike River Mine experts and Mines Rescue with planning and risk assessments with respect of plans to re-enter the mine and to recover or rescue any miners who may have been alive. At the time I made notes.

5. On 22/11/2010 my [redacted]notes stated:

   "1.00pm – had a meeting with [redacted] over RA for conveyor starting.

   Went through walking in front of the drive, able to walk over structure over the top of drive. This reduced the risk considerably.

   Spoke about what gained. Person lying on belt can come outside, person on bottom of the belt dragged into conveyor drum.

   If belt works, structure is straight and will not block drive for Mines Rescue.

   Fresh airbase sampling has shown fresh air. So little risk if roller damaged or sparks ignite flammable gases.

..... witness initials

New Zealand Police

STATEMENT CONTINUED

Section 82 Criminal Procedure Act 2011

Statement of: [redacted] Age *(if under 18)*: .....

[redacted] *suggested use robot to check if conveyor straight and good access.*

Check if possible person on belt. No need to start conveyor. Small risk if person under belt.

Decide to leave risk assessment only use if required."

6. The next meeting was at 400 with [redacted]

7. The third item listed in my notes at the time stated: "RA for conveyor – on hold."

I confirm the truth and accuracy of this statement. I make the statement with the knowledge that it is to be used in court proceedings. I am aware that it is an offence to make a statement that is known by me to be false or intended by me to mislead.

[redacted] 20-12-2018.

Signature *Date*

Date statement finished: 20-12-2018 Time: 11.05am.

Signature witnessed by: [redacted]

Print

[redacted] 20/12/2018 1105am.

Signature *Date* *Time*

Statement taken by:

(If different to person witnessing signature) *Print name and QID*

Signature *Date* *Time*

..... witness initials

22-11 2010 [redacted] notes

1.00pm had a meeting with [redacted] over RA for conveyor starting. Went through walking in front of drive, able to walk over structure over the top of drive. This reduced the risk considerably. Spoke about what gained. Person lying on belt can come outside, person on bottom of belt dragged into conveyor drum. If belt works, structure is straight and will not block drive for Mines Rescue. Fresh air base sampling has shown fresh air. So little risk if roller damaged or sparks ignite flammable gases. [redacted] suggested use robot to check if conveyor straight and good access. Check if possible person on belt. No need to start conveyor. Small risk if person under belt. Decided to leave risk assessment only use if rigid.

Typing error at the bottom. Decided to leave risk assessment only use if required.

Next meeting 4.00.

4.00 meeting [redacted]

1) Continued sampling 4-5% methane at fan. Helicopter cannot land. Stopped landing. Probably from falling barometer – gust wind will disperse. [redacted] said new procedure hand held methanometer 3% in general body of air if helicopter does not land. Talking of getting sample tube down hill. Track cutting gang doing well.
2) Discussed position for 3 hole. [redacted] had identity area?
3) RA for conveyor – on hold.
4) RA robot done – more cable on way – software engineer.
5) Fibre optic cable from hill not happening.
6) [redacted] have night rated helicopter.
7) Working Party for options still progressing
8) Police interview going ahead – [redacted]

3) RA for conveyor on hold

New Zealand Police

STATEMENT

Section 82 Criminal Procedure Act 2011

Statement of: [redacted] Age *(if under 18)*: ____

Date statement taken: 20-12-18 Time: ____

Location: ____

I [redacted], state:

In 2010 I was the [redacted] at Pike River Coal.

This statement is made at the request of the Police and in response to recent media releases about the Conveyor Belt and any relationship the belt may have had to the 2nd explosion at Pike River on the 24th of November 2010 at about 14:37 hrs. I was supplied with a questionnaire which had a series of questions which I have tried to address to the best of my memory.

Immediately after the first explosion at Pike River I was involved with the Pike Management Team and the Police in I suppose what you would call the incident management team.

I was involved with the discussions and risk assessment around the idea to restart the belt but I cannot recall there ever being a SOP produced to cover the process. An SOP is a "Safe Operating Procedure" and is required for any plan to be comfort action.

2. The risks were identified in the risk assessment and controls were proposed. As far as I can recall, a standard operating procedure was not produced as the mine exploded for the second time before this could happen.

3. I believe that the risk assessment may have been signed off before the explosion but I can't be sure but there was no SOP signed off so I do not believe or recall that anyone would have attempted to start the belt without all the controls identified in the risk assessment being in place. This included the mines rescue team being present as well as the police. At the time of the second explosion as [redacted] mentioned, Mines rescue team was being briefed on re-entry, they were not up at the portal waiting for the belt to start. Neither, to the best of my knowledge, was there any police presence at the portal when the second explosion occurred.

4. All 5 of the persons with names identified on the risk assessment would have been present even though some of the attendees may not have any recollection of the assessment [redacted] or I would not have signed the document if those persons were not present.

5. [redacted] and I were responsible for signing off the Risk Assessment.

[redacted]

..... witness initials

New Zealand Police

STATEMENT CONTINUED

Section 82 Criminal Procedure Act 2011

Statement of: [redacted] Age *(if under 18)*: .....

6. I do not recall the procedure but [redacted] personnel were responsible for operation of the belt.

7. I cannot recall anyone specifically advocating for starting of the belt. It was an option discussed at the time and obviously considered a high enough priority to hold a risk assessment to establish whether or not it was viable.

8. I have not discussed this with anyone else apart from answering a telephone call from TVNZ media team. Some lady from TVNZ rang me a couple of months ago alleging that the belt had been started and caused the second explosion. She asked if I would comment and answer some questions that they would email me. I said that I would be happy to comment but I have to date not received any email.

9. In the days leading up to the 2nd explosion I was in and out of the control room on numerous occasions.

10. I cannot recall the day of the 2nd explosion specifically so am unsure who was at the mine site. There would have been the Pike river employees that were rostered on, mines rescue personnel and members of the police.

11. To the best of my knowledge I'm unsure if any Pike /Mines Rescue or Police were at the Portal at the time of the 2nd explosion.

12. I do not believe that any person would have attempted to start the conveyor belt without a Standard Operating Procedure being produced and without all the controls in place identified in the risk assessment. I don't recall this SOP ever being produced and believe that the second explosion occurred before this SOP could be finalised.

13. As far as I am aware no attempt was made to start the conveyor belt at any time after the initial explosion on the 19th of November 2010.

.

I confirm the truth and accuracy of this statement. I make the statement with the knowledge that it is to be used in court proceedings. I am aware that it is an offence to make a statement that is known by me to be false or intended by me to mislead.

Signature *Date*

Date statement finished:	Time:

..... witness initials

New Zealand Police

STATEMENT CONTINUED

Section 82 Criminal Procedure Act 2011

Statement of: [redacted] Age *(if under 18)*: .....

Signature witnessed by:

Print name and QID

Signature *Date* *Time*

Statement taken by:

(If different to person witnessing signature) *Print name and QID*

Signature *Date* *Time*

..... witness initials

Were you involved in the discussions / Risk assessments SOP's around the idea to try and re-start the conveyor belt?

There was some discussion over the time I was at the forward command base at mine offices about the possibility of testing the conveyor belt by doing a start up and run for a very short time. To my knowledge it was never actively pursued. The emphasis was first to check that the conveyor belt as it was expected that it would have been damaged, but the nature and degree was not known. I also recall that there was a recognised risk of ignition if the electric motor was started up and that was increased if the belt did not run. The emphasis was on gas testing, deployment of the NZDF robots and the drilling of the bore hole,

Do you recall anything around the Risk Assessments, what were the perceived problems with starting the belt?

It was the view that the conveyor belt would have been damaged and covered with debris from the initial explosion. I recall the main issue was there was no way of knowing the amount of debris on the belt, the condition and whether it was intact the entire length. There was also a view that the terminus of the belt near the drift would have been extensively damaged also from the first explosion. The emphasis was on getting an inspection done of the belt done as best as possible and monitoring the of the gas ratios and the risk of ignition. In the early part of the operation there was a delay of several hours with results of the gas testing so the priority was to build up a understanding of trends with airflows, the percentage of oxygen and percentage of combustible gases. The sampling was critical for the risk assessments

Do you have any knowledge around the finalisation of the Risk Assessment for the conveyor belt? Was it signed off before the 2nd explosion occurred?

I don't recall anything.

Do you know who was involved in the investigation into the pros and cons of the R.A for the starting of the belt

I don't know.

Who was responsible for the signing off of the RA?

All risk assessments were sent to [redacted] *at the base at Greymouth station for forwarding to* [redacted] *t Police National HQ in Wellington.*

Do you know the procedure for starting the Conveyor belt?

No. I understood that it was powered by an electric motor switched on and off from the control room.

Are you aware of anyone who was advocating starting the conveyor belt?

No. It was mentioned but to the best of my recall it was never actively being advocated because there were too many unknowns. We were waiting for video from the NZDF robots, images from a camera lowered down the bore hole and there was the risk of combustibility

Have you spoken to anyone else who you think may have any knowledge of the conveyor belt enquiry?

No.

Were you in the Control room in the days leading up to the 2nd explosion? (24-11-2010, 14:37 hrs).

I visited a couple of times over the course of the week has I walked around the mine offices. The control room was always unoccupied. There was no reason for anyone to be in there.

What was your role?

Night Shift (1900-0700 hours) [redacted] *at the Pike River mine officers*

Do you recall who else may have been there?

At the time there was about 30-40 people at the mine site. I dealt mainly with [redacted] *from Pike River.* [redacted] *Recall there were a large crew of Mines Rescue personnel.*

If you are a Police member receiving this query please submit your response as a Formal Written Statement.

[redacted]

New Zealand Police

STATEMENT

Section 82 Criminal Procedure Act 2011

Statement of: [redacted] Age *(if under 18)*: .....

Date statement taken: ..... Time: .....

Location: .....

I, [redacted] state:

1. I am working for the [redacted] as a [redacted]

2. At the time of the Pike River Mine Tragedy I was employed at the Pike River's Coal Mine as a [redacted]

3. I have 23 years of experience of working in the Mines. In 1995 I started working in the [redacted], I was there for about twelve to thirteen years.

4. I left there in 2008 and started working for Pike River Coal Mine about 3 weeks later in New Zealand, in March 2008.

5. I have been asked by the New Zealand Police a number of questions in relation to the drift conveyor belt at Pike River Coal Mine for their investigation into the proposition that the drift conveyor belt was started up at the Pike River Coal Mine on the 24th of November 2010.

6. I was working in the Control Room on the 24th November 2010.

7. I was asked "Would turning on the conveyor belt cause any sort of change in the electrical readings at the control room, for example would the readings show an increase in the power readings?

8. The drift conveyor belt only had a running indication on the SCADA, Supervisory Control and Data Acquisition system. This was only displayed on the screen and no history recorded on it.

..... witness initials

New Zealand Police

STATEMENT CONTINUED

Section 82 Criminal Procedure Act 2011

Statement of: [redacted] Age *(if under 18)*: .....

9. From memory, I was asked this question in the past and I could not find any recording of the drift conveyor belt starting.

10. I have been asked "What was the procedure for turning on the conveyer belt and did this action activate warning lights and siren in the control room."? The conveyor belt motors and starter were situated at the Portal of the mine in a shed there (see attached diagram, the belt was owned and operated by [redacted] staff not Pike river staff. There was a siren which activated immediately before the belt was started.

11. The belt could not be started from the control room

12. There were no sirens in the control room, only a running / stopped indication on a SCADA screen. The belt was under the control of [redacted]

13. I have been asked "Do I know who was in the control room at 1400 hours on the 24th of November 2010"?

14. [redacted] confirmed that he was in the control room on the day.

15. I have been asked "Do I recall any discussions around starting up the Belt?, the white board photo attached, (annexure "A",) indicates it was an idea being considered, Point 4"?

16. I remember there was an idea going around about placing a camera on the belt and then starting the belt to run the camera into the mine for some distance and then reversing the belt to retrieve the camera recordings. To my knowledge this never made it past the conceptual phase.

I confirm the truth and accuracy of this statement. I make the statement with the knowledge that it is to be used in court proceedings. I am aware that it is an offence to make a statement that is known by me to be false or intended by me to mislead.

..... witness initials

New Zealand Police

STATEMENT CONTINUED

Section 82 Criminal Procedure Act 2011

Statement of: [redacted] Age *(if under 18)*: .....

Signature *Date*

Date statement finished: Time:

Signature witnessed by:

Print name and QID

Signature *Date* *Time*

Statement taken by:

(If different to person witnessing signature) *Print name and QID*

Signature *Date* *Time*

..... witness initials

Provision of advice relating to role of conveyor belt in second explosion at Pike River 24 November 2010

Prepared by Professor David Cliff
Minerals Industry Safety and Health Centre
Sustainable Minerals Institute
University of Queensland

Date of Report: 26 November 2018

1. Summary

Professor Cliff was contacted by [redacted] of the NZ Police to ascertain whether the conveyor belt was started at about 14:37 hrs on the 24-11-2010 and that this was the causation of the 2nd explosion.

As part of this [redacted] has asked [redacted] to contact Professor Cliff to see if he had expertise on the following matters may be probative?

- The video footage from the mine portal shows a small movement of the belt just before the explosive force can be seen exiting the mine. If the footage is supplied are you able to offer an interpretation of this footage.ie could it be stated that the movement of the belt is caused by the motors starting, or was the movement caused by the blast further in-bye?)
- Would starting the electrical motors for the belt show on the electrical usage for the mine at that specific time, ie would it show a difference in the usage at that specific time.

This report refers to an evaluation of video footage at the portal and ancillary information including gas monitoring data and witness statements.

This report concludes that the movement of the conveyor observed was caused by the second explosion and not the reverse.

David Cliff
Professor of Risk and Knowledge Transfer
Minerals Industry Safety and Health Centre
Sustainable Minerals Institute
University of Queensland

DETAILED OBSERVATIONS AND DISCUSSION

1. Analysis of video footage

   File supplied 20101124143713-143813.avi starts at 14:37:13. The recording of video by the system at Pike River was initiated by the detection of movement. At approximately 2 seconds into the recording the belt can be seen to move to the left of screen; i.e. out of the mine. The first evidence of the pressure wave exiting the mine appears at approximately the same time into the recording with the tape starting to lift. This followed by increasing air movement, the conveyor belt flapping up and down and the audible sound of an explosion at approximately 4 seconds into the recording with visible post explosion material. Similar behaviour is observed in the video of explosions 3 and 4 though the sound of the explosion coincides with the movement of the belt in these videos.

   It is possible that there was belt movement just prior to the recording being initiated as this could have triggered the recording.

   I believe that the original video recorded at a frame rate lower than 25 frames per second. It is not possible to quantify the speed of the blast wave, but it was subsonic as there was no sonic boom. The speed of sound is approximately 280 m/s. The sound of the explosion exited the mine prior to the visible evidence indicating that the pressure wave had a velocity less than this. There is no evidence of the actual chemical explosion wave exiting the mine (flame or heat). The ignition cannot therefore have occurred close to the portal. In addition video exploration of the drift using the various robots did not find any evidence of heat from any of the explosions in the drift as far as the jugonaut that was parked about 1600 m up the drift, though there was evidence of the pressure wave lifting the belt off its rollers at this point.

   There are a number of points to make with respect to this video and the conveyor belt.

   - The conveyor only runs in the stone drift as far as the “Grizzly”.
   - The conveyor visible is the bottom conveyor and under normal operation would move into the drift as the load is carried on the top conveyor belt out of the mine.
   - There is a very small difference in time if any between the first movement the belt and the detection of air flow out of the mine.
   - Airflow at this time was into the mine as there was a flow due to natural ventilation pressure differences and buoyancy effects.

2. Statements provided by [redacted]

   Some significant points raised during these testimonies:

- Starting the belt would cause and alarm to sound [redacted]
- The belt movement is not consistent with the belt start up ([redacted]) ([redacted]) – it would be a soft start with a slow increase in velocity
- Only [redacted] were permitted to start the belt ([redacted])
- No [redacted] were present at the mine on 24 November [redacted]) – except as a member of the mines rescue [redacted])
- The conveyor could not run in reverse [redacted])

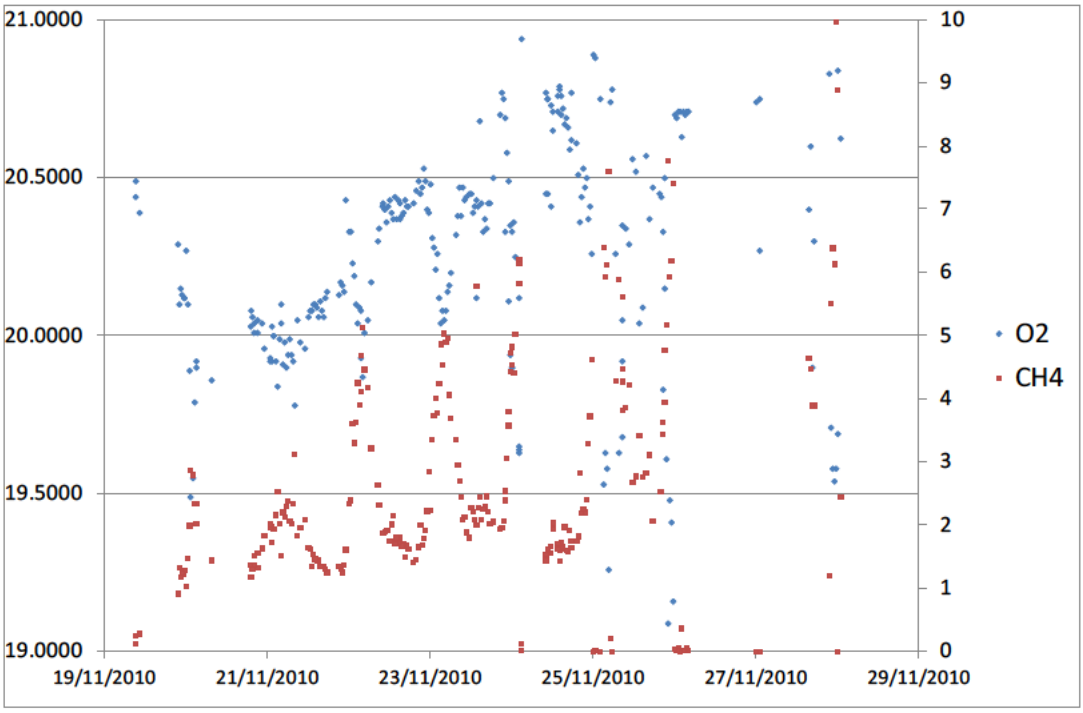
3. Gas monitoring information

Very limited gas monitoring was able to be established after the first explosion. Initially monitoring was undertaken at the top of the main shaft and via a solid energy supplied monitoring system at the grizzly borehole above the grizzly. The first borehole drilled into the mine PRDH43 was commissioned just prior to the second explosion. It was located in the stone area in the main return inbye the main fan. Attempts to establish monitoring at the slimline on 24 November were unsuccessful as the plastic tube when lowered into the mine kept melting, and the slimline appeared to be acting as an intake at all times.

The only meaningful gas monitoring data available for analysis during the period after the first explosion is from the fanshaft. Manual samples were taken and analysed by [redacted]. Sampling was subject to access to the top of the fanshaft and to replacing the damaged sample line after each explosion. Thus the sample regime is not continuous. The principle sources of gas at the sampling location were air that could enter the mine via the slimline shaft and the main stone drift, methane (and a small amount of carbon dioxide) exuding from the coal within the mine, post explosion gas and the products of any ongoing combustion. The gas monitoring data clearly shows the influence of the variations in the surface barometer. Generally the surface barometric pressure is at a maximum at or near dawn corresponding to minimum surface temperature, then as the day warms up the surface barometric pressure decreases until the temperature peaks and then reduces again (following the virial equation relationship between pressure and temperature). This diurnal variation was counterpointed by the emissions of methane from deep within the mine. Figure 1 shows that on each day the methane rises and falls and the oxygen does the reverse. The initial post explosion atmosphere took several days to clear through natural ventilation flows.

If the explosibility of the atmosphere at the fanshaft (figure 2) is plotted then it is clear that the atmosphere at the fanshaft starting moving into the explosive range on 22 November, however the second explosion did not occur until 24 November, then again 26 November and 28 November. The two elements plotted are the x and y coordinates of the Ellicott explosibility diagram, an atmosphere is explosive when both x and y are positive. By considering the flows of gas in the mine, it is reasonable to assume that the point of ignition was generally in an area of fresh air that started to fill with methane under the influence of the barometer. This would limit the area where the ignition source could be to those roadways immediately connected to the

roadway leading from the stone drift to the fanshaft. Given the data from PRHD43 days previously it is reasonable to assume that the working area of the mine is essentially full of methane. Over time the fringe of methane would slowly work toward the fanshaft roadway. Air also entered the mine via the slimline.



Gas monitoring data from the fanshaft showing the diurnal variation in methane concentration (on the right hand y axis) over time.

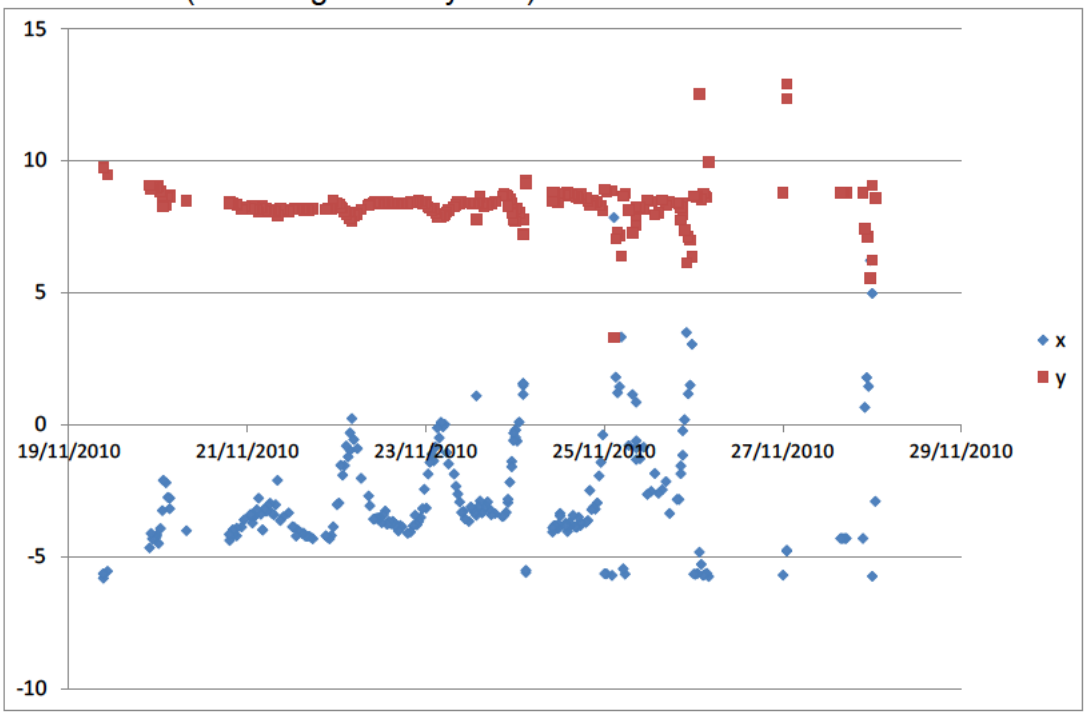


Figure 2. Ellicott explosibility parameters as a function of time at the fanshaft.

For the explos[redacted] initiated by the belt starting there would need to be an explosive atmosphere of gas adjacent to the conveyor belt system or allied electrical circuits. The belt only went as far as the grizzly.There is no evidence that the atmosphere at the grizzly was anything other than fresh air. This is supported by:

- The stone drift appeared to be acting as an intake to the mine at all times due to natural ventilation pressure and a probable fire in the coal near the slimline.
- The solid energy monitor at the grizzly, though not working on the 24th on the days prior to that did not show any signs of any flammable gas at the grizzly.
- The absence of any evidence of heat from the combustion wave from video exploration by the various robots after all the explosions, in the drift as far as the jugonaut.

CONCLUSION:

Based on the analysis above it is very unlikely that the movement of the belt was initiated by people. It was more likely caused by the pressure wave of the second explosion.
This is supported by:

- The absence of any evidence of a flammable atmosphere in the stone drift, as the drift was acting as an intake to the mine.
- The short lag time between the belt movement and the pressure wave arrival, indicating that the pressure wave most likely caused the belt movement.
- Similar behaviour observed during the third and fourth explosion.
- The absence of any heat in the stone drift as far as the jugonaut, meaning that the combustion wave had dissipated before this point.
- The belt moved in the direction opposite to normal operation and there is testimony to indicate that it could not move in the reverse direction.
- There was no one on site on the day with the capacity to initiate the belt.
- There was no evidence that the audible alarm triggered to indicate that the belt had started.

At the time of the second explosion there would have been no electrical consumption within the mine and thus the start-up of the conveyor could be detectable on the power supplied to the mine.

New Zealand Police

STATEMENT

Section 82 Criminal Procedure Act 2011

Statement of: [redacted] Age *(if under 18)*: _____

Date statement taken: 15 October 2018 Time: _____

Location: [redacted]

I, [redacted] state:

1. My full name is [redacted] I am employed by the [redacted] as the [redacted]

2. Prior to this job I was a [redacted] my last role being th[redacted] I was in this role at the time of the first explosion at the Pike River Mine on Friday the 19th of November 2010.

3. After the first explosion I became the [redacted] and began working 12 hour shifts from 7.00am until 7.00pm.

4. My initial role when the mine first exploded was to make sure that the Police National Headquarters were aware of the situation, contacting the Mine Inspectors and making arrangements for staff to be deployed to assist.

5. I arrived up at the Pike River Mine on the evening of Friday 19th November 2010.

6. I have been asked by [redacted] a number of questions around my involvement or knowledge around the risk assessments for starting up the conveyor belt at Pike River Mine after the first explosion.

7. On the Saturday I was involved in the discussions around the idea to try and restart the conveyor belt, the reasoning for wanting to turn the conveyor on was, if there were any injured miners alive in the mine that they would be able to ride it out.

8. After the discussions we decided against it because of the proximity in time of turning on the conveyor belt to the first explosion. Prior to the first explosion the conveyor belt

[redacted].... witness initials

New Zealand Police

STATEMENT CONTINUED

Section 82 Criminal Procedure Act 2011

Statement of: [redacted] Age *(if under 18)*: .....

had been off, when it was turned on, restarted, the first explosion occurred shortly after. There was concern about the link, and it was decided that the risk was too high and the proposal to restart the conveyor was put aside.

9. At approximately 11.00am on the Saturday morning the ventilation engineers gave results of the gas samples. We were told the first explosion was not be a survivable explosion as the Grahams ratio was higher than 0.6. The gas results were in excess of 9.0 so as a result the idea of turning on the conveyor was given a back seat considering the risks and possibility of destroying evidence that was there.

10. I am aware that a risk assessment was undertaken but I was not a party to that. I have subsequently seen the Risk Assessment as [redacted] showed it to me.

11. I came off the hill at approximately 10.00am on Tuesday the 23rd of November 2010 and was then on days off so I was not up at the mine at the time of second explosion.

12. I have been asked after the first explosion, 'was anyone allowed at or near the portal' and what security measures were in place.

13. The initial police officer in charge up at the mine was [redacted]

14. The access was sealed off back at the road, seven to eight kilometres down from the mine and Press had to be back even further than that.

15. I can say that no one went into the mine, not when I was there anyway. I assume that mine staff initially would have put a nose in and called out into the mine.

16. I have been asked if I know where the conveyor was turned on from, but I have no idea, but there was an electrical plant back on the road near the administration block.

17. [redacted] asked me in about April 2018 if the conveyor had been turned on. I answered him that it had not been turned on.

[redacted] ... witness initials

New Zealand Police

STATEMENT CONTINUED

Section 82 Criminal Procedure Act 2011

Statement of: [redacted] Age *(if under 18)*: .....

18. I have more recently spoken to a member of the New Zealand Police who told me that it had been turned on, I do not wish to name this person.

19. In August / September 2018 I spoke to [redacted] He showed me documentary evidence that [redacted] had obtained, under the Official Information Act, from the Police, about the planned conveyor belt restart and the risk assessment and other documents which were for turning on the conveyor belt.

20. I did not see anything in those documents to say that it had ever been restarted although it appeared that the documents pointed to Police planning for the belt to be restarted.

21. However with regard to those documents, where they documents were heading, it was a focus of thought and high on the priority board, which after the second explosion disappeared, as well as watching the video of the explosion at the portal. All these factors together make me feel that questions need to be answered about the conveyor belt and whether it was restarted.

22. I have no direct knowledge that the conveyor belt was ever restarted. It is all hearsay.

[redacted] th and accuracy of this statement. I make the statement with the knowledge that [redacted] n court proceedings. I am aware that it is an offence to make a statement that [redacted] to be false or intended by me to mislead.

Signat[redacted] Date 9/11/2018

Date statement finished:	Time:

Signature witnessed by:

Print name and QID

Signature *Date* *Time*

Statement taken by:

(If different to person witnessing signature) *Print name and QID*

..... witness initials

New Zealand Police

STATEMENT CONTINUED

Section 82 Criminal Procedure Act 2011

Statement of: [redacted] Age *(if under 18)*: .....

Signature	*Date*	*Time*

..... witness initials

N.Z. POLICE

Police 29
09/15

J O B S H E E T

Due .....

File .....

EVENT: OPEARTION PIKE – VIDEO ANALYSIS

DATE and TIME	First plan your inquiry then set out the action taken, inquiries made, oral statements of persons seen and information gained, etc.

20.12.18
1300 hrs

Tasked to carry out a video analysis of the CCTV footage on the portal at Pike River on 24 November 2010.

The first file in this footage is dated 24.11.10 at 1200.30 hours. The final file in this scenario is the same date at 1458.40 hours.

File 2010112412416-120455
This folder shows men working at the portal with what looks to be a white van.

File 20101124120833-120933
This footage shows three men at the portal.

File 20101124124802-124823
This footage shows a white van and men leaving.

File 20101124130149-130222
This footage has no visuals however, men's voices can clearly be heard on the video.

File 20101124130652-130658
This footage shows the trailer leaving.

File 20101124133318-133332
This footage shows two men walking east across the portal.

File 20101124133820-133831
This footage shows a third person walking east.

File 20101124132146-134201
This footage shows two or three men walking west across the face of the portal.

File 20101124134835-1
Two men leave the portal area.

File 20101124143713-143813
Shows the second blast at Pike River.

N.Z. POLICE

Police 29
09/15

J O B S H E E T

Due .....

File .....

EVENT: OPEARTION PIKE – VIDEO ANALYSIS

DATE and TIME	First plan your inquiry then set out the action taken, inquiries made, oral statements of persons seen and information gained, etc.

SUMMARY:

Pre Blast:

Due to the position of the camera and the limited view available from this camera it is difficult say without any doubt that all staff had left the area of the Portal area at the time of the explosion however between and 13:48:35 and the time of the explosion at 14:37:13 no-one is seen or heard on the cameras.

Post blast:

There are 12 videos post blast between 14:37:13 and 14:58:40

No-one is seen leaving the Portal area. Given the blast has (has activated the camera for a reasonable time post blast if anyone had started the conveyor you would expect to see ten leaving the leaving the Portal.

Relevance: Need to establish how easy it would be to access the [redacted] conveyer shed without activating the motion sensor on the Portal Camera.

N.Z. POLICE

Police 29
09/15

J O B S H E E T

Due .....

File .....

EVENT: PIKE RIVER MINE ELECTRICAL DATA OIA REQUEST FROM [redacted]

DATE and TIME	First plan your inquiry then set out the action taken, inquiries made, oral statements of persons seen and information gained, etc.
11.02.2019	Refer to the series of emails from [redacted] and [redacted] dating from 16 November 2018. I further spoke to [redacted] on the afternoon of the 11th of February 2019 to clarify the email he sent to [redacted] on the 15th of December 2018. [redacted] had requested more clarity on the 5th of February by email.
1610 Hrs	[redacted] informed me that having looked through the data that they managed to locate he could confirm that there was no fault and no evidence of an electrical surge. They had records for the first event (19 November 2010) but none for the second date we were requesting (24th November 2010). They are still searching their archives for any data. He was able to say that the CB3 (circuit breaker 3) was closed (power was going through it) after the first explosion a request was made to open CB3 (turn the power off) on the 30th of November. The power was on to the conveyor belt on the 24th of November 2010. He could conclusively say from the data he had seen that there was no surge of power following the first explosion and when the circuit breaker is opened on the 30th of November.

Name:	[redacted]	Checked by:	
Rank:	[redacted] QID [redacted]	Rank:	QID
Date:	11/02/2019	Date:	11/02/2019

IN THE CORONER'S COURT
AT GREYMOUTH

COR-CSU-2010-CCH-811-840

IN THE MATTER OF **THE CORONERS ACT 2006**

IN THE MATTER OF **An inquest into the deaths of**

CONRAD JOHN ADAMS
MALCOLM CAMPBELL
GLENN PETER CRUSE
ALLAN JOHN DIXON
ZEN WODIN DREW
CHRISTOPHER PETER DUGGAN
JOSEPH RAY DUNBAR
JOHN LEONARD HALE
DANIEL THOMAS HERK
DAVID MARK HOGGART
RICHARD BENNETT HOLLING
ANDREW DAVID HURREN
JACOBUS (KOOS) ALBERTUS JONKER
WILLIAM JOHN JOYNSON
RIKI STEVE KEANE
TERRY DAVID KITCHIN
SAMUEL PETER MACKIE
FRANCIS SKIDDY MARDEN
MICHAEL NOLAN HANMER MONK
STUART GILBERT MUDGE
KANE BARRY NIEPER
PETER O'NEILL
MILTON JOHN OSBORNE
BRENDON JOHN PALMER
BENJAMIN DAVID ROCKHOUSE
PETER JAMES RODGER
BLAIR DAVID SIMS
JOSHUA ADAM UFER
KEITH THOMAS VALLI

Before: Chief Coroner, Judge A N MacLean

Date: 27 January 20100

Appearances: [redacted]

COUNSEL'S SUBMISSIONS AND CORONER'S FINDINGS

COURT RESUMES: 2:04 PM

COURT OPEN

THE CORONER:

At just after 2 o'clock today we're back in public session in this inquest and I want to just in open Court make a few comments about developments over the last 24 hours and in particular just to give some insight as to what I've been discussing with counsel in Chambers both this morning and just prior to lunch. I became aware yesterday that there was some video camera footage from a borehole right at the top at the back of the mine works. That revealed some information about the

area, the very limited area up at that point. I also became aware that there was some suggestion that it revealed information relating to survivability and/or even the existence of body, or body parts. Naturally I wanted to get to the bottom of that and determine (a) what it was about, what it showed and (b) the extent to which it might be relevant to this inquest, my inquiry. So viewing was arranged yesterday at short notice and I saw it, along with one or two counsel who happened to be available, and an interpretation of what we were seeing was given at the same time. At that presentation I was also shown some further information that was obtained from a probe put down the same borehole from what is known as a CALS or cavity analysing laser system - most impressive and sophisticated technology which revealed considerably more detail of that same area that the video camera had covered; again with an explanation. Having seen it I thought it was appropriate that counsel should have the same opportunity to see that and I was also aware that some counsel had not seen the video. So arrangements were made to do that and that was the main reason behind a bit of delay this morning and what was also being discussed just before lunch. Now that counsel and I have all seen that, and after further discussion with them, I've determined that the information revealed by those two probes in that very small area is not relevant to the scope of this inquest. It shows a very limited snapshot but what I can say is that the proposition that in some way those probes reveal the presence of bodies or throw any useful light on survivability issues is simply not sustainable. So we've got to the stage where myself and counsel were all of the same mind that that particular information has no relevance to this particular inquiry although I would imagine it will be of great interest to subsequent inquiries and particularly the Royal Commission but that is for the commissioners. It's clear that there's likely to be a steady flow of similar information using the technology as time progresses. Now my thinking had been that perhaps we might show some of that video and/or CALS footage today in the inquest Court but having resolved that it's not relevant to the scope of the inquiry that will not now happen. Decisions as to what will happen about that footage and indeed any other footage

is not for this Court but for other forums. So that means that we're at the stage now where I have heard all the evidence that I'm going to hear in this inquest and I'm going to now invite counsel to make such submissions as they wish, [redacted]

[redacted]

Your Honour the families have been able to consider the evidence of course before today and they have issues which would arise out of the evidence by way of cross-examination and inquiry but not on the key issues before you. The conclusion that they reach and which I am asked to advance to you to find expressed in your coronial way is that it is essentially derived from the evidence produced by [redacted] at page 36 where he concludes by reference to expert evidence which they say the expert evidence concludes from [redacted] that the miners would have become unconscious as the result of acute hypoxic hypoxia almost immediately after the explosion occurred and would have remained unconscious until death supervened three to five minutes later. In addition to that, sir, you have the evidence of [redacted] where he has referred at page 44 of [redacted] brief, that his best estimate is that the explosion created an atmosphere throughout the bulk of the mine that contained concentrations of carbon monoxide at levels immediately threatening to life, exacerbated by elevated levels of carbon dioxide and reduced levels of oxygen. And [redacted] at page 37 and 38 has referred to more directly a summary of the causation or causative effect related firstly to those in close proximity exposed to immediate concussion and thermal injury, secondly a compression and expansion wave but thirdly then coinciding with [redacted] the third cause of death being the effect of toxic gas particularly carbon monoxide and highly unlikely the miners to survive exposure to such high levels in this confined environment without personal protection or access to air source. And finally, and recurrently in this evidence the problem of lack of oxygen or hypoxia as the result of the explosion and the subsequent fire. With those key components sir which seem to all come together my submission but not

expressed, of course, as you would do it in your usual way, is that the findings that are available to you is that firstly if they survived the blast which we do not know the location of, they are likely to have been unconscious from the blast or acute hypoxic hypoxia immediately. The cause of death, taking all possibilities was exposure to either explosive force instantaneous or otherwise acute hypoxic hypoxia and death was likely within, as the evidence indicates, within three to five minutes. They are the core components sir of what I submit the evidence leads you to in your findings. There seems to be no point at which the expert evidence diverges or crosses except by way of agreement. I don't purport to express the way you will but they are the key elements, sir, which are important to the family, not because this is a finding which in a sense most affords them some comfort but one that is truly there on the evidence for you. That's all I wish to say at this stage of the inquest sir.

1414

[redacted] **ADDRESSES THE CORONER**

Sir, I can't add anything. I don't take any issue with what my friend said and go with it.

SUBMISSIONS CONCLUDE 2.14 PM

1415

THE CORONER:

As I indicated back even in December and later to counsel, and again today, I'm going to give my findings now, they will be brief and I'll explain just a little bit of the context in which I make those findings. The purpose of the Coroner's Act, or one of the purposes, is contained in s 3 of the Act and it talks about recognising the public good associated with a timely understanding of the causes and circumstances of death. The purpose of an inquest under s 57 is to establish that a person has died, their identity, when and where they died, the causes of the death and the circumstances of the death.

There are other purposes which can include making of recommendations or avoidance of similar circumstances and also whether the public interest would be served by other investigating agencies dealing with all or some aspects of the death, so that s 57 is in a legalistic way saying what I said this morning, that I am concentrating on the what and where and who, but not the why or the whether.

Another important consideration under the Coroner's Act is "the existence and extent of any allegations, rumours, suspicions or public concern about the deaths," and it is almost trite to say now that all those words would apply to the circumstances of these deaths and I see it as an important part of my function to do what I can to help allay or correct any misconceptions, rumours or suspicions.

Turning briefly to the background factual context, on the 19th of November at 3.44pm we now know that automatic remote CCTV coverage showed a sustained about 50 second blast coming out of the mine portal. At about 3.50pm a power outage was noted and at 4.20pm an electrician was sent down into the mine to try and see what had gone wrong, and he was forced to

retreat and reported that there had most likely been an explosion - 4.35 pm, and it was the first call to emergency services and shortly thereafter to police.

Just after five o'clock we now know that there was a telephone conversation taking place between [redacted] down in the mine and [redacted] At 5.26 pm the two survivors, [redacted] and [redacted] emerged from the mine. A few minutes later the first control mechanisms were put in place by police.

I became involved virtually right from the beginning on the evening of the 19th of November, the police having been appraised of the likelihood of violent or unnatural death, reported as is normal to the designated coroner for this area, Mr McElrea, the scenario who promptly appraised me of it, and it was decided by me in light of all the circumstances including resourcing issues that I would deal with the matter.

So I opened an inquiry under s 59. At that stage it was not clear whether I would be dealing with a situation where there was recovery of bodies or body parts possible, and possibly a complicated disaster victim identification process gone into, or whether it was going to be a situation where, as it turns out was the case, it was going to be a matter of dealing with evidence of an unrecoverable lost or destroyed bodies.

A visit to the site early in December coupled with extensive briefings from police and all relevant experts revealed at a very early stage that it was highly probably that the disaster victim identification type of procedure using DNA, odontology and other techniques was an unlikely scenario and that I should proceed down the track which I have done through to today.

The issue for me today now is whether under s 44 of the Births, Deaths and Marriages Registration Act I can say that I have established that persons whose body has been destroyed or is impossible or impracticable to recover or is lost, has actually died and those persons' identity. It will come as no surprise to hear me say that I am so satisfied that those points have been

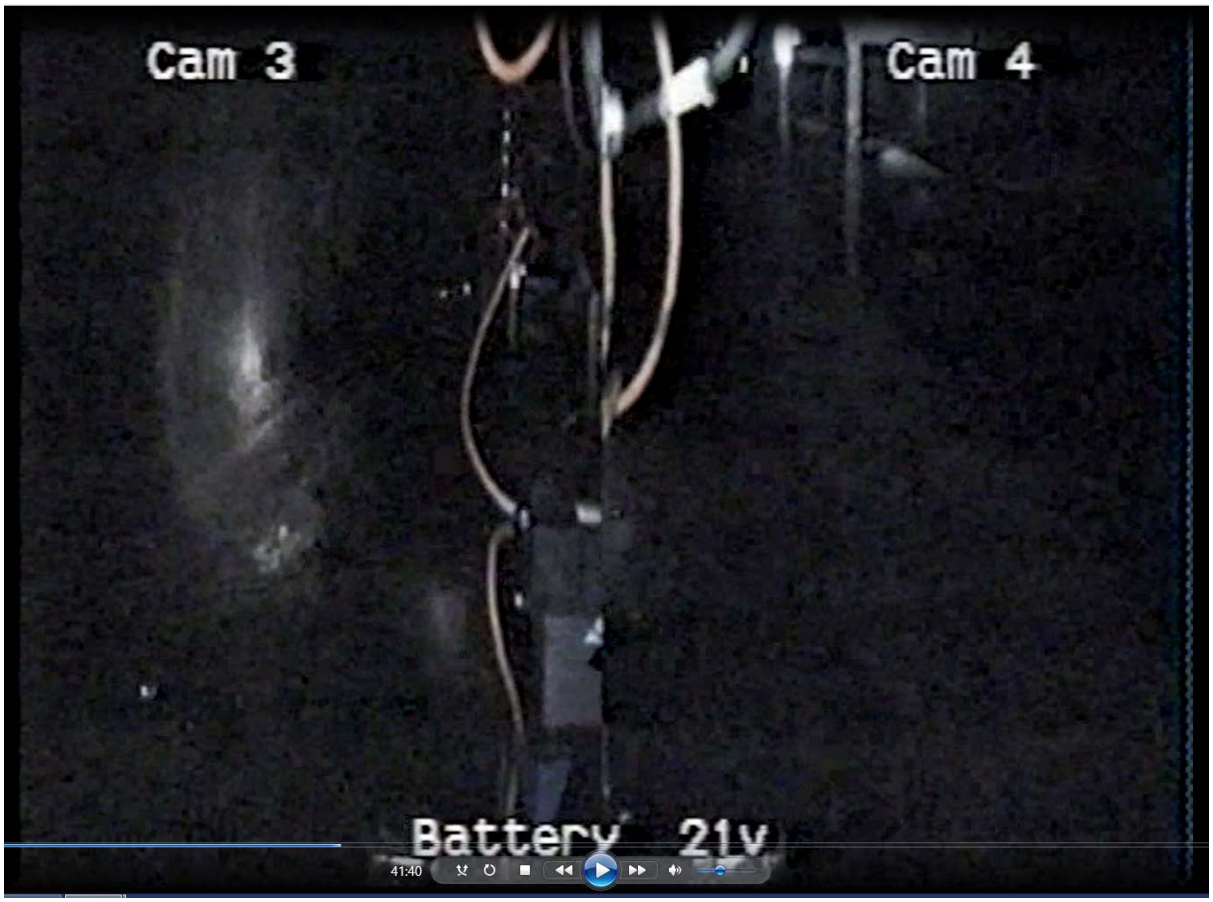
established. I am also satisfied on the evidence available to me and having listened to [redacted] submissions that the death of all 29 men occurred on the 19th of November either at the immediate time of the large explosion which occurred in the mine or a very short time thereafter.

It is also clear that the cause of death, although it may well vary in degree between individuals depending on their location, was the result of a substantial explosion and the combination of concussive and thermal injuries due to the explosive pressure wave, together with acute hypoxic hypoxia through exposure to toxic gases and lack of oxygen.

I think it is appropriate, although it may be hard for members of the family just to formally then conclude in this way, that I am satisfied of the death, in the circumstances outlined in my findings, of Malcolm CAMPBELL, Allan John DIXON, Peter O'NEILL, Keith VALLI, Josh UFER, Joseph DUNBAR, Benjamin ROCKHOUSE, Andrew HURREN, John HALE, Francis MARDEN, Milton OSBORNE, Terry KITCHIN, Sam MACKIE, Kane NIEPER, Zen DREW, Ricki KEANE, Michael MONK, Conrad ADAMS, Glenn CRUSE, Christopher DUGGAN, Daniel HERK, David HOGGART, Richard HOLLING, Koos JONKER, William JOYNSON, Stuart MUDGE, Brendon PALMER, Peter RODGER and Blair SIMS.

That concludes the inquest. I will from here move to send the appropriate notification to the Registrar-General of Births, Deaths and Marriages, together with the background family information that families have made available to my staff. That will be done in fairly short order, together with a copy of the transcript as a necessary certification, the plan being then that Death Certificates will be issued. We will collate the distribution through our Christchurch office with the family contact that has already been established with the assistance of police and our staff. It is a small matter but perhaps it is just one slightly cheery note to end on that the Registrar-General has in advance indicated that the normal charges that will be made will be waived in these circumstances and I think that is highly appropriate.

INQUEST CONCLUDES: 2.26 PM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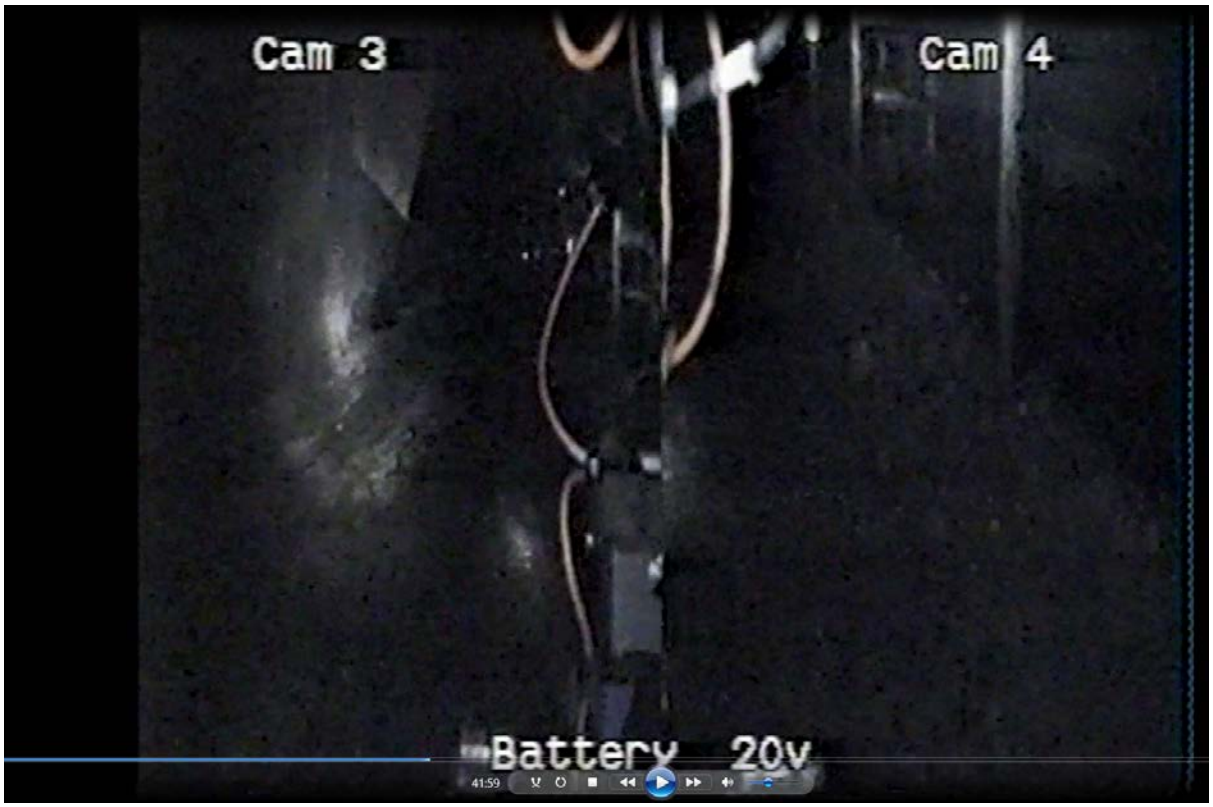
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