

28 February 2019

# SECOND EXPLOSION PIKE RIVER MINE / CONVEYOR BELT

This report summarises the investigation into the second explosion at the Pike River Mine on 24 November 2010 at 1437 hours and addresses reports in the media that the cause of the second explosion was the starting of the conveyor belt.



Conveyor belt under construction 2007

## Safer Communities Together

**NEW ZEALAND POLICE CANTERBURY DISTRICT HEADQUARTERS** 40 Lichfield Street, Christchurch, New Zealand DX Mail WX10057 Telephone: (03) 3637400 www.police.govt.nz This allegation initially came from and was relayed on national media by both and and and "that someone in the control room has started the conveyor belt".

# For ease of understanding, the areas of the investigation have been separated as follows:

- 1 The conveyor belt, its state, its controls and access to it.
- 2 The risk assessments.
- 3 The control room.
- 4 The witnesses and persons present at the time including Pike River staff, staff, Police staff and others.
- 5 The state of the mine at the time of the explosion and gas monitoring.
- 6 Evidential sufficiency.

As part of this inquiry, statements have been obtained from as many persons as possible, however several of the key witnesses are overseas having left New Zealand post the explosion and they have not been able to be contacted.

In saying that, there is adequate evidence to address any concerns raised in the investigation from the available staff and witnesses.

The statements, relevant documents and media obtained in this inquiry are all hyper-linked to this report for ease of reading. Parts of some statements have been outlined, however the complete statements should be read in their entirety for a complete comprehension.

## **Background**

The conveyor belt was designed by and construction and fitment was undertaken by Construction and fitting of the belt started in the Pike River tunnel in July and August 2007 when the tunnel was at about 300 metres long. As the tunnel progressed so did the conveyor length.

The owner / manager of states that states that were only the fabricators for the belt and had no involvement in the motors or fitment.

## 1 The conveyor belt, its state, its controls and access to it.

Would it have been physically possible for the conveyor belt to start?

- 1.1 At the time of this explosion the robot footage (click here for video) shows there is limited damage to the belt. However much of this footage is directed away from the conveyor belt and into the drift and so it is possible the conveyor did sustain damage post 19.10.2010.
- 1.2 Starting belt: Several witnesses give information around the starting / alarm procedure.
- 1.3

was the Construction Manager of His statement includes the following briefs:

- Para 7... this belt went up from the portal to the Grizzly at the end of the mine access adit (tunnel). At the grizzly the main belt was fed from a loading hopper via a secondary feeder belt.
- Para 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 (Programmable Logic Controller) 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 sounded along the belt including 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 belt reached full speed did the feeder belt start.
- Para 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 would not start. It was not possible to turn off the audio and visual alarms and then start the conveyor belt.
- Para 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. The equipment was designed in Australia to Australian standards and approved to be installed in the Pike River Coal Mine.
- Para 11... If any of the pull wires or connectors that also acted as the audio alarm were broken or damaged the belt would not start.
- Para 12 ... If the safety sequencing of the checks to run the belt was not completed satisfactorily then the belt would not start.
- Para 14 ... From my memory there were no people at the portal or running the conveyor belt after the first explosion.
- Para 15 ... It was not possible for the belt to run in reverse.
- Para 16 ... It was not possible to control the conveyor belt from the control room at Pike River.

### 1.4

at the time of the explosions. He was the electrical supervisor of the conveyor belt.

He states:

- Para 7... The controls for operating the conveyor belt were in a small control room next to the conveyor outside the tunnel entrance. The crew were responsible for operating these controls.
- Para 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.
- Para 9 ... The start-up and stop buttons worked on a touch screen on the PLC panel. The shed was not locked... 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 never passed knowledge of the password to anybody else.
- Para 12 ... We had normal issues where some of the warning devices got wet because of water ingress and the belt would not start.
- Para 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.
- Para 15... safety device alarm system ... could not be turned off unless it was intentionally disconnected by a qualified electrician who could understand the electrical schematics and who had access into the conveyor control panel.
- Para 18... I have viewed the video of the 2nd explosion ... it is my expert opinion it looks like a shockwave from the explosion caused the movement of the belt.

## 1.5

explosion as an engineer and was responsible for the maintenance of the conveyor belt.

He states:

- Para 7... the Tunnel Superintendent, the shift boss and myself were the only people that would normally start the belt.
- Para 8 ... at times it would be a little 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.
- Para 9 ... my professional opinion about the tripping is that the first blast would have tripped a few of these switches.

4

- Para 13. I am aware that the alarms could be turned off but not by Pike staff as this could only be done using the laptop with the belt programme and the skill knowledge of the operation of the belt.
- Para 14. staff would not be able to access it.
- Para 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 speed
- Para 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 drive mote kicked in.
- Para 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.

### 1.6

Mr was the Tunnel Superintendent for He has a vast experience and knowledge of the Pike River tunnel and the conveyor belt.

He states that about an hour before the second explosion he was at the portal area with several other **staff**, and that they left the area about an hour before the explosion as they had been told the methane levels in the mone were rising.

He thinks that two PRC men named and and and were also at the portal and left about the same time as them.

His statement outlines the process for starting the conveyor belt and who would have been capable of this task. He outlines his expert opinion after watching the explosion video and gives the reasons why he thinks the conveyor belt was not started. He was not involved in the preparation of any risk assessments for SOPs.

His statement should be read in its entirety, he is the leading expert on this matter.

## 1.7

was an engineer employed by and and who worked on the conveyor belt, he was not on-site after the first explosion but gives an insight into the conveyor belt operation.

He states:

- I also have no knowledge of any staff being around the portal of the mine at this time.
- There are certain other matters which obviously are of relevance with the conveyor belt.
- The conveyor belt motor was started through a soft starter system, this means that it started at a slow speed and gradually increased.
- 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.
- 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.
- > The clinking noise heard on the video is not a noise from this gear box.
- In the footage showing the second explosion seconds after the clunking noise the force of the blast can be seen.
- 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.
- The blast force travelled from 2.3 kilometres in the drift outside the portal in two seconds is not possible. (Blast force spoken about in this context is the speed of the explosive front from source to portal).
- I have given thought to the stretch factor of the belt and the distance to the return drum, no idlers or rollers would have moved at the tail end of the conveyor belt at the portal for at least three seconds.
- 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.
- The only persons I believe that might be able to shed further light on this are set the set of t
- The belt was started via the use of a laptop program, only staff were permitted to use this laptop, when not being used the laptop was locked up on site.
- 1.8 In reviewing these witness statements it has been established the controls for the conveyor belt were situated at a small shed at the portal of the mine, this shed was controlled by staff. Pike River Mine staff were not permitted to operate the conveyor belt. At the time of the second explosion there were no staff at the Portal, the one and only employee of was with mines rescue in the administration block.

After viewing the CCTV footage of the portal it clearly shows several workers at the portal 50 minutes before the second explosion. These miners / workers were leaving the area of the portal. There is no video showing anyone returning or at the portal / conveyor control hut after this time. Job sheet

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

# 2 <u>Risk Assessments / Processes</u>

The risk assessments for the starting of the belt were started, however never completed and never approved.

The following documents were completed as part of the risk assessment for starting the conveyor belt:

Risk assessment link



2.1 The following witnesses give evidence about the risk assessments, the process / systems in place for completing the RA's / starting the belt.

2.2

was the Response Co-ordinator in charge of the Police immediately post the first explosion. He gives a comprehensive statement about the systems and lines of control. He states:

On the 20th November 2010 I was in regular contact with  $\triangleright$ 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. 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 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.

- 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.
- The tactical level risk assessments were prepared under oversight of 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.
- Link toi each RA here:
- These risk assessments covered a wide variety of issues and occurred on a regular basis throughout the entire operation.
- 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 Response Co-ordinator and the proposal to turn it

on was not supported by Police.

At the handover between the Night Shift Response Co-ordinator and the Day Shift Response Co-ordinator

, 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.

- 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.
- 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.
- 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.
- 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).

## 2.3

was the CEO of Pike River Ltd, he was at the mine at the time of the second explosion. Attempts to contact have not been successful, however his evidence at the Royal Commission

with respect to the conveyor belt has relevance.

- Paragraph 1 states, "Continued monitoring. Considered running the conveyor belt in the drift to try and establish the extent of the damage in the drift. Could not convince New Zealand Police that this was a good idea as they thought it might disturb evidence."
- Now, just pause there please. To sub paragraph 1, under 141, can you explain what your proposal was with the conveyor belt, what it would've meant and the concern of the police?
- > What I put forward at the time was that if we were able to run the conveyor belt that it would establish information for us that the belt was continuous along its whole 2.1, 2.2 kilometres which would then indicate perhaps that the extent of the damage at the end of the conveyor belt may not have been that severe. In the event when I spoke about this option with the police, they raised concerns that we might actually disturb evidence that may be on the belt, which I did accept, that that would be the case, but I also put forward an option that we could mark the conveyor belt before we started running it and then if it was able to run for possibly 200 metres, maybe 300 metres, that would definitely indicate there was a potential lack of damage further up the tunnel. What I suggested at that time was if we did mark the conveyor belt and at a later stage had to go back and re-trace any evidence that was found on the belt, that we could in fact measure backwards to where the belt would've been before we started it, in which case we would've been able to identify the location of any evidence that might've been on the belt.
- And the Police reaction was not to go along with this?
- We actually conducted a risk assessment on the process, but the action was never taken. It was deemed that it wasn't necessary.
- ➤ Well, was the conveyor belt still working?
- There was still the availability to put power on the conveyor belt, the option that I was trying to get established was that the conveyor belt actually was still working, that would've meant that it was continuous along the whole length of the conveyor belt.
- Was that ever brought up again, the potential use of the conveyor belt?
- No , it was not.



was the

for the

purpose of the overall rescue and recovery phase.

- 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.
- 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.

- These risk assessments would cover a wide range of issues and occurred on a daily basis throughout the entirety of the operation.
- The risk assessments were then sent to the at Greymouth Police Station to be reviewed and before being sent to the for sign off and checking by a panel of experts he had assembled.
- 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.
- 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.
- 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.
- 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.
- I do not recall who made this suggestion.
- I do not recall signing a risk assessment or forwarding it to to allow the conveyer belt to be activated.
- As I have previously stated this type of decision would need to be made at the strategic level by
- I had only visited or was in the control room at the mine site on less than four 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.
- 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.
- I drove the mine site to access what was occurring. Whilst there the second explosion occurred.
- 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 the state of the stateo
- As I have I have outlined in paragraph 11 it was made clear to all those persons involved in the risk assessment process that 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.

# 2.5

at the time of the first explosion at PRC he was contracted to PRC in

his role at a company called **Example 1** He was the project engineer at PRC and also part of Mines Rescue.

Although his name features on the Risk Assessment for the conveyor belt he does not recall being involved in this assessment even though his name is on the document. At the time of the second explosion he was part of the Mines Rescue team and was in the main office block when **the main office block** when **the main office block** when **the main office block**.

2.6

is a Specialist Mines and Tunnels Inspector for the High Hazards Unit at MBIE. At the time of the Pike River explosion he was a Mines Inspector for the Department of Labour. He was part of the specialist team assisting the Police with risk assessments with respect to plans to re-enter the mine and recover / rescue any miners who may have been alive.

he had a meeting with **Example 1** (efforts to locate **Example 1** have been unsuccessful) over the RA (risk assessment) for starting the conveyor belt and that this was put on hold.

2.7

was the Engineering Manager at PRC at the time of the explosion. He states that the RA for the conveyor belt was completed, however no SOP (Safe Operating Procedure) was completed before the second explosion (which would have been required before any attempt to start the conveyor was attempted). The final two paragraphs of his statement summarise his recall.

- 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 19<sup>th</sup> of November 2010.

## 2.8

was one of the forward command leaders at Pike River post 19.10.2010. His complete questionnaire is linked here

He was involved in discussions around the Risk Assessments for 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,
- 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 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 an understanding of trends with airflows, the percentage of oxygen and percentage of combustible gases. The sampling was critical for the risk assessments".
- All risk assessments were sent to at the base at Greymouth station for forwarding to and at Police National HQ in Wellington.

# 3 The Control Room

- 3.1 It has been established beyond doubt that the conveyor belt could not be started from the control room, several witnesses have confirmed this.
- 3.2

confirms he was in the control room at the time of the second explosion with **Example**. He confirms the conveyor belt could not be started from the control room.

He further states that both the day shift and back shift mines rescue teams were all at the mine admin block at the time of the second explosion.

3.3

has no recollection of being involved in the risk assessment for the conveyor belt, he states that at the time of the second explosion he was at the mine as part of the Mines Rescue team and was getting a medical done at the main office block. 3.4

## 4 <u>Other Witnesses</u>

4.1 An independent review of the video footage and the witness statements was contracted out to mining industry expert for the

and has supplied evidential reports to the NZ Police previously as part of the 2010 investigation into the Pike River explosion. His report is attached as <u>Annex A</u> and in summary states:

- 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 juggernaut, 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.

## 5 <u>The Mine</u>

supplies further information around the condition of the mine as at the second explosion. His full report is annexed however in summary he states:

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 in-bye 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 GC. 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 co-ordinates 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 explosion to be 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 juggernaut.

## Additional Matters

- has stated to the Police that he has information from an unknown third party who states he knows that someone started up the conveyor belt. He has been asked for a statement around his knowledge but has so far declined either to assist the Police or point them in the direction of any person who may be able to offer further advice. States he has relevant information about the conveyor belt and has been asked on numerous occasions to assist with a statement but has declined)
- made a national media statement indicating he thought that the conveyor belt had been turned on. He has subsequently made a formal statement to the Police which does not corroborate his media statement,

He states:

- > Para 11 ... I was not up at the mine at the time of the second explosion.
- Para 18 ... I have more recently spoken to a member of the NZ Police who told me that it (the conveyor belt) had been turned on, I do not wish to name this person.
- Para 22 ... I have no direct knowledge that the conveyor belt was started. It is all hearsay.

would not supply any details for the person whom he stated told him the conveyor belt was turned on. A further approach has been made to **sector**, however at the time of writing this report he had not responded with any new information.

## **Photographic Analysis**

Photography Section was tasked with an examination of the video footage showing the second explosion.

He did a frame by frame analysis and created a series of still photos, the aim of which was to see if the "tell-tale" movement at the mine portal coincided with the movement of the belt. His task was made difficult due to the fact the camera was started by a movement detector so the video only progressed as it detected any movement. Nevertheless the photograph frames show movement of both the tell-tale and the belt at the same time. This would indicate the airflow from the mine caused by the explosion was also possibly the cause of the belt movement. (If you use to mouse the click through these images the simultaneous movement is easily seen)

## **Portal Footage**

There are a large number of video clips held by the Police for the portal on 24.11.10. These are from 12:00:30 to 14:58:40.

A job sheet from **gives** a timeline which lists when men and vehicles are seen or heard in the portal CCTV footage.

This video would seem to contradict some witnesses who state the area was not being accessed at this time, the video shows two workman, one carrying a length of timber, see link.

The last time any person is seen or heard on the footage is at 13:48:35: which is almost an hour before the explosion at 14:37:13 (CCTV time).

in his statement confirms he and some other staff were at the portal until about an hour before the 2<sup>nd</sup> explosion and this is confirmed with the video footage.

## **Power Recordings Electronet**

The power to the mine was disconnected at the time of the second explosion, however the power to the shed and the conveyor belt was on a separate line called the CB3. It was initially thought that the SCADA recordings (still held by the Police) would contain these records, however the last transfer of information from the Pike server to the Police was prior to 24.11 so it is not included. The information received from **Electronet** states *"The power was on to the conveyor belt on the 25<sup>th</sup> 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 30<sup>th</sup> of November 2010.* 

# Would the second explosion have rendered any person liable for any criminal or civil liability?

The Coroners findings on 27.01.2010

"I am also satisfied on the evidence avaiable to me and having listened to submissions that the death of all 29 men occurred on the 19<sup>th</sup> 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, athough 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."

Consequently even if the conveyor was started (there is no evidence of this), the resulting explosion would not contribute to any unlawful actions.

# 6 <u>Summary / Evidential Sufficiency</u>

- There is no evidence the conveyor belt at Pike River was started on or around 24 November 2010 at 1437 hours.
- There is substantial evidence to conclude that it wasn't.
- There is no evidence that any risk assessment as part of starting the conveyor belt was ever finalised and signed off by the RA or management team. (Which would be required before the conveyor belt was started)
- If report is accepted, then if there was an ignition source in the drift consistent with the starting of the belt it would have no effect as the atmosphere in the drift was not conducive to explosivity.
- The blast force reports completed by BMT WBM indicate the ignition source was more likely at the auxiliary fan (well in-bye of the end of the conveyor belt).
- In addressing any allegations that some rogue employee started the conveyor belt the following sequence would be required: Get to the portal (a restricted area), open the laptop, by-pass and turn off the alarm systems, have knowledge of the start-up sequence and turn the belt on. This person would have to have a knowledge of the start system. No staff were at the portal at the time of the second explosion.
- No liability has been established with respect to any persons around this accusation.
- If it were established that the belt was started, would this be sufficient to consider any criminal (Solicitor General Guidelines) or civil actions?

Solicitor General guidelines state:

## The Evidential Test

- 5.3 A reasonable prospect of conviction exists if, in relation to an identifiable person (whether natural or legal), there is credible evidence which the prosecution can adduce before a court and upon which evidence an impartial jury (or Judge), properly directed in accordance with the law, could reasonably be expected to be satisfied beyond reasonable doubt that the individual who is prosecuted has committed a criminal offence.
- 5.4 It is necessary that each element of this definition be fully examined when considering the evidential test in each particular case.

### The Public Interest Test

5.5 Once a prosecutor is satisfied that there is sufficient evidence to provide a reasonable prospect of conviction, the next consideration is whether the public interest requires a prosecution. It is not the rule that all offences for which there is sufficient evidence must be prosecuted. Prosecutors must exercise their discretion as to whether a prosecution is required in the public interest.

Pursuant to section 5.12 of the solicitor General Guidelines 2013 there is insufficient evidence to either standards of:

- 1. Criminal Standard "Beyond Reasonable Doubt" or
- 2. If consideration to a Civil redress, a "Balance of Probability"

Consequently a "no prosecution" decision is the only possible outcome for this matter.

This inquiry may be subject to peer or expert review from an independent third party if required.

Please don't hesitate to contact the writer if you have any queries.

