



Royal Commission on the Pike River Coal Mine Tragedy
Te Komihana a te Karauna mōte Parekura Ana Waro o te Awa o Pike

UNDER

THE COMMISSIONS OF INQUIRY ACT 1908

IN THE MATTER OF

**THE ROYAL COMMISSION ON THE PIKE RIVER COAL
MINE TRAGEDY**

Before: The Honourable Justice G K Panckhurst
Judge of the High Court of New Zealand
Commissioner D R Henry
Commissioner S L Bell
Commissioner for Mine Safety and Health, Queensland

Appearances: K Beaton, S Mount and J Wilding as Counsel Assisting
S Moore SC, K Anderson and K Lummis for the New Zealand Police
N Davidson QC, R Raymond and J Mills for the Families of the Deceased
S Shortall, D MacKenzie, R Schmidt-McCleave and P Radich for certain
managers, directors and officers of Pike River Coal Limited (in
receivership)
C Stevens and A Holloway for Solid Energy New Zealand
K McDonald QC, C Mander, A Williams and A Boadita-Cormican for the
Department of Labour, Department of Conservation, Ministry of Economic
Development and Ministry for the Environment
G Nicholson and S Stead for McConnell Dowell Constructors
G Gallaway, J Forsey and E Whiteside for NZ Mines Rescue Service
N Hampton QC and R Anderson for Amalgamated Engineering, Printing
and Manufacturing Union Inc
J Haigh QC and B Smith for Douglas White
J Rapley for Neville Rockhouse
T Stephens and N Blomfield for New Zealand Oil and Gas
P Mabey QC for Pieter van Rooyen

**TRANSCRIPT OF PHASE THREE HEARING
HELD ON 8 FEBRUARY 2012 AT GREYMOUTH**

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COMMISSION RESUMES ON WEDNESDAY 8 FEBRUARY 2012 AT 10.00 AM**THE COMMISSION ADDRESSES COMMISSION – OPENING STATEMENT****5 MR WILDING:**

May it please the Commissioners, ladies and gentlemen. This is the final stage of the scheduled evidential hearings of the Commission. It is focused on the cause of the explosion. It is designed to deepen your understanding of the systems, equipment and practices of the mine and how they might have contributed to the circumstances that led to the explosion, or failed to prevent or mitigate it.

There are two topics that I want to talk about today. The first, the progress of the Commission and the hearing upon which you are about to embark. We have already conducted eight weeks of hearing. The topics covered include the inception and development of the mine; the role of the regulatory agencies at that stage; the search and rescue; the oversight of the mine by the Department of Labour; hydro-mining; Pike River's health and safety systems and its management and governance.

You have heard from witnesses from New Zealand and overseas. They have included family and friends of the men who died, workers at the mine, the chairman of the board, geological, gas, mining, health and safety and emergency experts and academics.

Aside from these hearings, you have received over 66,000 documents, including the contemporary records of Pike River and relevant police and Department of Labour investigative material. Over 18 types of reoccurring records of Pike River have been considered including hazard reports, equipment and gas detector service and calibration reports, operational and board minutes and contractors' reports.

Analysis has been undertaken of over 1000 incident reports and over 500 deputy statutory and production reports. Six schedules have resulted. They

have assisted in the identification of trends or reoccurring events, for example problems with the ventilation system, the methane drainage system, the strata control, potential source of ignition and various unsatisfactory practices of the mine.

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Five chronologies have been produced focusing on New Zealand mining and coal production; Pike River's permit, access arrangements and resource consents; its financial circumstances; its board, management and workforce and the development of the mine.

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Your investigator has spoken with over 80 potential witnesses. Where relevant, their evidence has been placed before the Commission by way of witness statement.

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Most recently, the Department of Labour has provided you with a copy of the report of its investigation into the tragedy. It is the result of substantial work by the police, the department and the experts engaged by them. It is understood that collectively over 50,000 hours has been spent investigating this tragedy. That report is a useful document but, of course, was prepared for a purpose different from yours. It was prepared, in part, to assist the department with the decision about whether and if so whom to prosecute and for what. Your purpose is to ascertain what happened at Pike River and why, with a view to making recommendations to help prevent such a tragedy happening again.

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I am aware that the content of the department's report is not being accepted by you uncritically. In addition to internal analysis you have engaged two experts, Darren Brady, an expert in gas analysis and interpretation and a director of mine safety technology, SIMTARS in Queensland, and Ken Singer who has expertise in mine design and ventilation and is the acting chief inspector of coal mines in Queensland. They are reviewing aspects of the report, particularly the cause of the explosion, and are doing so in consultation with some of the experts engaged by the department. The result may well be

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the provision of further expert evidence subsequent to the conclusion of this hearing.

5 That outline of the range of evidence should answer one of the questions that is being posed, being whether a lack of cooperation by one or two individuals will undermine your ability to report on what happened at Pike River. The answer is no. The volume of evidence you have received, in writing and orally, the wide range of people who have provided it, the access to Pike River's contemporary records, to relevant parts of the department's and
10 police's investigative material, collectively protect against you being thwarted by isolated lack of cooperation.

That brings me to another matter. This hearing is not the end of your evidence-gathering stage. A number of participants have been granted leave
15 to file evidence in reply to issues raised so far. Others have been requested by the Commission to do so. Some of the matters upon which recommendation is required, for example, what is needed to make the mine and surrounding area safe if the mine is not re-opened may require more expert evidence.

20 During the search and rescue hearing you invited participants to provide information about any progress made by them outside of the Commission's processes towards resolving issues relevant to coal mine emergencies, for example, how they are led, structured, and resourced. I know that information
25 would be welcomed by you. The Department of Labour intends to continue to update you about the changes it is making to how it administers the regulation of coalmining. You will have a keen interest in those changes.

30 There are complex policy and regulatory issues for you to consider in relation to mining law and practice here and overseas, the interaction with conservation, environmental and other legal requirements, and the regulation and administration of health and safety in underground coalmining. You have a team of analysts who are assisting with that.

Minute number 10 sets out many policy and regulatory matters in which you have an interest and upon which submissions and written evidence have been invited.

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You will be aided by submissions in respect of all phases of the inquiry, which are to be filed by 16 March. I know that the early filing of submissions would be welcomed. The hearing on those submissions will commence on 2 April this year.

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Notwithstanding all of that, it may be desirable for you to engage in meetings outside of the hearing process, for example, with experts in relation to health and safety regulation. Where such meetings result in relevant information of an evidential nature, it is anticipated that a record of that would be made available to participants as appropriate.

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I have not even touched on the work required for you to assess all of the evidence, reach your conclusions and report on them. Clearly you have much work to do. I shall now turn to this hearing.

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You are going to hear from five witnesses. On one view that is not many. However, the breadth of their evidence is substantial, as is its importance. The first witness to give evidence this morning is Brett Murray. He is the head of the department's investigation into the tragedy. He will outline the investigation methodology, the investigation team, the experts involved and the investigation's focus.

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He will be followed later today by David Reece. He is a consultant in mine safety training, audit and risk management and a former senior inspector of mines in Queensland. His role was to provide expert advice to the department in relation to mine safety and design and to co-ordinate the other experts engaged by the department and the police so as to provide one expert report. He will give evidence about the gas drainage, ventilation and

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methane monitoring system of the mine, their deficiencies and the potential causes of the explosion.

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5 An explosion requires fuel to come into contact with the source of ignition in the presence of oxygen. In a coal mine fuel commonly could be methane, which is present in coal, or coal dust. The experts consider that the fuel was primarily methane, diluted with air at a concentration of between 5% and 15%. If methane is diluted near below 5% or is richer than 15% then it will not be explosive.

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A potential source of that methane is considered to be the goaf in which hydromining had been occurring in November 2010. The goaf, which was known to contain methane, may have collapsed pushing methane into the general body of the air in the mine where it became diluted.

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The methane in the goaf may have been added to by methane in the Rider seam. That is a seam of coal located a short distance above the seam that was being mined by Pike River. It could also have fallen down in the goaf collapse.

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Another potential source is from methane accumulating in the workings or tunnels of the mine. It may have formed a layer in the roof. Layering occurs because methane is lighter than air and thus, in the absence of proper ventilation, accumulates near the roof.

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Trying to identify the location of the explosion was a significant matter in trying to identify the source of the methane. It is thought likely that the first explosion was located further into the mine than Spaghetti Junction. The subsequent explosions, 2, 3 and 4, may have been located in or closer to
30 Spaghetti Junction.

There were many potential sources of ignition including frictional ignition by rock or metal striking rock and causing a spark, defective machinery,

contraband or spontaneous combustion of coal. However, the most likely source of ignition was electrical and on Monday next week Tony Reczek will give evidence about Pike River's underground electrical systems. He is an Australian electrical engineer engaged by the department who investigated those systems and contributed to the expert's report. His focus will be on how those electrical systems underground might have been a source of ignition.

A main focus will be the use of variable speed drives, also known as VSDs. They provided a power supply to the electric motors in the mine and allowed their speed to be adjusted. However, they had potential to lead to issues such as harmonics, common mode current and voltage potentials between exposed metal surfaces. Harmonics might lead to current flowing through the interconnected earth networks of the mine resulting in sparking. Common mode voltage can result in arcing in large electric motors known as electrical discharge machining. Those and other consequences of harmonics can be a source of ignition.

After Mr Reczek you will hear from Douglas White. He was a senior manager at Pike River from January 2010. In June 2010 he was appointed statutory mine manager and in October 2010, general manager. He was the most senior mine official on the site at the time of the first explosion. He will give evidence about the hazards including flammable gas present in the mine; the likely ignition source; Pike River's management and operational practices; its mine systems, including the ventilation methane management and electrical systems; its health and safety systems and potential impediments to health and safety at the mine.

The final witness will be Pieter van Rooyen. He is a geologist and was employed as the technical services manager at Pike River from February 2009 until 3 November 2010, a couple of weeks prior to the first explosion. His role at Pike River included managing geotechnical and survey functions and petroleum exploration and mine design. Part of his department's responsibilities included long-term ventilation design and surface

and underground exploration of the coal field. He will give evidence about mine planning decisions made at Pike River including the placement of the main fan underground; the development of the Alimak raise and drilling of the Slimline shaft; the design of the roadway and mains headings; the options for
5 the development of the second intake egress and return; the ventilation control devices including stoppings and dilution doors; in-seam drilling and gas drainage and the design of the hydromining panels, including assessments of strata and wind blast potential.

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10 That concludes the outline of this hearing, however, a caution is necessary. As we all know there has not been access to the mine. The CALS scans and videos taken underground after the explosion show that parts of the mine have suffered substantial damage. Those make identifying the source of the methane and cause of ignition difficult, if not impossible. Even with access it
15 is possible that the immediate cause of the explosion may never be known. We will be left with a range of possibilities. That does not undermine the importance of this hearing.

As indicated earlier part of its significance will be to help identify the way in
20 which systems, equipment and practices and deficiencies with those helped create the circumstances that led to the explosion, or failed to prevent or mitigate it. It is the identification of those and their prevention in other coal mines that can stop a tragedy such as this happening again.

25 Finally, it is important to thank those who have given evidence, both written and oral. I know that you have been assisted by their evidence, largely given voluntarily and notwithstanding that some of it has not reflected well on them nor the organisations they are a part of.

30 We are aware of just how difficult this process has been for the witnesses, the family and friends of the miners, those employed by or associated with Pike River and its contractors and those who participated in the search and rescue,

amongst others. We know you are grateful to them both for their participation and the dignified manner in which they have done so. Thank you.