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

TRANSCRIPT OF PHASE THREE HEARING
HELD ON 21 NOVEMBER 2011 AT GREYMOUTH

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COMMISSION RESUMES ON MONDAY 21 NOVEMBER 2011 AT 11.31 AM

MR FORSEY CALLS

DAVID JOHN STEWART (SWORN)

Q. Can you please confirm for the Commission that your full name is David John Stewart?

A. Yes my name is David John Stewart.

Q. And have you prepared a brief of evidence for the Phase Three hearings of this Royal Commission dated the 3rd of November 2011, in your capacity as director of Minserv International Limited?

A. Yes I have.

Q. And you have that brief of evidence with you?

A. I do.

Q. If I could ask you please to read, starting at paragraph 2 of your brief of evidence?

WITNESS READS BRIEF OF EVIDENCE

A. "I first worked at a coal mine at 16 years of age. I worked underground in New Zealand and travelled and worked overseas for seven years before I went to Otago University and received a degree in mineral technology, which is a mining engineering honour's degree. I then returned to mining and achieved the first class mine manager's certificate which I have held since 1982. I also have an A grade tunnel manager's certificate, an A grade surface coal mine manager's certificate and an A grade quarry manager's certificate. I was a mine manager for State Coal Mines and held senior management positions with Coal Corp until the end of 1992. I was a statutory mine manager on contract at the first job I did when I started working for myself. This job was to recover the West Mine after the explosion in 1992.

1134

A. The recovery operation included a feasibility evaluation for recovery of the mine and it covered the first six to seven months of 1993. I have been a brigade member of the New Zealand Mines Rescue Service since 1984, and after 25 years service I retired as an active brigadesman at the end of 2009. I am currently chairman of the New Zealand Mines Rescue Trust and have been a trustee for approximately eight years. I have provided evidence in my

Mines Rescue capacity in respect of the Phase Two hearings before the Commission. I am giving evidence as Minserv International Limited here. I am currently self-employed as a mining consultant which primarily involves mining engineering related work. I incorporated Minserv International Limited on 19 February 1993 as an independent mining consultancy business. I also do a lot of training and assessing in the industry including writing material for the organisation associated with the extraction industries training. I am a fellow of the Australasian Institute of Mining and Metallurgy and an AUSIMM chartered professional, and I was secretary of the New Zealand branch for about 13 years, but retired from that role about a year ago. Since I have become self-employed, I have worked for almost all coalmining companies in this country at some point in time and I visited all of the operational underground mines including Pike River. Annexed to this brief of evidence and marked STE0002, is a copy of my curriculum vitae. I have been requested by the Commission of Inquiry, to submit this brief of evidence relating to my work as a contractor for Pike River Coal and with particular reference to issues requested by the Commission."

Q. You can skip paragraph 10, which lists out the questions that the Commission have asked you to add and move to 11, please?

A. "I have read the code of conduct for expert witnesses, annexed to practice note number 4, dated 20 October 2011 and agreed to comply with it. My qualifications as an expert are set out in paragraphs 2 to 8 above and recorded in the curriculum vitae attached as exhibit STE0002. I confirm that the evidence I have been asked to address is within my area of expertise.

1137

A. I was first approached by John Dow, chairman of PRS at Pike River Coal in Queenstown after the New Zealand branch (inaudible 11;37:14) IMM 2009 conference who asked me to meet with him informally at Christchurch Airport when we were both on return flights from the conference. We met on Friday the 28th of August 2009 for around 30 minutes. I did not make any notes of the 2009 meeting but my recall is that Mr Dow was interested in what I thought about PRC performance and what I considered some of the issues the mine had. Mr Dow was concerned about the turnover of senior management and the difficulties PRC had in getting good experience and certificated managers.

I believe his main concerns were around the moral at the mine, the turnover of staff and the ongoing difficulties in meeting targets. I suggested to Mr Dow then that from what I had heard from employees through my contract the training role from direct contact with PRC employees and from my involvement with New Zealand Mines Rescue that there were things that needed to be addressed. I suggested first that there probably needed to be a check of the operation's compliance when New Zealand legislation relating to mining. I also suggested that there appeared to be an attitude and general unhappiness among the employees. I suggested that someone with local knowledge and experience may be able to work alongside the mine officials and crews and make some changes from within in addition to formal training. I think I may have referred to the role as, "Mentor." Mr Dow then said he would discuss this with the chief executive officer Gordon Ward and the general manager of mining Peter Whittall of PRC and at that time I believed Mr Whittall was also the statutory mine manager. I followed up with an email with some other comments on the 30th of August and received a reply from Mr Dow on the second on September saying that he had discussed the matter with Mr Ward and Mr Whittall and he suggested that I make contact with Mr Whittall to discuss further. And annexed to this brief of evidence and marked, 'STE0003,' are copies of these emails. I did not have any opportunity to meet with Mr Whittall at PRC Mine after this and our attempts to have a telephone conversation also were unsuccessful, mainly because I was occupied on other projects and Mr Whittall was also very busy. Eventually Mr Whittall and I did meet at PRC Mine. I do not know the actual date as I do not have any entries in my diaries but I believe it was either prior to Christmas 2009 or in mid January 2010.

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A. Mr Whittall wanted to know if I would be available full-time on a contract basis or as an employee at the mine and I said that I could not as I had had too many of my own consultant business commitments, but that I was prepared to schedule time to carry out the tasks as discussed with Mr Dow. Mr Whittall appeared more interested in the compliance audit tasks than any mentoring role, but we agreed that I would also schedule time, while doing the compliance checks to spend time with crews and mine officials. At this stage I

was aware that Doug White had been appointed as operations manager of PRC and that he would also be taken off statutory mine management responsibilities as soon as his New Zealand certificate of competency was issued. I met with Mr White and their recently appointed underground mine manager, Mick Lerch, on the 4th of February 2010 at PRC mine. Prior to this I had drafted a schedule of dates for the agreed work which I had sent to Mr White, Mr Lerch and Mr Whittall and this initial programme of work covered a systematic compliance audit of surface and underground and talks with crews, mine officials and trade staff during the course of the audit inspections. I had also included a series of proposed dates to carry our risk assessments and develop or update the mine safe operating procedures which I had also discussed with Mr Whittall. From the 4th of February meeting, Mr White said he wanted me to carry out the compliance audits as scheduled and that I would also spend time with the underviewers on their shifts as they did their rounds. During that time I would have an opportunity to talk with other mine officials and crews as earlier agreed. This RA, this risk assessment and SOP which is safe operating procedures, the RA and SOP parts of the programme were dropped because Mr Lerch had been tasked with getting work done as part of his underground mine management duties. I suggested to Mr White and Mr Lerch that what I would do was go underground every day I was at the mine with the underviewer on shift and carry out the inspections with the underviewer. At the same time I would talk with him on (I say him because all the underviewers were men) on any issues I observed. The exception to this would be the days when I would audit their CPP, that's the coal processing plant, the surface facilities and the workshops and when I was with the site contractor doing the shotfiring in the stone places. McConnell Dowell which are also known as McDowell with one term is shotfiring. I explained that all I could achieve was a snapshot of the situation regarding compliance and I would comment on my findings and make suggestions, but it was not my role to implement the required changes as this was the mine and management's function. I said that my intention was to write up my notes at the end of each day I was onsite and meet with either Mr White or Mr Lerch each day to discuss my findings. I would then write a rolling report of my findings including any recommendations and updates of previous actions at the end of each

week. Mr White said he would make an office available for me and he also asked that the weekly findings be electronically sent to him and Mr Lerch with a copy to Mr Whittall. I carried out the first of the mine audits on 11 February 2010, subsequent audits were carried out 10th/11th of March, 18th/19th March, 24th and 25th of March. 31st of March and the 1st of April. 8th and 9th of April. 15th and 16th of April and the 23rd of April. I only occasionally met with Mr White during these visits as he was very much occupied with the mine and as he had only been in the role for a few months I did not expect him to be available much as he had his own staff structure and team building to manage along with his many other duties. I did meet with Mr Lerch every day I was at the mine, apart from once or twice when Mr Lerch was offsite. The audit reports are annexed to this brief of evidence marked, "STE0004." These cover my notes in more detail. The audit reports were circulated by email at the end of each week to Doug Whtie, Mick Lerch and copies to Peter Whittall. The audits reflect the status of the mine at the time when it was still in a development phase. Most places were in stone, the monitor pump station and services had not been installed and the hydro-monitoring guzzler was still in the workshop. What I considered the main issues I raised with regard to my underground audits are as follows. With regard to surface control displays and gas monitoring.

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A. The main fan was located at the shaft collar but did not meet compliance with regard to instrumentation as specified in the regulations. I recommended that the revs per metre monitor and surface control displays be installed as required. There was no remote gas monitoring sensor system in the mine at all, or any display in the surface control room, which meant they had no idea what methane concentrations were in the main returns and shaft, and therefore no idea of what was passing through the main fan or was in the general body of the mine. I suggested that they needed to get a real time sensor in the main shaft as a minimum. The only gas monitoring occurring was via handheld gas detectors and gas sensors on the face of machines. These were only localised gas monitoring instruments and did not give an indication of general gas levels in the main body of the mine and did not monitor likely gas accumulation areas such as cavities in high roadways. I recommended to the electrical supervisor

and control room operator that the mine needed establishment of sample points for remote gas analysis throughout the mine. I suggested to the underviewers which were also known as shift co-ordinators, and to Mr Lerch, that an RA should be carried out and should include selected deputies which are also sometimes known as face supervisors and experienced miners. The purposes of the RA would be to establish the best locations for remote sensors and also develop procedures and trigger action response plans, which are widely known as TARPS for when alarms were activated. With regard to ventilation structures and plans, I was concerned about the standard of ventilation structures erected in the mine, particularly the stoppings and the doors, both of which were inadequate for their purposes and were leaking and resulting in short-circuiting of air. There was also some recirculation of contaminated air being returned into the working places. I suggested that the stoppings be improved and that the miners constructing them had some training in stopping design and purpose and I also sent via an email to the technical services staff, copies of drawings, stoppings designs for them to base their structures on. A copy of the document sent on or about 19 February 2010, is attached as STE0005. I also suggested training options which would combine classroom work with underground practical construction training programmes to improve the miners' skills. After the report on the ventilation structures, there was some improvement in construction of both stoppings and doors underground. I was concerned about the location of some auxiliary fans, particularly the exhausting fan drawing contaminated air for the 99 section, which was part of these, what is known as the South section, which was discharging into the Slimline. This fan and ducting was adjacent to the gas drainage line and the water trap for the gas draining was discharging at the base, or near the base of the fan. This was not good practise as it increased the risk of methane leakage, through the trap directly to the fan motor. This problem was eliminated by the next visit as the fan had been removed and the Slimline had become an intake. The South section ventilation had therefore improved significantly. I was concerned in the early stages that the mine plans were not being updated quickly enough, because some of the plans I collected prior to the underground inspection had auxiliary fans and ducting in incorrect locations. This was also subsequently corrected.

I was concerned about the lack of information relating to ventilation airflow measurements and the absence of established stations around the mine. This was also addressed by management and regular airflow readings were taken at established stations and marked on the plans accordingly, which I observed later in my visits. With regard to obstructions, I was concerned about the amount of obstructions and debris that had accumulated in the main returns leading to the Alimak rise. This would've caused high resistance at a time when the mine was struggling for air in the working places, plus it added to the fire risk. Up until the time I finished my last visit, this problem had not been addressed fully. Stone dusting. I was concerned about the lack of stone dusting in the mine. There was a lack of stone dusting in the main returns and working places and the mine had no stone dusting and sampling programme.

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A. There were no stone dust water barriers installed in any of the roadways. I talked with the engineering staff and underviewers about the need for stone dusting and was told that there were no plans for barriers to be erected and they were waiting for a stone dusting machine, sometime known as a tricklip (inaudible 11:50:19) it's got other names as well, to be delivered. I sent them a generic copy of a stone dusting sampling and analysis programme for them to use to develop their own. A copy of the stone dust management document is annexed as 'STE0006'. With regard to the alternative egress. I inspected the alternate egress via the access to the Alimak rise and commented that this route was impracticable for a large number of personnel at any one time and only the fittest would escape through this route, particularly while wearing a self-rescuer. I commented that it appeared an alternative egress option solution was not achievable at this stage of the mine, but I was informed that the refuge chamber located in the main access drift would be moved to the Slimline stub end, which would ensure a secure airtight chamber with a fresh air supply via the Slimline. I commented that in the absence of another escape route this was a good option at that stage of the mine because the shaft also allowed for fresh water and food to be lowered."

Q. I could just stop you there for a moment. Do you recall who it was that you had that discussion with about the movement of the refuge chamber that was in the main drive?

A. My recall is with underviewers and I don't remember the name but it was probably, it could've been one or all of three of them, that's the best I can recall on it. I actually asked them what was being done and they offered that information.

Q. But they were clearly of the view that it was the movement of the existing container type chamber rather than the construction of a temporary area with a flap or anything of that nature?

A. Yes, my understanding was it was to be that moved there and that would be set up as a refuge chamber, as I say, with the independent air supply and other access services. "So up until my last visit to the refuge chamber it was not relocated. The work on what was to be subsequently – the work on what was to subsequently be referred to as the Slimline fresh air base had not taken place prior to my last visit. With regard to communication. I was concerned about the deputy and underviewer reporting an inter-shift communication early in the audit visits and that none of the reports met what I considered legal requirements, particularly relating to those stipulated in the roles and responsibilities document I had developed for PRC in 2008. I discussed this document in a little bit more detail later in my evidence. Mr Lerch explained that he was revising all the reports as part of his duties and he was also bringing in a new shift structure, which would facilitate better and more constructive communication between shifts and among the officials. With regard to damage to stoppings. I was concerned about the amount of blast damage to stoppings when shotfiring. As the mine was still in a development stage, shotfiring and stone places was causing fly rock and blast damage to crucial stoppings which were erected to separate intake and return air. I suggested that blast protection screens be installed in the roadways which would take the brunt of the blast and protect the stoppings. One of the underviewers did erect a blast screen at a suitable location but when I inspected this in later visits, the screen had been damaged and at that time had not been re-erected or fixed. Generally, even with the improvements to the ventilation structures, I did not think the problem of short circuiting of air had been corrected by the time of my last visit. With regard to the use of explosives. I was satisfied with the management use of explosives on the surface and underground, although the only audit I did was with McDowell.

They complied with procedures and followed a safe and secure practice with regard to magazine access, recording of explosives and detonators, key management, key being the key to get into the magazine, carriage of explosives and use of explosives including shotfiring procedures. The McDowell supervisor otherwise known as an approved handler was Mr Les Tredinnick, expressed some concern on this visit about the effectiveness of the sentry posting because of the number of potential entry points to the blast zone and the lack of communication or line of sight with his sentries.

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A. There were a few minor issues relating to signage outside the magazines and similar issues that McDowell committed to address these. The shotfiring was carried out within the Pike River SOP which had been signed off by the underground mine manager. This referenced New Zealand relevant legislation, but also was based on British Health and Safety Commission Approved Code of Practice Coal and other Safety Lamp Mine Explosives Regulations 1993, that's the quote from the document title. This last legislation includes multi-shotfiring in gassy mines which from my understanding was different from accepted practice by the Department of Labour. I asked if PRC had approval from the Department of Labour for this procedure for P1 explosives. I was assured that this approval was in writing, but I never managed to get hold of it to sight it. I cannot recall who gave me this assurance and I did not record who it was in my notes at the time. With regard to ground support. I was satisfied with the ground support installed in roof and ribs. I made a comment that I thought in some places the installed support was excessive for the conditions, but I acknowledged that as these were in the main life of mine roadways then it was better to be prudent. With regard to maintenance. I was generally satisfied with most of the maintenance reporting and programme although it did take some time for me to meet with the engineering manager and I only achieved this on the last visit. I was concerned about the pre-start and defect reporting which appeared to have not always been completed and if it had been completed was not always handed in. However, those that were handed in appeared to be logged in work orders generated for the task to be prioritised and completed. The engineering

manager, Mr Nick Gribble, did say that he had just introduced an improved three-copy system for pre-starts which would facilitate better returns and controls." I might add that was in my last visit when I did meet with the engineering manager. "The engineering manager also assured me that all standards and codes for machinery and electrical equipment were in compliance. It was not possible given the time available for me to check these personally, but there was no reason to doubt the system he described for checking and monitoring was not in place. The engineering manager also said he was introducing a hierarchal flagging system for prioritising actions and repairs required and that the new shift roster would allow for a training day for his trade staff. Nevertheless, the most important machine at that time of the audits was the LHD machines (that's load haul dump machines). The main machine in the mine were juggernauts or known as "juggies". These were required for almost every operation at the time including bringing in plant and equipment, maintaining roadways, carrying and dumping concrete mix, loading out waste rock from stone, shotfiring places and also loading out the coal from the few places in coal production at the time. On many days when I was underground there were only two LHDs operating and sometimes only one of a fleet of six. Towards the end of the audit visits, PRC had leased an Iron Co 130, which is a different type of LHD, but this was dedicated to transporting the main pipes, plant and equipment for the hydro-monitor pump station installation. With regard to underground zones. There was a plan to introduce non-restricted and restricted zones underground. The engineering manager was in the process of installing boundary sensors at strategic locations which defined the areas where flameproof which is known as FLP and intrinsically safe which is known as IS, plant and equipment to be used. I assumed and expected that these sensors would be linked to the surface control room with appropriate alarms and interlock power trips and SOPs and TARPs developed and staff trained prior to the operation of them. I do not know if this system was introduced. Similarly, I was informed by the engineering manager that there would be real-time sensors and links to the surface control room for all underground electrical fixed plant such as the monitor pumps, electrical switch gear, the VSDs et cetera and all with

interlocks and alarms installed. I do not know if these systems were introduced.

1200

A. With regard to the evaluation of the mine systems, with reference to the electrical systems, the following are my comments relating to the audit visits. I did not check FLP, that's flameproof or IS intrinsically safe codes, or A/NZ standards to ensure electrical equipment was in compliance, but I was assured by the engineering manager that these were all up-to-date. As most of the main fixed plant and equipment was not installed in the mine at the time of the audit, I had no comment at the time regarding the electrical services and installation relating to them. The main fan was not installed underground at the time of the visits and my only observation was that a 600-1000 volt rated cable was being hauled up the main shaft, through the Alimak rise from the location where the main was planned. I commented in my audit findings that the cable was damaged with the outer sheath split to the armouring wire. I pointed this out to an electrician on the job, and said this damage made the cable dangerous and out of standard, who assured me it would be fixed. I do not know whether it was. Face machinery consisting of a Worth Waratah roadheader and a Worth Waratah continuous miner at the time of the audits. Both machines had on-board electronics which had caused significant problems since purchase and were not considered reliable. The miners did not like them at all and felt they were very bad choices for the conditions being worked. They both had on-board gas sensors fitted and if the gas level in the working place reached 1.25%, then the machines were interlocked such as the power would shut down to the machine. I had heard stories of these sensors being overridden, but I did not observe this myself and the few times I was at a coalface where the CM was operating, the deputy was required to release the interlock trip-out. My comments relating to the surface control room and the links with regard to sensor and equipment operation have been noted, as the mine had little operating fixed plan inbye of the main drift, and there is little I can add. In my opinion, if non-restricted zones were to be established underground, then there had to be a stringent regime of gas monitoring with strategically located sensors throughout the area and these would need to be real time and interlocked so as to cut power until the alarm in the surface

control room at pre-start gas levels, particularly for flammable gases. With reference to the mechanical plan and equipment, the following are my comments: All the pump systems and pipe installation look good quality and suitable for the work required. I did note that the holding pen for washed coal from the face areas which was the surge bin prior to passing through the screens into the slurry pump system, was not what I considered a good design in that it did not have any method of cleaning out the stone and other waste material that would inevitably build up and eventually cause storage and flow problems. My comment at the time was that this would have to be modified to allow for LHD to drive in, to clean it out at some stage before the mine got into full production. The mine previous had a number of frictional ignition incidents, caused by sparks from the roadheader cutter head hitting hard quartzite sandstone which intruded into the seam from time to time. These events resulted in methane catching on fire and burning in the face area. It was reported that this happened several times over several shifts in the previous year. As a result, I talked with underviewers whether this problem had been fully addressed and was assured that they had procedures in place to manage the risk. Nevertheless, I also talked with one of the RH operators and he said that he felt the real issues was the water jets on the roadheader, RH cutter head, was placed too far back on the boom and were also inadequate in number, water pressure and direction, to effectively dampen the cutter head whilst cutting was also inappropriate. This was aggravated by the head being sumped in too far. I think the PRC solution was to not use the roadheader and to shotfire instead. With regard to the ventilation system, the audit findings described in some detail the main issues I raised during the audits, but as a general comment, I personally do not support main fans located underground in gassy coal seams and I certainly do not agree with where the PRC fan was to be located.

1205

A. I thought the pressure differential between the main intake and the fan return would be substantial as the mine developed and the location of the access door in the first crosscut was not the best place because of the likelihood of short circuiting. My impression of the overall ventilation system and what I understood was proposed at the time of the last audit visit was that the mine

had a lot more to do with regard to ventilation control and gas management before they could manage a high production unit such as the proposed hydro-monitor system. The issues I felt needed to be addressed and be proven as effect systems and method included the issues I have raised in my audits. The auxiliary fans that were purchased and used were of very good design and very robust. The fan settings were easily applied and could be locked and each fan had inbuilt de-gassing chamber. After the earlier visits the fans appeared to be located correctly and the ducting was in generally good condition. Compressed air fans were used as overlap fans in some places, particularly where shotfiring was occurring and these all appeared to be correctly earthed. With regard to the gas drainage system and I do not recall which underviewer I discussed this subject with and may have mentioned to more than one of them during my underground visits, but the following are my comments. I had a concern about one of the gas drainage lines discharging directly into the main return so that the gas would exit the mine via the main shaft and the surface fan, particularly as there was no monitoring or interlocks in place at that time. It seemed to be an uncontrolled gas discharge method to me and from what was reported to me, the main discharge route though was via the Slimline gas riser, but often the main return was also used. The gas riser adjacent to the Slimline appeared to be effective but my concern as commented in my audit reports, was the location of the gas drainage pipe along the main travelling route through Spaghetti Junction. The risk of damage to the pipeline for mobile vehicles seemed to be high or very high and the proximity of electrical equipment also seemed a risk. The estimated gas drainage volume was around 800 litres per second and although I have not had a lot of experience with gas drainage systems, this seemed to be enough volume to require a tightly controlled drainage method. At the time of the audits the gas drainage was coming from Valley Longwall in-seam drill holes located in the stub end off B heading, and I'd need a plan to make reference to that. There were also other sources later in the mine life."

Q. Would it assist you to have a plan now or is the Commission sufficiently familiar with this?

A. It will if it's relevant to the Commission.

THE COMMISSION ADDRESSES MR FORSEY – HAVE A PLAN

COMMISSION REFERRED TO PLAN

THE COMMISSION ADDRESSES WITNESS – CONTINUE

EXAMINATION CONTINUES: MR FORSEY

Q. We'll come back to the location of the heading that you're referring to.

A. It's probably a good idea for me just to point out how far the plan or the mine had developed at the point when did the audit actually because it's probably a better reference to it.

Q. At the time of your last visit in April?

A. Yeah. "With regard to the hydro-monitor operation at PRC Mine, my comments are general because the system was not in place and the first extraction panel had not been developed when I was carrying out the audit. However I am familiar with hydro-monitor operations from my association as project consultant for Solar Energy and previously as contract technical services manager at Spring Creek Mine, which is a joint venture Solar Energy mine. I have also carried out consultant work for Roa Mine where low pressure monitors currently operate.

1210

A. From my experience and knowledge of hydro-monitor extraction operations, there are a number of essential pre-requisites for any high production extraction system to be started in gassy coal mines, particularly high pressure hydro-monitor systems because of the gas release the face cutting generates. Some of these requirements are as follows: The hydro-monitor equipment and system design should be suitable for the conditions encountered. Conditions such as water jet cuttability of the coal, the condition of the roof and floor, frequency and type of geological features et cetera and there's a whole number of variables all determine the height, length and width of each of the monitor lifts. The ventilation circuit, ventilation structures and set up particularly the main fan operation and reliability must be established and proven with the contaminated return air exiting the mine as directly as possible. There needs to be an effective gas drainage and it's also known as a bleeder

road for controlling gas make when the extraction lift is broken through. Unless the main fan is on the surface all electrical reticulation equipment, instrumentation, starters, et cetera, should be flameproof or intrinsically safe. If there is any risk of flammable explosive gasses being present and coming into contact with the electrical systems. All computer control and reporting software and high voltage reticulation feeders have to have no operating glitches." This has come up now, do you want me to stop here and…

Q. Perhaps you could explain first how far the workings were developed on this plan of the mine as at the time of your last visit.

A. Have you got a pointer or something? Where did I get up to?

Q. Right so this is showing in more detail the working area.

A. In March/April when I was there this road down here which is going to a sump area, had – was still being driven and it was about around about this area and so none of that was in, that was actually flooded and bog – a quagmire, quite a significant one, the pump station, this is a hydro-monitor pump station, the concrete plinth or pads that the pumps were going to be on were just being installed at my last visit. So that loop hat wasn't in. This road, driven to the rise here was to be established as the hydro-monitor header driver, so it's a sort – like a header tank, so it's a gravity feed to the monitor. That was being driven still and it was very bad country. They had a fall – not a major fall because they recovered it, but it was badly broken, fractured ground. That area through there, there was a fall in there and they lost that place earlier. So that ground was bad.

Q. When you say "lost," do you mean it was designed to be developed but wasn't?

A. It was - no, that – it was fallen in and they just gave up. I think from looking at some of the plans, this can be verified by the people, was the intention was to draw and connect up through there, but that road there was also lost. When I say "lost" it had fallen in and there was no – they'd just given up trying to progress it any further. So it was a fall there, basically a fall there that was dodgy. I understand that they did set that up as a hydro-monitor header tank. Regarding the development up here, that road there, there was coal places to about here and this is just off my memory, then there was stone in chunk in here and there may have been some coal but it seemed to be intermittent coal

stone through here if I remember rightly. There may be a plan that supports that. Then it got back into coal around about, I think, here, and then they hit a graben, where the whole thing sat down, I mean the whole geology, the ground had just dropped down. It's called a graben. It's a double-sided fault, I suppose.

1215

Q. Can I please get you to identify for the record where you're pointing at the moment?

A. When I left that was about where they were.

Q. The "that" that you're referring to is to the north of the area marked "substation S5001" on the map?

A. Yes, that crosscut there, north of that, and I think that was in stone, if I remember rightly, but there was a coal place, I think that crosscut was working in coal and there was shotfiring happening down to – that road there was in stone and that road there was being shotfired – no, it was coal. The stopping that was being knocked out all the time that I referred to was this one here, because they were shooting up here.

Q. So for the record there, the area that you're referring to with the shotfiring is to the west of the label "auxiliary fan AF001" and the stopping that you referred to is to the south of the same label, near the writing "filter bank FL5012". Do I have that right in terms of the stopping?

A. With reference to the Valley Longwall location which is where this came up, they were located in this stub-end here at the time I was there.

Q. So when you say, "this stub-end", you're –

A. I was relating to where the gas draining line was coming from at the time.

Q. So that is your paragraph 31.3, where you talk about the Valley Longwall in seam drill holes located in a stub-end off B heading?

A. That's it, yep. And, that's right, I thought that was called B heading, because I do remember seeing a plan that had another heading coming up here, which was A heading, so they may have changed later on, I don't know, but that was my understanding of the way that the headings were numbered, or lettered at the time.

Q. So the stub that you're referring to and indicating with your marker is to the north of substation S5004?

A. It's that one there. That's correct, and the gas drainage lines were running down the return through a stopping located there, which was not what I considered a good stopping, not for a main intake return separation.

Q. The stopping that you're referring to is the line to the left of, and on the same level as the ventilation shaft, if I can call it that, or the diagram with the main ventilation fan?

A. Yeah, well, I don't know what the crosscut numbers are. I always called this crosscut number 2, that one there. And the gas drainage line came through, they went through Spaghetti Junction, which is this junction here and then across the road and up through into the Slimline there. So the gas raiser was located there, the Slimline.

Q. So the gas drainage line exited through the Slimline shaft?

A. The one that went through the gas raiser – riser, I mean. The other one where it was released into the return, I don't know where it was released, but it would've been released into the main return here and then did the circuit up through the Alimak raise here, through the main fan on the surface, at that time.

Q. I think we were at paragraph 33.5.

A. I read that one, it's regarding the high voltage reticulation feeders – 33.6. These were all, I think, requirements prior to the hydromining extraction operation starting, just getting myself back on track. "I also thought a pre-requisite before anything was kicked into that sort of productive capacity, was a controlled and monitored underground atmospheric monitoring system must be installed and operating with suitable located sensors and analysis points and that could be either real time or tube-bundle or both, effective alarm systems must be connected to the monitoring system with pre-set levels, interlocks to trip power supply or activate some other control method, plus procedures and TARPS when the alarms are activated." And the last one I'd listed here was, "A training programme to ensure the miners and officials are aware of the system, what the alarms mean, what they need to do when an alarm is activated.

1220

A. So carrying on with that, the high pressure hydro-monitors – this is just an explanation about my understanding of hydro-monitor systems, High pressure

hydro-monitors generate significant quantities of methane because of the high extraction coal exposure rate. With a high gas make the goaf fills quickly with methane making the control of the gas in the goaf difficult while the monitor is operating and/or when the ventilation system is not adequate. When operating the monitor the goaf gasses can be in most cases managed by the action of the water jet which can control the gas discharge into the return roadway or the bleeder road on the other side of the extraction panel. If the water jet is not directed in a controlled manner, the methane from the goaf will discharge into the return at an uncontrolled concentration, therefore the hydro-monitor operator needs to be aware of the methane levels in the return side so the monitor operation can be worked accordingly. The water jet control of gasses and cutting is also managed to some extent by varying the water pressure. This is usually done by the settings of the variable speed drive which is otherwise known as VVSD if the monitor pump is fitted with such a system. There are other methods such as a restack control which allows for a soft start and varying pressures whilst operating, but the system is less efficient and energy is lost via heat, which obviously means there has to be some method of cooling designed into it. The gassy mine such as Spring Creek and Pike River, the monitor operator should be experienced and competent and I make the comment, there is little room for error unless all the backup safety systems are well established. Spring Creek Mine has developed effective systems for extraction place gas management and some of these include and these are just general description, a real time gas sensor is located in the bleeder road of the extraction panel which measures gas levels coming from the goaf and displays the reading on an LCD unit, that's Liquid Crystal Display I think, in the monitor operator's cab which is generally slung from the roof out by the monitor location. Typically there is a TARP established for the monitor operation and this will determine at what level the operator will either change the height and direction of the water jet or shut the monitor down, or lower the water pressure to reduce goaf disturbance and allow the methane levels in the goaf to settle out. This reduces the discharge volume of gas into the bleeder road. When the methane reading has lowered adequately, the operator will then recommence cutting, washing as required. The other measure is out by the extraction panel dilution doors are installed in a crosscut between the

intake road and the return road. This system uses compressed air to activate doors which allow the air to short circuit in a controlled way and the short circuited fresh air mixes with the contaminated methane enriched air leaving the extraction panel, which in turn dilutes the gas air mix in the main returns to a safe level. The concentration of methane coming from the extraction place which activates the doors depends on several factors such as the distance of the doors from the working place, the maximum level of methane permitted in the return and the volume of air being short circuited. This method does require a design such that development headings operating in the panel are not deprived of adequate fresh air, which could result in recirculation through their working place auxiliary fans. Spring Creek Mine also opted to drill a methane drainage hole or holes at the rise end of the goaf area of the extraction panel but this does require an adjacent goaf or return airway for the methane and other goaf gasses to bleed into. There are from my understanding other hydro-monitor extraction places in operations overseas, but not in New Zealand other than the mines mentioned. It is understood Russia and China use the method but as far as I'm aware there's no known international best practice or procedures available. There are other observations that I made and I've commented here as follows. In 2008 I completed a detailed document entitled, "Roles and responsibilities for Pike River Coal." The purpose for this as explained to me by the training and safety manager at the time was to identify all the legal and operational responsibilities for each of the roles within the mine structure.

1225

A. This document became a formal PRC document and the proposal was to use it to underpin the job description and duties of each employee within the planned PRC structure. This document is annexed as "STE0007." Since then the titles of the respective roles have altered in some cases, but from my opinion the roles and responsibilities have not. With regard to the management structure at the time of the audit visits, my comments are below. I am only referring to the underground operational structure. The rest of the mine management and service structure is similar to most large mines with sections for technical services, geology, geotechnical people, survey, environmental, engineering, maintenance, stores, coal processing plant and administration. So my

comments are, in my opinion at the time of the visit the person in charge of the PRC operation was Mr Whittall and although he had recently appointed an operations manager and an underground mine manager, both these men were recent arrivals and it was clear that it would take some time before they could get up to speed with the complexities of the operation and form a bond with the work force. From my perspective I considered Mr Whittall was still very much in charge of the PRC operation, which was in keeping with his role and involvement up to that time. as far as I am aware Mr White was appointed – sorry, when Mr White was appointed Mr Whittall was general manager mines for PRC and although technically based in Wellington was at the PRC mine most weeks. I believe Mr White became statutory mine manager as soon as his New Zealand certificate of competency was granted. Mr Lerch was appointed as underground mine manager and my understanding also was once he had achieved the requirements for a New Zealand first class mine manager certificate of competency he would be appointed statutory mine manager. That was what I understood at the time. Mr Lerch left the mine and returned to Australia before that occurred, as far as I understand. Mr White was an experienced manager and ex-mines inspector and also had his own consultant business in Queensland. From my initial meeting and site-based meetings at the time of the audits, he appeared to me to be a capable manager and as he was still getting things sorted as he wanted, I considered I was not required or intended to do anything more than offer suggestions and report my findings. I believed at the time that as a new manager he needed to sort things – sort through the mine requirements himself and develop his team accordingly. The level below the underground mine manager included shift underviewers who were the shift controllers for underground operations and deputies who were in charge of the working places and some back-bye work. This structure is normal for underground operating mines in New Zealand and in Australia. The mining crews were made up of a mix of experienced miners and inexperienced or green miners. The ratio in my opinion was not favourable in that the experienced miners were far less in number than desired given the nature of the operation and conditions. The workforce was further complicated by the mix of New Zealanders, Australians and South Africans scattered through all levels. In many operations this can be an advantage, but

at PRC mine it appeared to add to the apparent dysfunctional nature of the organisation and communication within the mine and between underground and surface. What was unusual for Pike River Mine given the high methane levels the geological difficulties and the introduction of a high pressure high producing hydro-monitor unit, was there was nobody appointed with the dedicated task of ventilation engineer or manager. There is no statutory obligation in New Zealand for this position as there is in Queensland I believe, but there is normally a person, usually either the mine manager or a mining engineer who is given the ventilation engineer duties and who has authority to change ventilation systems and/or recommend to the mine manager what is required."

1230

Q. If I could just stop you there, when you carried out your roles and responsibilities work and produced the document in 2008, was there a ventilation engineer specification among the roles that you outlined?

A. Yes, there was. The trades' people were a mixed bag. All the electrical staff were from overseas, or at least all those that I met. They were either trades people who had migrated to New Zealand for work and lifestyle, or who lived overseas and were contracted only a temporary basis and flew in and out as required. It was difficult for me to get much electrical information, and only on some occasions did I see electrical staff underground. "The fitters and mechanics seemed to be experienced on the whole. "With regard to the health and safety safety systems, I have described some of the issues raised during the audits. Generally my comments are as follows. There were a range of safe operating procedures and management plans for the mine. Some of these were recently updated and some were due for updating. Updating the underground operational management plans and the SOP's was a task the underground mine manager was to complete, as I'd mentioned earlier. It is not easy, I say this, for any mine to ensure that at all times SOP's and management plans are complied with and I expect PRC mine had these issues also. I did not identify any major issues, other than those already discussed through the audit findings. My impression of the training section and the programmes put in place by the training manager for both the experienced workers and the new starters was that it was well organised and PRC used

(inaudible 12:32:01) otherwise known as TPP, for many of the training and assessing tasks and New Zealand Mines Rescue for specific training requirements. I was contracted by TPP to train and assess to deputy underviewer and mine manager level some of the PRC employees. With very few exceptions, they were dedicated to achieving their certificates and most of them did. I did not have any direct involvement regarding health and safety policies and issues, other than the roles and responsibilities document in 2008 and when I carried the audits out in March and April 2010. With regard to competency of the statutory officers' workforce and contractors, my comments are related to my experiences when the audits were carried out in 2010. My impression of Mr White was that he was very experienced as a manager and as an ex-mines inspector and that he had a clear focus on safe operating procedures. I believed at the time of my audits that he was the right man for the job, and he said he was determined to stay to get the job done to his satisfaction. For that reason, I did not push any of the issues I identified significantly, as I believed he would be capable of implementing what was required as he deemed appropriate. I believe he had the support of his management team. Even though I talked with Mr Lerch most days I was on site, I did not think he had the same grasp of the required issues as Mr White, but I was also aware that he had only just arrived and would take some time for him to become familiar with the operation and with the crews. I believe PRC had some very good underviewers. One in particular had returned from Australia, and was there through the time of my audits but soon after left and I believe went back to Australia. There was another underviewer who also had extensive West Coast mining experience and who was also very good and committed to improving and progressing the mine. One of the other underviewers was also very knowledgeable and dedicated but did not, in my opinion, have the same control of the role as the two mentioned. There was one other underviewer who I commented on about in my reports who I considered was not as involved as I thought he should be, and did not show the dedication and commitment I expected from an operational underviewer and sadly, the only other qualified underviewer was lost when the mine exploded. The deputies also had a range of skills and experience and I make this comment, it was interesting from my observations that some of the most

committed in regarding progress decision-making in health and safety were those who had just completed their tickets or were in acting deputy roles while they were still in training.

1235

A. PRC didn't – did employ one qualified deputy from overseas who was not a good choice, but he did lose his job not long after my last visit. There was a turnover of frontline supervisors as there was a turnover of higher managers and technical staff which I believe compromised PRC's functioning and continuity. The mining workforce as stated were a mix of experienced and inexperienced with a high percentage of new starters and trainers. This made it very difficult for PRC to maintain consistency and development and performance as so much of the work and skills were left to the experienced few. With regard to contractors employed onsite and underground, there were so many different tasks being carried out that I did not make contact with many of them. I did know some who were contracted for specialist tasks such as installation of pumps, pipes, mine planning, technical work and so on. As for the general workforce, there was a mix of experienced contractors who had worked on underground projects before and those who had limited or no experience underground. With regard to the culture of PRC mine, I include some general comments, but these are based on my impressions and are not related to any particular incident or instance. At the time of the audits and particularly when I was underground there was a sense of pressure to achieve targets. This was evident because everybody was aware of the cost of the operation to date, the missed targets for development and production and the financial crunch relating to the company as a whole. Almost all employees I talked with felt the pressure to perform and to get the mine infrastructured and development places ready for the planned hydro-monitor to start up. This was a dominant impression. The drive to achieve targets resulted in most employees working hard and I observed the determination to get the job done with most employees including the new starters. That was an observation of mine. However, there were some with negative attitudes towards the success of the operation, but all were concerned about the future of the mine. The experienced personnel I talked to underground were aware that even if or when the first monitor panel was successful they still had a lot of development

to do before the next two panels were available for extraction and they commented that this meant coal production would probably not be sustained at the desired rate and therefore the pressure would not necessarily be lifted. At every mine, and I say this, at every mine with the exception of small mines that I have worked at, whether as a miner, whether as a manger or whether as a consultant, there has always been an underlying suspicion and mistrust of management. That's the reality. This is probably universal given the big difference between the jobs and conditions of face-workers and other underground jobs and middle and senior managers and technical staff. However, there appeared to me at PRC mine to be a greater level of dysfunction and mistrust than at other mines I had worked at. I was not surprised about this, because the mine and the company were under a lot of public financial and internal pressure and the turnover of senior and middle management and technical staff aggravated this. I do believe this may have contributed to some of the problems the mine had experienced. As a final comment, even though many of the issues I had raised in my audits had not been addressed by the time I left the site, I was still confident that with a stable senior management team an achievement of the targets that the culture and attitude of the mine employees would change. When I did my last audit at the end of April I had planned on going back to the mine at a later date to meet with Mr White to observe what progress had been made. however, I became committed to another project and other than a couple of emails relating to other matters with Mr White I did not return to the mine until the night of the 19th of November as part of the New Zealand Mines Rescue Emergency Response. I am not aware of any arrangements being made for undertaking compliance audits after I ceased. This statement is true to the best of my knowledge and belief and was made by me knowing that this may be used as evidence for the purposes of the Royal Commission Inquiry into the Pike River tragedy."

1240

Q. Mr Stewart, you do exhibit to your brief the copies of the audit reports that you emailed to Mr White and Mr Lerch and copied to Mr Whittall. Did you receive any specific feedback in relation to those reports?

A. I don't recall receiving any electronic feedback. I did discuss earlier on with Mr White about whether this was okay because I'd explained to him the way I

was going to do it, was just do these reports and then just roll over if you like an update on where I stood and anything new that I'd added and send those and the recall that I got was only a conversation was that he was happier enough with that. Mr Lerch gave me feedback verbally that he received them because I did talk to him about them you know, whenever I talked him if there's anything came up in there I discussed it with him, so he was aware of them. I got no feedback at all from Mr Whittall.

THE COMMISSION ADDRESSES COUNSEL – APPLICATIONS FOR CROSS-EXAMINATON OF WITNESS – ALL GRANTED

CROSS-EXAMINATION: MR WILDING

Q. Mr Stewart, your first involvement with the Pike River Mine was in December 1997 when you were asked to undertake a pre-feasibility study?

A. Yes, that's correct.

Q. And you were asked to do so by Mr Gunn of Coal Marketing Services Limited?

A. That's correct.

Q. And was that on your understanding on behalf of New Zealand Oil and Gas?

A. That's right.

Q. And you provided two pre-feasibility study documents, one in February 1998 and then another very similar in March 1998?

A. Yes.

Q. If I could just turn to the one of March 1998 and Ms Basher DAO.012.03362/1

WITNESS REFERRED TO DOCUMENT DAO.012.03362/1

Q. You will see that document titled, "Pre-feasibility of the Pike River coalmining project March 1998," and is that the study that you completed and provided for New Zealand Oil and Gas?

A. Yes it is.

1245

Q. Ms Basher, could we please have page 3 of that document? Just before we talk about some of the content, what is the purpose of a pre-feasibility study of this type?

A. Well, taken into account this is 1998, and my version of the pre-feasibility, it was really a first pass scoping study of the potential access and development

of the mine, a broad brush extraction system or extraction system method, and looking at infrastructure, basic costs associated with that part of it. So, it's really a first study, I guess.

Q. I take it would be envisaged that there would be significant further work to get to the stage of a feasibility study?

A. I always expected that from this study it would go through probably two more levels of feasibility at least before it went into operational stage. This study was based on limited information.

Q. And in fact you'll see at paragraph 1.3 that at that stage the borehole data is limited to 14 holes?

A. That's right, yes.

Q. You would've anticipated that substantially more borehole data would've been required to move to feasibility study?

A. At a feasibility study, probably even before you go into the full feasibility there'd be a requirement to, based on the information you get out of those 14, identify areas or sections where you'd want to do infill drilling. The infill drilling intensity depends entirely on the structure and the problems that you think you may encounter, so it takes a whole level of magnitude if you like of detail into the study.

Q. And I take it you would agree with evidence given during Phase One to the effect that in a faulted environment the interval of in-seam drilling will be lesser than if there wasn't faulting?

A. You mean the in-seam drilling intensity would increase in a faulting environment?

Q. Yes.

A. Yes, that's correct.

Q. Just looking at paragraph 1.8, you state there, "The extraction and development equipment proposed is expected to be able to produce between 460,500 tons and 502,380 tons per annum depending on the days of operation."

A. Yes, they're very specific numbers, that's the beauty of spreadsheets of course.

Q. Yes, what was the basis upon which those were reached?

A. The scoping plan, the pre-feasibility plan as I called it then, was based on one hydro-monitor. I think if I recall correctly the production rate was 1.5 tonnes per minute, working what I anticipated on a continuous basis, so that was the main production unit. There was also two development machines. From that amount of productive capacity and given the, what I expected the geological conditions would be, that was about as much as I thought was viable coming out of that mine.

Q. When you say, "based on what you expected the geological conditions to be," what did you expect them to be?

A. I expected them to get a lot worse than what the plan that Ian Brown and Associates had done, based on 14 boreholes, for sure. I might add also that 400 to 500,000 is a very good production level for an underground coal mine in the Paparoa ranges.

Q. Ms Basher if I could just ask you to take us to page 7 of that document? You'll see the heading, "3.1 Mine access and pit bottom." The third paragraph commences, "The excess roadway will be a single entry stone drift of five metre width and a height three metres." At that time was there any consideration that you're aware of, of it being more than just a single access mine?

A. At that time and the early stages, it was single entry, with a main ventilation shaft, connecting roadway to establish the circuit. The basis of it was to get access into the reserve area and set up a fundamental design around how that would happen. So it was a single entry.

1250

Q. When you say the basis was to get entry, to get entry as cost effectively as possible?

A. Yes. Yes cost effectively, yes. At that scope there wasn't any real consideration for all the other finer points that you develop later on in feasibility studies. It was pretty broad-brush.

Q. And if we have a look at figure .1 for example, that's clearly nothing more than a conceptual sketch, is that a fair comment?

A. Yes it doesn't demonstrate my artistic skills very well I must admit. It's definitely, that's all, it was just these are the services that you need down a main drift – sorry, main access route, that was really what it was there for.

Q. Because if we look at that for example, it represents the cable rack, pipe rack and the low pressure pipe as being in areas which might potentially be susceptible to being hit by vehicles?

A. Yes.

Q. Would it be fair to say that best practice would be for those types of infrastructure to be placed outside of the way of vehicles or alternatively to be guarded, for example, by a barrier?

A. Yes is the answer.

Q. And that's something that you would've envisaged presumably would've been attended to as the design process became more refined?

A. Yes.

Q. And in the course of your audits, did you observe whether those infrastructure, the cable rack, pipe rack, low pressure pipe had been guarded or were placed out of the way of vehicles?

A. Some of the areas were I thought compromised in that particularly through Spaghetti Junction, the main corridor area coming off the main drift through Spaghetti Junction up into the working places was confined, congested, high traffic and there were sections where the pipes and ducting – mainly pipes, were vulnerable and that was both the gas drainage line and the feeders, service pipes.

Q. And they didn't have any guard?

A. There was nothing that I observed. The big problem with front-end load – underground loaders like that is that they're big machines and it's pretty hard to keep them in a straight line or going in tracks and what not.

Q. Can you remember approximately how long the drift was planned to be at this stage?

A. What when I did the study? I'm pretty sure it was 1.7 or 1.8 metres, I wish it was 1.7, 1.8 metres, kilometres and it was further – the entry I'm pretty sure was further up White Knight Stream – not White Knight Stream, Pike River than what was currently or what was eventually put in. So, they – the entrance was changed, but I never saw it on a plan until much, much later.

Q. Ms Basher could we have page 8 please? You'll see there under paragraph 3.1.2 down the bottom, ventilation shaft. The length of the shaft will be 120 m

with internal diameter of 3 m. The ventilation shaft referred to there broadly correspond with the ventilation shaft as built in terms of its placement?

A. I can't tell you whether the – I think, I'm pretty sure that the ventilation shaft location that I put in my first cut plan was in a different location than their final eventual one. I'm pretty sure but I haven't actually looked at – to compare. I haven't looked at this stuff for a long, long time.

Q. In your plan, had consideration been given to whether that ventilation shaft would be a second means of egress?

A. Again it wasn't looked at specifically as a second means of egress because the plan at that stage didn't take into account those sort of factors. I was asked later on to look at how a shaft would be used as an alternative means of egress and I did consider in some detail how that could happen then but that was not at this time.

1255

Q. Ms Basher please page 11 please. I'll just ask you to look half-way down where it says, "B north headings," and you'll see that you refer to those being developed first for two reasons and it would be fair to say that one of them is related to the quality of the coal and that's the second one, correct?

A. Yes.

Q. And the first one reads, "It is prudent to retreat back towards the pit bottom and lower part of the mine when steeply dipping seams are encountered."

A. Yes.

Q. Now this was stated on the basis that this mine was going to be mined using hydromining?

A. Yes.

Q. What's the reason for your comment?

A. The principle really of any mine I think especially retreating down dip is that you extract and retreat so that you don't compromise the life of mine or long-term corridors, underground roadways. That's the first one. The second one is, is that if you're going to extract every time you do that and you're working around that area, then you're going to generate a pressure differential because of the requirement for ventilation flow, which may pass through the goaf area and that may cause spontaneous combustion problems, which may cause you ongoing issues, so in principle and ideally, you develop out as far as you can

within a specified section, you'd retreat from the high side to the dip, seal off and design and extract the mine so that you're not throwing a load back on to any of your main corridor development and it's probably a basic mine planning I guess principle. It's developing and extracting a section which is adjacent to main corridors and is likely to have pressure differentials at some point in the life of the mine causing leakage through the strata because it doesn't matter how effective you try and get a seal, one thing if for sure, when you've got faulted difficult ground there is going to be leakage plains and you try and manage and design your mine to minimise that risk.

1258

Q. And there's going to be leakage, even if you make a seemingly complete seal?

A. I can tell you that in this country no seal is perfect. The strata can be fractured, the nature of ventilation and the whole fundamental principle would be why ventilation works in underground mine is that you create a low pressure zone and you have a high pressure zone and the air flows from the high to the low. So if you do that you're going to (a) get air circulated and what you do in a ventilation control of course you can manage that, but when you've got a sealed area where there's leakage planes and you've got that pressure differential the air is only going to go one way, the shortest way it possible can and if it can leak into a goaf to get to where the low pressure zone is on the other side it'll do it and the problem is with goaf's of course is that we also don't get 100% of the coal removed so therefore when you have air flowing in and you've got coal that's got a propensity to spontaneous combustion, you've got a recipe for a heating.

Q. Just finally on this document, Ms Basher if you could take us to page 16 please? If I could ask you to look at the second from bottom paragraph. "It must be noted here that the massive incompetent nature of the immediate overlying roof will be an advantage when extracting in that it will allow for significant extraction room sizes prior to collapse. The disadvantage, however, is that, first bullet point, the collapse can generate high air blast which can cause significant damage to stoppings and other mine facilities. The second bullet point, the massive roof can cause excessive crushing of back-bye pillars and stumps due to the cantilever effect of the extents of roof beam which will be aggravated by the dip of the seam." Just having regard to your first bullet

point, do I take it that your view from as far back as then, was that it was important for the stoppings in this mine to be properly constructed?

A. Oh, absolutely, yes.

COMMISSION ADJOURNS: 1.01 PM

COMMISSION RESUMES: 2.01 PM

CROSS-EXAMINATION CONTINUES: MR WILDING

Q. Mr Stewart, at the time of your pre-feasibility study of March 1998, where was it intended that the main fan be?

A. On the surface at the collar of the ventilation shaft.

Q. Had there been any discussion to your knowledge of that main fan being placed underground?

A. No.

Q. I think that you then later, in September 1998, made a further pre-feasibility study?

A. I was asked by NZOG through Peter Gunn to look at a desktop study for increasing the production from the sort of 450-500,000 tonnes per year up to 650,000 tonnes per year and the study was a spreadsheet study.

Q. Ms Basher, could we please have DAO.012.03403/2?

WITNESS REFERRED TO DOCUMENT DAO.012.03403/2

Q. And you'll see that's a document from Minserv International Limited dated 25 September 1998, "Pike River project, option three, 650kt/annum." That's the study to which you refer?

A. Yes, that's right.

Q. And had you been provided with any fresh geological or other information which would enable you to have assessed the viability of extracting that rate of coal per annum?

A. No, that was still based on the three plans that I'd had initially.

Q. And it says in the middle paragraph, "As the time to complete t his option is one day (25th September) only estimated figures are used for the following." Does that essentially reflect the fact that you were asked to provide that on the day?

A. I can't recall exactly, but that looks like it. It was pretty short term query, and as I said, it was desktop study.

Q. And in your view, presumably significant further work would've been needed to assess whether that was realistic?

A. Yes. Going from 450 to 650 is a significant increase, given that earlier I'd always looked at that initial production capacity around about the limits of the infrastructure and the design as it was stood at the time, so it definitely needed a lot more investigative work before any conclusions could come out of that.

Q. And I see on that same page just above paragraph 2, you've noted, "Higher accuracy for these figures will require further work as described in section 4 of this report."

A. Well, yes, that's right.

Q. Ms Basher, could we please have DAO.002.13551/1?

WITNESS REFERRED TO DOCUMENT DAO.002.13551/1

1405

Q. I want to turn to a different topic which is that of certification to be a mine manager and you'll see that this is an extract of the operation's meetings of Pike River Coal Limited dated 31 May 2007.

A. Mhm.

Q. Do you see that up the top?

A. Yes I do, yes.

Q. Ms Basher if we could have page 4 please. The centre bullet point reads in part, "Progress on K L certificate of competence has ground to a halt. We completed all necessary documentation and sent to Sushi Battersby who is the education administrator at EXITO. Dave Stewart sent out US7142 material that was also completed." What is US7142 material?

A. US7142 is unit standard 7142, it is a level 6 unit standard under the ITO framework or the NZQA framework and it's directly related to knowledge and ability to manage regulatory requirements at an extractive site, being a mine and it's really to determine the level of knowledge that the applicant or the candidate has for, the working knowledge of New Zealand law related to operational management.

Q. And what certificates is that required?

A. It's required for all certificates of competency, it's a fundamental unit standard as you'd expect, well I would expect.

Q. That same bullet point includes reference to, K L presumably being Mr Louw, is that correct?

A. I assume at that time it would've been Kobus Louw, yes.

Q. "Seeking the accreditation in first class coal mine manager and that David Stewart is due in on the week after Queen's Birthday Weekend to set a date to begin mapping. K L's current qualifications to the unit standards required." Are you able to explain what's meant by, "Mapping."

A. What I did then is I developed my own process of evaluating an overseas certificate of competency who was seeking to get a New Zealand equivalent certificate of competency and the process that I went through was to get all the history if you like if I could of the candidate which included their qualifications, certificates of competency from the country of origin. Within that the curriculum, the training programmes they went through, all the information I possibly could, then what I did was I matched that up against the equivalent unit standards that are required for the New Zealand certificate of competency, in this case is a first class coal mine manager's certificate. So what I do is I match those up and then where there was any areas that I felt needed elaboration or needed clarification, or indeed they just didn't have the knowledge that I thought was required, I would normally go through an interview process, then if necessary I would get them to do some further training and assessment.

1408

Q. And this was in your capacity as an EXITO assessor?

A. Yes. Yes.

Q. And is that the process followed by other EXITO assessors in assessing whether overseas people meet the requirements for a first class mine manager certificate?

A. At that time there was very few assessors doing that. I don't know of any – there may have been others. This system was what I developed myself. I was pretty particular about it and always have been fairly particular about how I do assess that. So, as far as I'm aware I was the only one using that system.

Q. Now your next involvement with Pike River was completing a detailed document entitled, "*Roles and Responsibilities*" to which you refer at paragraph 40 of your witness statement. Is that correct?

A. That's correct.

Q. We needn't have this document, but the operations minute meetings for 19 December 2007 at DAO.002.13598/2, refer to "Stewart responsibility report

received." That was in December 2007. I just wonder whether your engagement to undertake that roles and responsibilities document might've been earlier than the 2008 to which you refer?

A. Well what happened – I can't remember the exact dates to be honest about this, but what happened was that I was approached and if I did a draft document at 2007 I'm pretty sure I did two drafts. The first one was 2007, the other one was the one that was finally submitted and then that was then put into Pike River documentation framework, so there must've been late 2007 in that area.

Q. What was the –

A. I just don't remember exactly.

Q. What was the process you followed in developing that document?

A. I received – well I requested and received a whole series of job descriptions of the various roles in the mine that were anticipated or planned at that time and of course that went from the mine manager right through production – there was a whole range of things, right down in fact to what they called electrical technicians and mechanical technicians, so it was a whole structure if you like in between. Not the miners, and not – yeah, not the miners. And the job descriptions were quite specific as job descriptions are, and so the roles and responsibilities is to take those job descriptions, then put them into a document where the legislate – what I considered the legislative obligations for those roles would be satisfied by activities that I identified for each of those roles and that's what the whole document's around.

1411

Q. Ms Basher, could we please have STE0007/3?

WITNESS REFERRED TO DOCUMENT STE0007/3

Q. This is a page of that document entitled "Legislation roles with responsibilities" that you've attached to your witness statement and you'll see this page is headed "Staff positions." Does that page then set out the positions that Pike River Coal Limited had identified to you as positions which either had been or would be filled?

A. My recall of that time was that these were the positions that Pike River were intending to fill for their proposals for the future, not necessarily at that time, but that's where they wanted to go. That was my understanding.

Q. Did they give you any document setting out a timeline for when the various positions set out there might be filled?

A. No.

Q. Ms Basher, could we please go to page 98 of that document? You'll see this is the role profile summary for a ventilation engineer, and I presume you developed this?

A. I think that page was taken from the job description and the role profile was the summary of what the position required, so I think that page was based on that, which was supplied from Pike River.

Q. And at the time of your involvement with Pike River, there wasn't a ventilation engineer?

A. No.

Q. Are you aware of who was undertaking the responsibilities set out there?

A. Not a specific individual, and I expected that the roles and the responsibilities as defined in this document, were carried by the various people's within the organisation, i.e. the mine manager would pick up some responsibility, underviewer would do some and deputy would do some as part of their duties. That's what I anticipated and expected.

Q. Would those roles set out there be the equivalent of a fulltime position?

A. The answer's yes, but not necessarily at the time I was there. By the time a mine like Pike River got to the high production capacity and the complexities that go with such an operation in a gassy environment, where it has all those ventilation issues around it, and there are a lot, I would – if I was the mine manager I can say that I would like – prefer there was a position of ventilation engineer.

1415

Q. If we can just take some examples, the fourth – sorry the fifth bullet point down in that role profile summary, "Liaise with area shift co-ordinators on a daily and weekly basis regarding section ventilation requirements." Were you aware who was doing that at the time of your audits?

A. No. Not in that sense, I mean, the mine manager may have, but there was no – I didn't see any formal acknowledgement of that.

Q. And perhaps the third bullet point from the bottom, "Monitor, set up alarm settings and liaise with control officers in comms and monitoring engineering

relating to remote and real-time atmospheric monitoring systems." Was that being done by anyone at the time of your audits?

A. No, that was one of the things that I raised in my findings was that there was a significant lack of that activity going on, in actual or planned basis.

Q. Ms Basher could we please have DAO.002.13887/3. This is page 3 of the operations meetings of Pike River Coal Limited for 21 January 2009 and you'll see the third paragraph down it says, "Dave Stewart will be onsite this week to conduct training on US7142 for the development of production staff to their deputy and underviewers certificates." And would it be correct to assume from that that you were involved in the training of staff at that stage?

A. Yes I was. What year was that, sorry I missed it?

Q. This is the operations minutes meetings for 21 January 2009?

A. Yes.

Q. What was your involvement in training then?

A. That was through Tai Poutini and what it was the – Pike River had selected, I'd seen they'd selected people – miners who were interested in going up to the next level which is certificate of competency, that's the first stage and that is essentially the face supervisor if you like of a crew. The training that is involved covers a range of subjects and the first one that I prefer that they do is the one that I talked about before which is 7142. In my approach to these things has consistently been that they need to have a good working knowledge of New Zealand legislation before they do anything else, because New Zealand legislation, health and safety obviously, is fundamental to anything that they do beyond that point in time. So that's the first unit and from that I develop a programme of training which then will deal with all the subsequent ones and for a deputy there's probably within the unit standards maybe about 10, I can't remember, it might be less. It's somewhere in that order.

Q. Did you have an ongoing training role with Pike River?

A. I did through Tai Poutini and for deputies, underviewers and mine managers, first class mine managers. There was only one that I actually took through to first class completion.

1420

Q. Could I just now turn to your audits which are paragraph 12 onwards of your witness statement. And in paragraph 13 you refer to Mr Dow being concerned

about the turnover of senior management and the difficulties PRC had in getting good experienced and certificated managers. Can you remember what Mr Dow said to you?

A. I can't remember the words, it was a very informal meeting and I just do not recall, but I do recall the subject matter was around those issues there. My impression was he was concerned obviously the lack of targets being met, hits from weren't being met and he was concerned about the turnover of staff and he was concerned, which is the reason I had a follow-up email about accessing someone with enough knowledge locally probably, there must've been reference to it to be able to assist at the mine and he was concerned about the morale. My recall is that was what it was about but I cannot remember the words because I didn't take any notes or anything like that.

Q. In your email of 31 August 2009 attached to your witness statement STE0003/3, there's an attachment from Mr Dowell back to you saying, "Dave thanks for these comments and your candid observations in Christchurch last Friday." Do you recall that email?

A. I do recall the email, yes.

Q. Can you recall what the candid observations that you made to Mr Dowell were?

A. No I can't, I honestly can't and when I read this later on, I thought what did I actually refer to. I still recall the discussion was around what I'd just finished saying so whether in the course of that discussion I might've mentioned individuals or not I don't know. Whether I mentioned incidences or not, I don't know.

Q. Ms Basher could we please have DAO.002.14157/3

WITNESS REFERRED TO DOCUMENT DAO.002.14157/3

Q. This is page 3 of, "Operation meeting minutes of 19 November 2009 of Pike River Coal," and you'll see that under number 2, "Production," final bullet point, "Need to consider getting Dave Stewart involved to boost practical experience personnel underground." Was that an issue that had been discussed with you?

A. Yes it had and I had an email exchange and I'm sure it was with Neville Rockhouse about what that's saying, which is to go underground and just spend time with the crews, just observing what they were doing and just

give them points, sort of a mentoring role at the frontline level. I think I responded by saying, "Yes," and I don't actually recall this again, I must have some info in an email trail somewhere saying, "Yes I was interested," but I don't recall anything happening from that. I don't remember anything beyond that point. It was soon after that I think that I got involved with the deputy and the underviewer training to a greater degree I think. But my memory's a little bit hazy. I certainly didn't go underground and work with the crews.

Q. Ms Basher if we could have DAO.002.14255/1.

WITNESS REFERRED TO DOCUMENT DAO.002.14255/1

Q. This is the operation minutes meetings of Pike River Coal for 3 February 2010. If we look at page 5, it says, "Dave Stewart is coming tomorrow to discuss options on mentoring supervisors." So by this time we're at 3 February 2010. Can you recall that discussion?

A. That was after I'd met with Mr Whittall and the day before I met with Mr White and Mick Lerch, Mr Lerch to go through the details of how this auditing programme that I'd drafted up will be dealt with. So that was really, probably the first meeting that led into my underground, well, the site visits through the end of February, through March and April.

1425

Q. So would that be what you're referring to in paragraph 19 of your witness statement when you say, "Eventually Mr Whittall and I did meet at PRC mine. I do not know the actual date, (as I do not have an entry in my diaries) but I believe it was either prior to Christmas 2009 or mid-January 2010."

A. Well, that meeting was prior to this because, this minute's the 3rd of February, you said?

Q. Yes.

A. I met with Doug White and Mick Lerch on the 4th of February, so the meeting I had with Peter Whittall was prior to that, I just don't remember when it was. What I think it was, when I – I have been looking trying to remember and I did put in my brief that I didn't enter anything into my diary, but I think probably I met with Mr Whittall when I was running training programmes and probably it was for McDow tunnellers who were going through their shotfiring unit standards and I was doing some of that on site and even though I do not recall

this, I suspect that I probably took the opportunity while I was on site to meet up with Mr Whittall. Again, I'm not sure of when it was.

Q. Aside from your involvement, are you aware of anyone who Pike River had arranged to mentor the supervisors or other workers?

A. Well, while I was there, there was two guys, two men working with the crews. One was George Colligan, Corrigan? The other one was Reg. Sorry, I can't remember his name.

Q. These are both internal Pike employees?

A. I thought they were brought in externally actually. I thought they were contracted in specifically for that purpose. Again, I'm just going on what I understood at the time.

Q. All right, perhaps if we turn to the conduct of the audits. What was the method you followed in conducting your audits?

A. It was informal, is probably the best way of summarising it. I deliberately left it that way because I wanted to be able to go around the working places and talk with all levels of operators, miners, you know, the whole workforce as much as I could. I did intend initially of going underground with the underviewers and I did do that in probably many if not most of the cases, but sometimes I went in by myself. I got fully inducted, which meant that I was entitled to go underground, and I just spent time walking around, by myself on some occasions, so I was fortunate, I guess, in that I had the opportunity to talk with a fairly wide spectrum of the workforce.

Q. What was the highest level of the workforce that you spoke with?

A. Well, obviously the mine operations manager, Mr White, but the face crews, I talked to the face miners, the miners, deputies – of course I spent a lot of time with the underviewers as I said, because I was particularly focussing on the underviewers as that was Mr White's request, and also with the deputies when I was in their working places, I'd just talk with them. But throughout, the process around it if you like, was to just observe, to converse, to pass ideas, to learn a little bit about how they were looking, how they were feeling about things. It was very informal in that sense.

Q. What type of records did you look at?

A. Records, I didn't look in any detail on the management systems that they had in place, but I do have copies and did have copies of them. By that I mean the

management, the ventilation management plan, the shotfiring management plan, the SOP, some of the SOP's under that. I didn't go through those. I deliberately stayed away from looking at the documentation as such, because early on in the peace, Mr White had said that he wanted Mr Lerch to go through those and update them, which I understood.

Q. Did you look at the incident reports?

A. I looked at them, yes. I looked at some of them, yes. And hazard reports, yes.

Q. Ms Basher, could we please have CAC0138/5?

1430

WITNESS REFERRED TO DOCUMENT CAC0138/5

Q. And you'll see that this is an email 15 February 2010 from Doug White to you with copy to Mr Whittall. Correct?

A. Yes.

Q. You'll see that Mr White has written that there are currently two main needs at Pike, (1), ensuring as far as practicable that the mine is compliant now and in the future (physical compliance) (2), the statutory officials and others with obligation (leckos set) understand how to apply and maintain compliance. This is where I have the most difficulty as I find basic non-compliances every time I go below ground." Does that set out what you were mainly engaged to do?

A. Yes, if this was post my initial submission where I detailed out within a timescale if you like, all the activities that I was going to pursue. This basically superseded that.

Q. In that second paragraph, the reference to leckos? What is that a reference to?

A. Electricians, it's an Australian term. We call them sparkeys.

Q. At the cessation of your auditing, are you aware of what arrangements Pike had to ensure that either of those two were being attended to?

A. After I left?

Q. Yes.

A. No, I'm not aware of anything.

Q. At the time that you left, had you had sufficient time to ensure that statutory officials and others with obligations understood how to apply and maintain compliance?

A. Are you talking about generally or specific?

Q. Well just generally.

A. I would like to think that what I did and how I interacted with the individuals had some impact in that it improved their awareness, but I cannot tell you whether there was an ongoing improvement or not.

Q. Would it be fair to say that you would've seen this educational element if we call it that, as a matter which required ongoing training and oversight?

A. Yes, it's a very important issue.

Q. If I could just clarify some matters that arose from your audits. Paragraph 27.1 of your witness statement. You recommended that an RPM monitor and surface control displays be installed. Had that been done to your knowledge?

A. As far as I was aware when I left it hadn't been done. It was something that I raised on a number of occasion, it was a statutory requirement in the mining underground regulations.

Q. 27.2 there was no gas, no remote gas monitoring sensor system. Do you know if that has been done since you left?

A. The one that was in place was the one that I discussed in my brief here which was in the main ventilation shaft monitoring the return air and that was installed after I raised it, reasonably quickly I think within two weeks, but it took about another two, maybe three weeks before it was calibrated to the electrician's satisfaction. Other than that there was no other system in place.

Q. Would the SCADA system be the type of system that you would be contemplating?

A. Well it's an underground remote monitoring system with, you know, connections to the surface control and alarm settings and what not.

Q. So assuming Pike got that at some stage, that remote aspect was attended to?

A. Yes, of course remote monitoring is all dependent on where you put the sensors and what you're monitoring and how you respond to them, but yes.

Q. In paragraph 27.3 you've referred to a risk assessment being carried out to establish the best locations for the sensors?

A. Yes.

Q. What are the benefits of conducting a risk assessment for that purpose?

A. As a general comment risk assessments have the enormous advantage if you use them properly of bringing in a wide range of the workforce. So in the sense of – in the context of where remote monitoring sensors are going to be located underground, what information that they're going to convey? What

systems are in place to be able to respond including the finer points, the TARPs, then to me having the widest range of input from the mine manager through to the face man is an important part of it, an (inaudible 14:35:16) part of it in fact, because what it does is it means that they all understand what's involved and the importance of it, that's why it's important to me, to have a risk assessment rather than just make up something and put it in if you like.

1435

Q. So to your knowledge, was that done while you were there?

A. It wasn't done while I was there, no.

Q. Paragraph 27.4, you state, "That the stoppings and doors were inadequate for their purposes." What was it about them that was inadequate?

A. Well I guess this is the first thing that really impacted on me when I first went underground. They were badly constructed. They didn't have any systematic construction around them which was even more surprising to me. They were not really sound and stable. They certainly didn't act as effective separation between intake and return and for that reason they were leaking.

Q. What were they constructed from?

A. Well they're essentially board and brattice, some of them mostly board if not all board, but it was just there was no design around it. They seemed to me that everyone of them was built by someone who was told to go and build – this is my comment so it's not based on any obvious evidence, but built without any consideration of going through a process of construction. As you – what stoppings require, is that you have to get a firm area cleaned out, hard floor, roof and ribs clean enough and stable enough where you can effectively apply a stopping that will separate between intake and return. If you don't have that you get air leakage and they also get damaged very easily.

Q. Did you ask the workers what training they had had in building stoppings?

A. I didn't ask the workers. I talked to the underviewers about it and as I said in my brief, what I did do was send them some information, but it was pretty basic information but I thought from the perspective of the stoppings and the doors to some degree, that even the basics weren't being satisfied, so I felt that starting with basic information was a good option.

Q. Did the underviewers say what training there had been in the construction of stoppings and doors?

A. The underviewer's response to it was they just didn't really have the time. The underviewers that I talked to were knowledgeable about these things but their focus was elsewhere.

Q. You made a number of comments expressing concern about ventilation. Did you discuss with the workers who was responsible for the placement of the auxiliary or booster fans?

A. When you say "the workers", are you talking about the face crews or the deputies or the underviewers?

Q. Men underground.

A. Oh the men underground oh okay. I suppose they're all workers, sorry. Yes, yeah of course. I was quite – initially you know, as I said in my original – I was actually quite satisfied with the location of the auxiliary fans after some of my initial observations. I thought the locations were okay. The problem was that the stoppings in the particular – and it was at that particular time it was the south section. The fans were drawing air out of the working places, but the discharge area was then, the stoppings beyond that, where it should've gone straight out into the main returns and out of the mine, the stoppings were such that they were getting leakage, so the location wasn't so much an issue after the initial comments that I made.

Q. If I can just turn to the alternative egress. You say in paragraph 27.12, "That you were informed that the refuge chamber located in the main access drift would be moved to the Slimline stub end which would ensure a secure airtight chamber with a fresh air supply."

A. That's right, yeah.

Q. Who informed you of that?

A. I was talking to underviewers about it. I can't remember whether I talked to Mr Lerch or not but I did discuss it with underviewers and it think I discussed it with probably two of them during the course of the grounds. One of the, I don't know if you want me to mention names, but both of those people is when I'd gone into where the Alimak rise is at various different trips, different visits and when I made that comment about – that was on one of the early visits, that one – I did ask, "Well, what are your options?" And at that time, I was told that the idea was that Slimline would be used as the refuge chamber location, and the refuge chamber that was located out the main drift was going to be

disestablished there and moved into the Slimline, hence the comments that I made in the report that that was to me, a reasonable alternative, given that it allowed direct – first of all it allowed protection, because it was an enclosed chamber –

1440

Q. Well, I won't go into your views on it. I want to just turn to the electrical system and you've said at "28.1 that you did not check flameproof or intrinsically safe codes or standards." Are you aware of what checks were being undertaken by Pike River to make sure that the electrical system complied with the requirements of the legislation?

A. I was only – I was relying on what I was reported. To go around and check all the motors and the flameproof equipment, intrinsically safe equipment was not something that I wanted to do and my main issue was to raise in these reports that these were issues. The issue – the thing around this is that I kept on wanting to meet with the engineering manager and it kept on getting put off. He just was not available. So, it was only on the last visit that we actually sat down with Nick Gribble and we had about an hour I suppose, and at that time I went through all the things that I wanted to highlight with him, and those were the questions I asked and that was one of them, is that, yes, that was the way it was managed and he was confident that he was introducing a whole lot of check and balances in the system.

Q. If I could take you to another aspect of your audits please, STE0004/45?

WITNESS REFERRED TO DOCUMENT STE0004/45

Q. This is part of your follow up report of 15 and 16 April, 2010 and under "comments and recommendations" at the top, you say, "A good reporting system is in place and operating. However, there is no apparent clear procedure for converting the reporting into actions." What caused you to make that comment?

A. The main cause would've been the conversations that I had underground with miners, deputies and underviewers, but mainly the miners and deputies that were saying that they were putting in reports and they were not hearing anything back. So, it was sort of, they were doing it, and the comment that they made, and it wasn't, there wasn't just one or two people, it was relatively common, I suppose over a number of visits was that, "Why bother doing it

then?" My answer was, "Keep on doing it, because there will be a response. It's just that they haven't obviously prioritised them at the moment" or something akin to that. So, that's why I followed it up with an update, if you like, a suggestion.

Q. And you'll see that in the row immediately below that you've written, "The effectiveness of any hazard management system is reflected in actions and feedback, otherwise the workforce will just see it as another company procedure that does not work."

A. Yeah, exactly, that was the issue. And they, you know, miners are like all other people really, they feel if they do it so many times and nothing happens, then they're just wondering well, why they're bothering doing it, but of course this is – these are hazard identification. These are issues that have major significance.

Q. Had those issues been addressed by the time you left?

A. What I suggested – I don't, I can't tell you whether the follow-up was there, but I did make a suggestion there, and that suggestion hadn't been done.

1445

Q. If we look at page 44 of the same document please Ms Basher. You'll see and it's the same dates, 15/16 April 2010 under comments and recommendations, "Training the workforce is an ongoing critical issue and is being addressed by the management team along with lack of training in some essential skills there is a significant lack of miners and trades people available, particularly experienced people."

A. Yes.

Q. And the comments in red are your then follow-up comments of the 15th and 16th of April, correct?

A. Yes.

Q. Would it be fair to infer then, that by that stage 15/16 April there was what you've called, "A well organised process for training?"

A. The training section I thought was very well organised, they had a good process in place, they had a good relationship with TPP. The answer is they had a good system in place, whether – but I can't tell you whether it was happening if you understand.

Q. Who was running the training system?

A. Well the, the man in charge of training at that time was a Mr Couchman, Adrian Couchman and as I say I personally thought he was doing a good job, as much as he could.

Q. Paragraph 41.5 you refer to the mining crews being made up a mix of experienced and inexperienced or green miners. What do you define as an inexperienced miner?

A. Well one of the – the training programme that was in place was - for new starters was structured. So it went through a number of stages. It was practical experience-based and it was unit standard based and what I'd classify as an inexperienced miner was someone that was still in that first stage and I can't remember exactly, but I think the stages were probably something three or four levels and of course the first stage would be things like first aid certificate, induction training, probably up to the point of knowing how to hand – use a goafer, a handheld bolter. Things like that. certainly not operate machines, not operate LHDs or anything like that.

Q. You've gone on to say the ratio was not favourable in that the experienced miners were far less in number than desired given the nature of the operation and conditions?

A. Yes.

Q. What ratio was there from your observations?

A. Again it – well the miner place, when the continuous miner was working at the times that I observed it working in coal which I think was twice, while I was there, there was one experienced miner who I knew to be good, in fact he was doing deputy training, he was on the machine or he was operating the remotes, there was one other miner who I would've thought was probably a couple of years experience under his belt and there was probably three and possibly four working in that crew – it's hard to say because they weren't all standing around, who I considered to be in that first stage. So that ratios two to four of experience.

Q. Two –

A. That's probably the worst scenario if you like, but that was what – that one. In the roadheader place it was

THE COMMISSION ADDRESSES WITNESS – SPEAK UP

CROSS-EXAMINATION CONTINUES: MR WILDER

Q. You might have to speak a bit louder, but when you say, "Two to four?"

A. Two experienced to four relatively inexperienced or inexperienced in that particular place. Again these are snapshots so at times that I was there I didn't obviously cover the whole workforce all the time.

Q. What would you say is a desirable ratio?

A. Desirable, desirable of course is having six experienced excellent miners at all times. Desirable if you want to develop your miners up to a level of competence and experience and it takes probably three years before you get a really good miner, maybe a bit longer depending, is probably four to two, four experienced to two inexperienced. The four of course can be experienced or can have three years under their belt or maybe two, something like that, but four to two, the other way round.

1450

Q. You referred to the complication in that same paragraph of there being a mix of New Zealanders, Australians and South Africans scattered through all levels.

A. Yes.

Q. How did that cause complication?

A. Well again it was a sort of a – I sort of qualified that I thought a little bit by saying, "This is an impression," so I'm not sure if I can come up with instances or examples, but there just seemed to be a division to some degree between New Zealanders, Australians and South Africans and it's not as if it was anything you can actually pin down, it's just that Australians approach underground mining in coal mines different than what New Zealanders do because they generally come from different conditions. South Africans come from different conditions than both of those so they approach underground mining in a different way. So when you've got a mix and it was a fairly, it was a mix, mix really if – you won't understand that but, yeah it tends to create a separation if you like. I called it "dysfunctional", and I felt that, so when you're saying is there a particular incident, no I can't tell you but I was asked my impression and that's my impression.

Q. You've said in paragraph 44.1, "Almost all employees I talked with felt the pressure to perform."

A. Yes absolutely.

Q. Did they tell you that?

A. Yes, not all of them but – and they didn't say, I'm under pressure to perform but I've been around long enough to know it when they're under pressure.

Q. Were there any consequences attaching to that that you observed?

A. If you mean in sloppy behaviour in practices, not specifically, no. I actually – despite the pressure they were under I – and again, even though I've said there was a dysfunctional relationship if you like, that was probably more around the communication side than anything and how they interacted between themselves. But individually, I felt that they were doing the best that they could given what they'd been given. By that I mean the equipment they were dealing with and the conditions they were trying to actually make some progress in. Neither were good.

Q. Did you find that the workers were willing to talk with you about the issues they were encountering?

A. Yes, generally, particularly those I knew of course but if I'd spent more time underground and spent more time in the working places with them, yes they would've, I would've got a lot more information. I had limited scope on what I was intending to do.

Q. Did any draw to your attention any incidents of overriding of safety devices?

A. No and I didn't observe any. Oh the only incident I think was the one that has been reported which was discussed with me where the dead man on the road head had been tied back and that was when I was having a look at the machine after the incident in February but other than that, no.

Q. How long would your audits take?

A. I probably was underground two to three hours, maybe a bit longer, oh no it was longer sometimes. Depends on what underviewer I was with. Some of the underviewers you know, they spent pretty well the whole chunk of their shift underground so I'd spend a fair bit of time with them, it varied.

Q. I just want to turn to the end of the audits then and Ms Basher could we have CAC013939/1

WITNESS REFERRED TO DOCUMENT CAC013939/1

Q. And you'll see this is an email from you to Mr White, Mr Lerch and copied to Peter Whittall dated 25 April 2010.

A. Yes.

Q. Is this the final email that you wrote reporting back at the conclusion of the audits?

A. Yes it is, yes that's right.

1455

Q. And if we just look at the third to last paragraph, and perhaps read that to yourself?

A. Yes.

Q. Is it fair to summarise that letter as saying by then your view as that things were beginning to get on the right track in terms of health and safety compliance?

A. Yes, it was. That paragraph was two things, one was that I thought that a lot of the things, or many of the things that I'd raised had been addressed, although not fully, I must admit, but they were – there was progress. There was issues that I'd raised, that I'd reported that I'd been informed were being progressed and were intending to be introduced, particularly around that was the change of shift and therefore the releasing and availability of trades and miners and officials to be able to go through a training programme to up-skill, so those sort of things. But the other reason was that I actually was very positive, particularly with regard to Mr White and I thought, as I said in my brief, that he had a very good approach to what was intended and what he expected to do, and so I was leaving it really on a positive note for that reason.

Q. Are you able just to list the issues that were still outstanding from your perspective?

A. Well, I still felt the ventilation needed a long way to go before it was up to the level of high production.

Q. Right, what else?

A. The other thing was obviously the gas monitoring, because at that time there was one lonely – well, sorry, one sensor in the main ventilation shaft which was wholly inadequate for the mine to carry on without a doubt. I was concerned about the maintenance side of it, clearly, because there were issues around that, but I was – even though, and I report in my reports, the last one after I'd had the meeting with the maintenance manager and all the things that I'd listed that he'd said that he was implementing and in the process of doing that, I was confident that they would address the maintenance problems

that occurred. They're probably the main ones, but they're biggies, you know, those three things are big things for an underground mining operation. If you haven't got those or any one of those, you've got an issue.

Q. Why did you cease the auditing?

A. At that point? I had another project to start. That was the big driver. I was sort of satisfied that I'd raised enough issues with the senior management team that they would be able to then see that there are things that had to be introduced and had to be implemented to be able to get it up to a satisfactory compliance level, because if you note Mr White had said that when he went underground, he found things that are non-compliant. I raised all these issues. It was then – I was confident that they would then implement the changes as required.

Q. Did Mr Dow or anyone from the board contact you to find out how the audits had gone?

A. No, no, no. I did talk to Mr Dow informally, again, I think it was in May, and again, it was just a conversation. That was when we were both in Australia.

Q. This is May 2010?

A. Yeah, yeah. And there was just, and I think, I can't remember details again, but I think he asked how it went and I said, "Oh, you know, it went okay. I was pretty happy." I think I made a comment that I thought Mr White was good, pretty much the same as what I'd said in the email at the end of it, but I never got any feedback from anybody from the board, and I never, also never got any feedback from Mr Whittall.

Q. I take it from that that Mr Dow didn't ask for a copy of your audit reports?

A. No, he didn't. I didn't expect him to. It was, as far as I was aware, it was an issue between me and the management team, not the board.

CROSS-EXAMINATION: MR HAMPTON

Q. Mr Stewart, that last email we were looking at, the last one you wrote to Mr White and Mr Lerch reporting on your last audit, the very last paragraph and I'll put it up again if you want to, but it referred to the fact you were still available on the coast if they needed to speak to you again about other matters?

A. Yes.

Q. Do you remember that?

A. Yes, that's right, yes.

Q. And you weren't approached by them to take up those other issues?

A. No, not on those issues, no.

1500

Q. A couple of small things first please, paragraph 19 which Mr Wilding has referred to, but a different aspect in there, you refer to Mr Whittall wanting to know you'd be available full-time to take on employment in the mine either on contract or employee basis?

A. Mhm.

Q. What sort of role did he want you to perform do you know Mr Stewart?

A. I don't think it really went to that sort of detail, I think Peter was asking whether I was prepared to work full-time or make myself available full-time. I said, "No, I wasn't available," and really it never really went any further than that, is my recall.

Q. And the work you did do, these audits you did, was that on a contract base – did you have a contract for it? A contract?

A. Good question, I don't recall signing a contract, but the terms of it was that I was employed as a contractor or as a consultant to carry out those tasks.

Q. A bit unusual in your experience from the coal mine going off to have a written contract for that sort of work?

A. No it's not unusual. Not at all.

Q. Second matter, there's been some discussion about that figure of 400 to 500,000 tonnes per annum production and you've talked a wee bit further about that after lunch, this Commission was told in Phase One – well from Mr Salisbury's – from Mr Whittall Phase One PWO/10 please Ms Basher. Photograph 38. Mine design with the production capacity of up to 1.3 million tonnes per annum of saleable coal or approximately 1.5 million tonnes per annum of run of mine coal. Your reaction to that sort of figure in view of what you've told us earlier on today?

A. Well my reaction is from any of the work that I did back in '97, '98, there was nothing that could possibly come remotely near that tonnage. In fact the tonnages that I projected initially which is a 450 to maybe top end 500 was as much as I anticipated that mine was capable of producing. So my reaction is

I've got no idea because I don't know what the planning was subsequent to that. But, it seemed an awfully large figure to me to get out of the West Coast underground coal mine.

Q. Does Stockton opencast get that amount?

A. Well they do, but I mean that's an opencast –

Q. That's an opencast mine?

A. Gotta lotta gear up there.

Q. And what sort of manpower are they using up there at Stockton?

A. Well a lot more, but I think – well, it's a different operation now of course, but probably six, 700 people up there, maybe even more than that.

Q. Well just to finish the topic, if Ms Basher you could put up please NZOG0068/14.

WITNESS REFERRED TO DOCUMENT NZOG0068/14

1505

Q. And this is Mr Salisbury of NZOG speaking at paragraph 55 of PRC 21 July 2009 going to the market on the basis of (b) 800,000 tonnes for the year 30th of November 2010? A rather similar comment I imagine Mr Stewart?

A. 800 what year was this done? What year was this statement sorry?

Q. This is on – they went to the market 21 July 2009 on the basis of producing 800,000 for the year ending 30th November 2010.

A. I, as I said, I can't tell what they had designed and planned but that is a very high tonnage within that short timeframe and with the development requirements that the mine needed to get to, to be able to get anywhere near that, it's a long way away.

Q. Next topic fan. I'll touch you on quickly. I take it that from the comments you have made you were rather surprised to see this fan being underground, the main fan being underground here?

A. Yes I was surprised, yes.

Q. In your experience have you seen a fan of this sort of capacity being used underground as the main ventilation fan in any other underground coal mine?

A. In my experience, no I have got any inexperience in that and I have never considered designing a mine with an underground main fan.

Q. Because of the inherent dangers with it?

A. There's a lot of issues, technical issues and management issues around it that I would have real issues about.

Q. Third, fresh air base and two things I want to raise with you really as to the relocation of that fresh air base to the Slimline shaft.

A. Mhm.

Q. And what I'd like to put up if could please Ms Basher is page SOL443047 and in fact there are two pages if I could keep them side by side /9 and /10 please.

WITNESS REFERRED TO DOCUMENT SOL443047/9 & /10

Q. Now this is the evidence of a Mr Jones of Solid Energy who made a visit to Pike on 17th November 2010, a couple of days before the explosion and he makes some comments on the fresh air base which I'd like to put in front of you and get your comment on. First on the /9 page paragraphs 39 to 41 in particular, perhaps you could highlight those please Ms Basher. "Some of the in-seam drill holes at Pike River were drained using pipes. These pipes joined a 4 inch main drainage line that ran to the FAB and then up, drilled a hole to the surface. My impression was this arrangement compromised the ability for the FAB to function as a refuge in an emergency," and goes on about gas drainage lines rupturing and he'd never seen a gas drainage line through an FAB before. I take it you would have similar concerns Mr Stewart?

A. When the refuge chamber was installed there I would have some concerns about the gas drainage rise at being in close proximity when it was there yes, that would be true.

Q. Have you seen that in any mine in your experience, an arrangement such as that?

A. No I haven't but I have to say that I don't have a lot of experience about gas drainage systems.

Q. The second thing then about that Mr Jones observed and it's the page /10 46 1, the brattice – or 45 I suppose, "The FAB was a stub cut out of the workings," and describes the floor area, "A large flap of brattice hung over the front of the stub."

A. Mhm.

Q. "And we observed the following," 46.1, "The brattice flap which hung in front of the stub neither sealed in fresh air nor stopped contaminate air from entering FAB."

A. (no audible 15:09:45)

1510

Q. And goes on to refer at 46.2, "There were no CABA sets," and so on. Some concerns about that sort of arrangement in view of what you'd been told was going to happen, that this was going to be a sealed FAB?

A. Well, yes, I would have concerns about that. The whole idea of a sealed FAB is that it is a recluse, it's a place where you can go where you're independent and you're apart from the environment that's outside that's either on fire or post an explosion, so the whole idea is for it be separated out, but I haven't got what that's written up there, so I can't actually comment exactly, is it there? What you just read out, I haven't – it's not in front of the screen. If you go through it again, I'll probably comment a bit more.

Q. I'm sorry, 443047/10, sorry, it's the next page, sorry – 45 and 46. I apologise. This is on the same visit. Can you highlight –

A. This is Mr Jones' visit you're talking about?

Q. Mr Jones' same visit on 17th November and this is in the Slimline area, the area you thought a proper refuge chamber was to be put.

A. Yeah.

Q. And he describes how it's built there and what he saw there.

A. So your question to me is, Mr Hampton is what?

Q. Did you see that as described there, that fresh air base as built, (a) it didn't fit the description you were given as to what was going to be put in the Slimline shaft, does it?

A. No.

Q. Two, unsatisfactory, isn't it? It's not a refuge at all?

A. Well, it's not a refuge, no, no, I mean that seems, the way it's described is not a refuge chamber, no.

Q. Have you read Mr Jones' evidence at all?

A. I did read it quickly but I don't recall it in great detail. I skimmed through a lot of evidence and didn't cover a lot of them. I didn't study them Mr Hampton, I've just – got to earn a living in between.

Q. Well, over and above those things about the fresh air base he makes comment about the conditions of the roadways being rough with potholes –

A. This is in the November –

Q. November 2010.

A. Okay.

Q. The drainage, gas drainage lines being low, too low and getting dented and knocked around.

A. Okay.

Q. The smell of hydrogen sulphide in the drift and so on. Those would be of concern to you given your previous audit visits to this mine?

A. They would be concerns of mine, yes, they would be concerns.

Q. Indicate that things hadn't changed a great deal, perhaps, Mr Stewart?

A. It would indicate that things hadn't improved to the level that I would've liked them to have improved, that is for certain.

Q. And if I were to go to a document, and I don't necessarily want to put it up at this stage, Ms Basher, that we used last week, which was minutes of a health and safety committee of 9th November 2010, so about 10 days before the explosion, where there is reference in those minutes to a series of 11 things, that I'll just summarise for you, it's DAO000208157, for the record, an out of service machine, a juggernaut having been put back into service without being repaired, unavailability of warm wet weather gear and replacement PPE, that's number 2, fire hoses not wound up, left lying on the floor and tardy lazy practices about fire fighting equipment, and still trying to formulate a fire fighting plan. Number 3, concern at lack of drift runners to go to and from the face; 4, a shortage of fans and vent cans for ventilations at the headings; 5, sorry, that's 5 I think; 6, the availability of new dust masks; safety eye glasses need to get new models; lack of toilets; inability to raise controls at times; no lights, flashing lights or alarms at the portal; unavailability, or lack of availability of drinking water. Those sort of –

A. These are all listed from what, Mr Hampton?

Q. From health and safety minutes of 9 November 2010.

A. Okay.

1515

Q. Those matters, those 11 matters if they were occurring would indicate again I suggest that things hadn't improved much since your audit visits in February/April 2010?

A. They're very specific and detailed on certain things, but of course that's indicative of what improvements should be, they should be improved yes. They're detailed issues and a lot of things need to be improved then obviously.

Q. Mr Wilding had put up, and I wonder if Ms Basher you could as well, STE0004/45, which was one of your audit reports following your visit 15/16 April and it's headed as the legislation, the relevant legislation's the Health and Safety Act in the left-hand column.

A. Yep.

Q. Then you've got the observation column, Mr Wilding got you to refer to the top one on the observations, but there's one further down, incident/accident reporting and follow up action systems is established. Do you see that?

A. Yes. Well that's an observation about what we – what was required under the Act, the comments and recommendations is about what I'd seen in place and what needed to be followed. It's just the way that I structured it.

Q. And then your update column's the far side?

A. That's right yes and also any suggestions that I might make.

Q. Can I take you back to the previous month's visit, the 10th and 11th of March and ask Ms Basher whether you could put up please STE0004/37 and suggest that starting at the bottom of the page there, health and safety, it's the same matters that you were referring to – I think it's identical wording a month later?

A. Is it a month later, yeah.

Q. The one that Mr Wilding showed you was a month later, this is a month earlier, this is your visit of 10/11 March 2010, sorry I should have given the date.

A. Okay yeah, all right. Which column are you referring to? The right-hand one or –

Q. No all the way across, under the health and safety towards the bottom of the page, health and safety. I can put them alongside each other, but they are exactly the same matters being noted as were being noted a month later?

A. Yep, okay, well they may have been. The nature of these reports was not so much to replace what was there, but to add on and if nothing – there'd been no progress then I'd just repeat them. the whole idea was to raise them on an ongoing basis.

Q. Which would indicate if that – between March and April nothing had happened in respect of these issues of health and safety that you were raising?

A. The ones that I'd raised and the recommendations that I'd made it does indicate that nothing had happened, yes.

Q. In your evidence in section – when you turn to the hydro-monitor operation, paragraph 33 through to 38, but particularly focusing on paragraph 37, you say, "For gassy mines such as Spring Creek and Pike River, the monitor operator should be experienced and competent. There is little room for error unless all the back-up safety systems are well established."

A. That's right.

Q. Yes. have you seen Mr Stewart the evidence filed on behalf of two men, first Mr Mason who was employed as hydromining co-ordinator at Pike, have you seen his evidence filed with the Commission Mr Stewart?

A. I have as I said the same as Mr Jones, I read through it very quickly.

1520

Q. At paragraph 5 of his evidence and the reference is MAS0001/3, Ms Basher, please?

WITNESS REFERRED TO DOCUMENT MAS0001/3

Q. Paragraph 5, and he commences employment at Pike in 2010. He says, "I had no previous experience in hydromining prior to my engagement at Pike River Coal." And if I put that then with – before I ask you a question, then /5 of the same document please Ms Basher, paragraphs 13 to 17. Can you highlight 13 to 15 please Ms Basher? "I received no formal training in hydromining. I received what we termed on-the-job training. The training was informal. 14, I was a little out of my depth, because of my lack of knowledge of the hydro-machinery and equipment. It was all very high tech." And then further down – "16, Arrangements had been made to visit and view the hydromining operation at Spring Creek to enhance my knowledge. As it transpired, I'd never actually made the visit. 17, when I arrived I viewed a general risk assessment that'd been completed in relation to hydromining at Pike. I don't recall seeing a manual at the time. I can't recall any SOP's in relation to hydromining." This is the man co-ordinating and in control of the hydromining. How do you feel about the level of experience there for a man in charge of that sort of operation, Mr Stewart?

A. Mr Mason, is that his name?

Q. Yes, it was a Mr Mason.

A. I think Mr Mason's saying that it's wholly inadequate and I would agree with him. I agree that it's inadequate training and experience to take on a role such as that.

Q. Insufficient experience to allow him to be employed there in the first place, in that role?

A. I'm not in a position to make comments like that, but if you're asking my opinion about whether his experience and his training is adequate for that role, then my answer, as I said, it doesn't appear to be adequate, insufficient for that role.

Q. If you were being asked as a consultant to advise as to whether you would employ someone with that experience in the role of hydromining co-ordinator, would you be recommending such a person?

A. I would not be recommending such a person.

Q. Well, likewise, can I look please at the evidence of Mr Wylie, who was a deputy in Pike, first please Ms Basher, WYL0001/3?

WITNESS REFERRED TO DOCUMENT WYL0001/3

Q. He relates in the initial paragraphs from about 6 on about his experience with hydromining at Spring Creek, you see that, and commencing employment with Pike, February 2009? In paragraph 9 on that page, if I could highlight that for a moment please Ms Basher, when the hydro operation – last two sentences. When the hydro operations began, the outbye deputy covered the outbye and the monitor operations. The outbye is any area that is outbye of the development or extraction faces." Can I ask you please whether you consider it appropriate that the deputy who is supposed to be in charge of the hydro operations, is also left in charge of outbye, so leaving the working face and covering that is outbye, do you consider that appropriate Mr Stewart?

A. Again, I can't comment about what went on at Pike River with regard to the hydro-monitor operation because I wasn't there but, with a hydro-monitor operation, because of the inherent hazards associated with it and because of the operational competence that's required, my desire and probably as a mine manager expectation would be that the extraction deputy was in the extraction place.

1525

Q. And not being expected to leave the extraction face and go outbye and look after things out there?

A. Outbye is a very broad term. Outbye means outbye of any point in the mine that you specify so I can't answer that because I don't know how outbye he went.

Q. You've given me the answer really I think Mr Stewart thank you. Just turning to the next page then please Ms Basher /4, at paragraph 12 Mr Wylie says, "The function of the monitor deputy was to provide supervision and guidance to the monitor crew," and that would be you'd expect to be so wouldn't it?

A. Yes it would.

Q. Fourteen, "The mine undermanager is in charge of the mine but the monitor deputy reported directly to the hydro-coordinator. As far as I knew at that time, the undermanager had no say in the hydro-operations. Our day to day activities were directed by the co-ordinator." Do you see any problem there that apparently the undermanager had no say in the hydro-operations?

A. That in itself is not a problem. It's not unusual to have a shift manager if you like, whether it be a co-ordinator or undermanager or underviewer or whatever you want to call them TAR are devoted for the extraction section and it's not unusual and for probably larger mines, it's probably normal for a superintendent or undermanager to be dedicated towards the development section. So I don't see a problem in it that sense, it's a matter of how they co-ordinate, how they communicate and all the controls around it that would be an issue.

Q. But there's also an issue isn't it, there's only one hydro-co-ordinator and he's not going to be available all the time, a 24 hour a day operation is he?

A. No that's true and you've got to have – I mean the whole idea of a 24/7 is that the people who are in there on other times are capable of handling the issues, without a doubt. It all comes down to confidence, knowledge and experience.

Q. Paragraph 15, "I had no formal training at Pike River Coal and hydro-monitor operations before I took up the position as deputy hydro-operations." Concerned that person was put into the deputy's position and I should say that back at paragraph 11 he said he was just put in there, he was just told, he didn't apply for it. Concerned that you're not training up a deputy in hydro-monitor operations/

A. Of course I would be concerned about anybody put into a position responsibly like that without adequate training to be able to carry out the task required. That's a generic comment which I would make. Again, I say that the hydro-monitor operation is a complex operation. It's got inherent hazards to it. The implications of it not going right are fairly significant, so therefore I would expect that whoever takes on a supervisory role and is appointed accordingly would be competent and trained and able to do it.

Q. Next page/5 please Ms Basher. Paragraph 19 in particular where it says, "Obviously there were risks relating to spontaneous combustion, gas management ventilation, I wasn't involved in any risk assessments in relation to those issues and wasn't shown any." Again a concern that the deputy in charge is not involved in risk assessments?

A. Yes, yes I would be very concerned if the deputy in charge was not involved with risk assessments directly related to that person's responsibilities.

Q. Further down paragraph 21, "The operator on his crew he didn't have a great deal of underground experience, had no prior hydromining experience, I'm not sure how much general mining experience he had, he didn't have a gas ticket." 22, "The trainee had no face mining experience prior to going on to the hydro-operations." Does this touch on the green horn aspect – that latter paragraph anyhow that you're talking about?

A. That's a real issue. I mean, as I said in my brief to me the monitor operator has really got to be skilled, experienced and know what the person's doing. It's just such a crucial job.

1530

CROSS-EXAMINATION: MR RAYMOND

Q. Mr Stewart, just a couple of questions. Firstly, you mentioned in your evidence-in-chief the mentor role which Mr Dow initially raised with you as something he'd like you to possibly take up at Pike. Is it the case that it actually – an actual mentor role wasn't taken up?

A. The mentoring role was a term that I, you know, commented on because I couldn't actually remember exactly how the conversation went, but my impression was that was what we were talking about was a mentoring role. Did I take it up in that sense? The scope of work did change as we went on

and what I ended up responding to was the two bullet point if you like that I received from Mr White via email around about February 15th, something like that. So, answer your question, no I didn't mentor, mentor meant I would've spent a lot more time underground working with the crews.

Q. But when you first raised it you didn't have yourself in mind as being a mentor, you were suggesting that there might be someone local who could be good to act as a mentor?

A. It was a general comment.

Q. Did you have someone in mind for that role?

A. Well as you saw in my email, I didn't, no. I was talking about what I thought was probably necessary for someone to work alongside the crew who were familiar with the coast, who were familiar with the different situations and problems that were dealt with. I didn't have anybody in mind particularly at that time.

Q. When you discussed that with Mr Whittall you – did you gain some sort of negativity from him in relation to that role, that it wasn't something that he wished to pursue further?

A. I got the impression that Mr Whittall wasn't interested in that so much as the compliance side of it. That was the impression I got, but again that conversation I didn't make any notes so I can't give you any details about what went on.

Q. When you discussed with Mr Dow the issue of high turnover and morale being low, was there any discussion that you can recall that it might be – the email referenced to be candid about the source of those sorts of problems being the senior managers then in place, Mr Whittall and Mr Ward?

A. I don't think I've commented about Mr Whittall and Mr Ward. I don't think so, but again I can't recall. When I – the word "candid" was Mr Dow's word not mine and I was trying – I actually was trying to figure what it – what is it that I said that he interpreted as being candid and I honestly don't recall 'cos what I recall was what I actually put down in the brief.

Q. Well did you have a view at that time about whether or not Mr Ward or Mr Whittall might be a contributing factor to the morale issues?

A. I had a view, a personal view yes.

Q. Which was?

A. I thought, certainly Mr Whittall was a contributory issue, yes.

Q. Therefore is it possible that that's the sort of comment you might've made to Mr Dow?

A. I don't think I would've said that to Mr Dow at that time. I don't think so and – I don't think so.

Q. Moving to egress.

COMMISSION ADJOURNS: 3.34 PM

COMMISSION RESUMES: 3.52 PM

CROSS-EXAMINATION CONTINUES: MR RAYMOND

Q. A couple of questions to go Mr Stewart, firstly the question of egress again and in your evidence you said that you formed the view that it was not achievable but that you were I suppose pleased to hear that a refuge chamber would be built in the area of the Slimline shaft, is that a fair summary?

A. That's correct.

Q. And you had discussions with the underviewers about that?

A. Yes I did, yes.

Q. That was the extent of your discussion?

A. I may have mentioned it to Mick Lerch, I can't remember, but I put it in my reports of course, so they went through to the senior – the three senior people that were the recipients.

Q. And your last visit was on the 23rd of April 2010?

A. Yes.

Q. And nothing had been done in relation to the refuge chamber at the Slimline as at that date?

A. Not the refuge chamber, the drop flap was in the process of being constructed as I recall, but the refuge chamber no, it was still in the main drift.

Q. And was it of concern to you as at that date that things were still left in the state that they were?

A. Yes. It was – of course it was a concern I mean the reason I raised it was because it was a concern so therefore because it wasn't – nothing had changed it was still a concern.

Q. Of course.

A. Of course.

Q. Did you pass wearing your MRS hat which in your evidence you've confirmed you were chairman of, did you pass that information through to MRS either formally or informally?

A. I certainly discussed with the general manager the fact that I'd made that observation because he'd also mentioned to me that he'd made similar observations. I don't know if it was around the same time, you know, I talked

to the general manager Trevor Watts frequently as chairman. We discussed many things, but formally, no I didn't write them a letter or send an email as far as I'm aware.

Q. But the information was conveyed, as you say, through that informal chat?

A. As far as I recall I discussed all that stuff, yes.

1555

Q. I asked Mr Watts this during Phase Two and given that you're here and given with Your Honour's leave it's a slight Phase Two type question. But it's a looking forward question as to possible recommendations by this Commission. If MRS had the ability to play some sort of compliance or regulatory role on matters relating to emergencies, egress, smoke lines, fresh air base, refuge chambers and the like, is that something that you would like to participate in or be consulted over?

A. If you're referring to mines rescue being a regulator I don't agree with that in principle. As far as a regulator as being involved in consulting on what are the best options and if there's some structure around that part of it, I think that would be very beneficial. I just don't see the Mines Rescue Service in the role of a regulator.

Q. You'd rather respond to a situation that...?

A. Well no, I'm not saying that. Mines Rescue is by its nature an emergency preventative organisation as well because that's a lot of what we actually do as an organisation, is to try and put up systems in place so therefore there is certainly a position for consultation and advice, but being a regulator is quite another step and I think that obviously will require a big change in the way that the Mines Rescue Trust Act is and it would be a change in philosophy if you like of the service.

Q. Are you concerned though that people like Mr Watts and others within Mines Rescue go into a mine such as Pike River or others and make observations, see that things aren't up to scratch if I can put it like that but really don't have any ability to do anything about it. They lack teeth. Is that of concern?

A. It is an approach which I wouldn't rule out completely, I have to say that. It's just to me the role of Mines Rescue is not there for that purpose. That is a responsibility of the operation to set up their operation in a position or a

situation where they can respond accordingly and the facilities are available and the training, all those other things around it. Mines Rescue certainly should be involved in advice, monitoring, checking to make sure that everything's up to scratch, those sort of things for sure and that is a service that I would see an emergency response organisation like Mines Rescue have an ongoing basis and maybe enhanced involvement. But again, to be a regulator is another sort of magnitude step to me.

Q. Finally just on the hydro-monitor system and you've given evidence about what happens at Spring Creek and your knowledge generally of that process, you talked in your evidence at paragraph 38.2 about dilution doors.

A. (inaudible 15:57:57)

Q. And how they work and the necessity for that, there is evidence before the Commission yet to be given, but to the effect that prior to the commencement of work on that trial panel at Pike River, dilution doors were to be fabricated, installed and commissioned before commencement of extraction operations. As it transpired they were fabricated and installed but not commissioned, therefore operating at the time coal was being extracted from the bridging panel. Have you got a comment on that?

A. My comment is as I said in my evidence, is if you've got a hire pressure hydro-monitor system as was being installed in Pike River and you've got a gassy mine that you're installing it in and going to operate it at, you are going to get a high gas make and you are therefore going to have to put in place management systems whether they be physical training or otherwise to be able to deal with whatever happens. So, with regard to the question of dilution doors, there's two things really with regard of the physical if you like. One is what I said about the sensor being operated in the bleeder road or the return road, with a direct link to the operator who can operate the monitor accordingly. The second one which goes hand in hand with that, they're not exclusive, they're both together, the operator it doesn't matter how good he is, is going to find at some point in time and several points in time where he or she will not be able to control the amount of methane that's going to go into the bleeder road. There's a number of things that can happen. You can have a fall, you can have an omission that you just don't have any control over, so you can only end up with a plug of methane going into the return. He or she won't

be able to act quick enough to control that. There has to be a backup system. The dilution doors, one set of dilution doors allows an automatic trigger that if it's activated you'll get short circuiting of the air and you'll get that dilution effect, as I described, so to me it's a requirement, you have those, they go hand-in-hand. The hydro-monitor controller operator his ability, or her ability, sorry being PC here, I suppose, the ability to be able to handle this sort of stuff and then a backup in the event that they don't handle it.

1600

Q. Because if there is a significant rockfall and therefore – I think the term is "windblast", is that right?

A. Well, depends whether you're a hard rock miner or a coalminer, whatever happens, you get large displacement of the atmosphere inside the goaf.

Q. If it was a significant fall and it was on the side of the intake road or the bleeder road, and the operator standing in this case at the guzzler unprotected, is the potential to be overcome and not therefore be able to operate the dilution doors?

A. The operator doesn't, well the operator – in a good system, the operator doesn't operate the dilution doors. The dilution doors are activated by a sensor sending a trigger signal to – they're usually pneumatically operated, which will then automatically open them up at that pre-set dilution level.

Q. Yes.

A. So the operator actually doesn't have to do anything. This big plate of methane goes out, the sensor goes, "Oh, I don't like this," opens the doors. That's how it works.

Q. And would you be concerned if coal was being extracted as in this instance from the bridging panel without the dilution doors having been commissioned in operation?

A. By bridging panel, you mean that extraction, the extraction place?

Q. Yes. It was called a bridging panel.

A. Well, as I said, if it's producing a high gas make, and it's a hydro-monitor, high pressure, then you need those two safety systems in place, in my opinion, before you'd operate and before you'd run it. The risks are substantial. There's a lot of gas going out, needs to be managed.

Q. And how quickly do the dilution doors open once the sensor had been activated?

A. You'd have to talk to an expert about those things, pretty immediate. In other words, if the signal goes, they will operate. They will open up.

CROSS-EXAMINATION: MR HAIGH

Q. Mr Stewart, I act for Doug White, so can I ask you to turn to page 19 of your brief please, paragraph 41.2.

WITNESS REFERRED TO BRIEF PAGE 19

Q. Just a matter of clarification, that you seem to have here, although I noted in your evidence that you may be changing there, and it's only clarification that Mr White was around January/February of 2010, the statutory manager, the underground manager. Was that your understanding at the time?

A. I didn't say that in this. 41.2.

Q. Well, what was your –

A. I see that. No, what I said was I believe Mr White became statutory mine manager as soon as his New Zealand certificate of competency was granted.

Q. Right, well, just so I can let you know what the evidence is, is that when Mr White joined the company in the 18th of January, he was appointed operations manager?

A. That's correct, yes.

Q. So you understood that, did you at the time?

A. Yes, yes, absolutely.

Q. And that he became statutory manager well after, well, after you'd left in June, the 12th of June 2010? You understood that?

A. Yes, that's when I understand he was issued with a New Zealand certificate, that's correct, that's what I understand.

Q. Fine. So, during the whole time that you were there, during the course of your audits, it was Mr Lerch who was the underground manager and the statutory manager?

A. Well, I wasn't sure, that's probably where the confusion comes from. Mr Lerch didn't get his New Zealand certificate of competency until the period when I was there and I am actually not sure when it was, because I do remember seeing it being issued. He actually showed me it. He said, "I've just got this

through the mail." And I can't remember when it was, but it was after I'd started, and so therefore he wouldn't have been appointed – well, he wouldn't, he didn't have his first class ticket at that time. He got his through the Trans-Tasman Mutual Recognition Agreement, which you may or may not be familiar with and the process that went under that. I think he got it either at the end of March or some time at the beginning of April. I'm not sure.

1605

Q. All right.

A. So my answer is that if he didn't have a ticket, New Zealand one, I don't know whether he was appointed prior to that as acting statutory mine manager or not. He may have been.

Q. The main thing I wanted to clarify was that you understood that Mr White wasn't the statutory manager during the period that –

A. That was my understanding and I thought that's what my brief said, obviously not.

Q. Did I understand from your evidence that it was Mr White really who took a leading role in trying to change the apparent non-compliance of some of the staff or officials underground?

A. Yes that was my understanding.

Q. And indeed if we look over to – Ms Basher if you can call it up please, CAC0138/5.

WITNESS REFERRED TO DOCUMENT CAC0138/5

Q. This has already been referred to once if not twice, you've got that before you. Can you look at the third paragraph from the bottom beginning, "May I suggest…" You have that in front of you?

A. Yes I do.

Q. That seems to suggest some concern by Mr White that his officials who he describes, "are simply not coming to grips with the fact that there are a number of concerns relating to non-compliance in the mine."

A. That's the way I understood it then, yes.

Q. And indeed it indicates that – it says that, "They need to realise non-compliances and organise to fix them instead of having to be spoon-fed."

A. Yes that's what it says.

Q. Did he reflect his concerns which is within one month of being employed, orally to you about the non-compliance of his officials as well as indicating that in this email?

A. I think we certainly would've – again, I can't recall all the conversations and that's probably a problem, we would've discussed that when he wrote this email to me and when I went back 'cos I said that I would re-adjust things accordingly. There was no doubt that he was concerned, that's clear.

Q. And indeed he was the leading light in terms of compliance with safety requirements in the mine?

A. He, yes as I said in my, my brief, I was very pleased with his approach. I liked what he said and it also said that he was perceived that way as bringing about change within the actual workforce itself. So a lot of positive comments about Mr White.

Q. Now can I ask you please to turn to paragraph 30.1 of your brief.

A. 30.1?

Q. Yes please and this is where you record that you don't support main fans being located underground in gassy coal seams and certainly not where the PRC fan was to be located. Did you tell any of the – any of management about that?

A. I don't know whether I did specifically, that was a personal view that I had at the time. I did talk to the underviewers when I went in there, there was probably two of them that I discussed into that area. I've got an – I think I talked to Mick Lerch about it actually also, when I was in that place, where it was going to go. Because, towards the end of when I was there the – there was a crew in there starting to re-stabilise if you like the area. There was an awful lot of bolts in that section, intersection anyway. It was bolt – there was more steel in there than there was coal and there was more glue in there than there was anything else, so it struck me at the time there didn't seem to be a lot of point in putting more, more stuff in there to try and stabilise the grout. I did discuss it with the underviewers. I'm pretty sure I talked to Mick about, why are you putting it here because I didn't think it was a good place. It wasn't an issue that I took up because it wasn't a compliance issue with regard to the regulations or the legislation. That was the reason why I probably never took it up in a more formal way.

1610

Q. Even though it was a matter that concerned you?

A. It was my personal and professional concern. It wasn't a legislative concern.

CROSS-EXAMINATION: MS SHORTALL

Q. Mr Stewart, I act for Mr Dow together with other officers and directors including Mr Whittall as well. I just have a couple of matters I want to clarify with you. Now you've said that you were approached about these compliance audits in 2009 by John Dow, Pike's chairman at the time, that's right isn't it?

A. That's right yes.

Q. And Mr Dow presented to you as someone who took health and safety seriously didn't he?

A. Yes he did, yes he always (inaudible 16:10:49)

Q. And he was engaged with what was happening at the mine?

A. Again I'll have to go back to what I said before. That meeting is all a little bit vague to me in the sense other than what I reported, so I don't remember the details but my impression and any conversation that I had with Mr Dow indicated that yes, he was concerned about what was going at the mine. The health and safety side of it was not something that – I don't recall we discussed. It was more about the issues of as I've said in my report, the frequent turnover, the lack of hitting targets, those sorts of issues and the morale. Now the morale of course is a broad term which could apply to anything.

Q. It could include health and safety as well?

A. It could include health and safety.

Q. And Mr Dowell wanted to work on improving operations at the mine didn't he?

A. Yes.

Q. And he suggested to you that contact be made with Mr Whittall, right?

A. Yes.

Q. And that was towards the end of 2009 at which time do you recall that Mr Whittall was acting as the mine manager?

A. I thought – when you say, "acting,' you mean statutory, had the statutory role?

Q. Yes, yes.

A. I thought that he was because at that time he was the only one on site that had a first class New Zealand certificate of competency, other than Liz Marnane.

Now I don't, the thing is that I don't know who was appointed to the Department of Labour and I'm sure there's a lot more people in this room will know that than I. I wasn't sure at the time. I expected him to be the statutory mine manager as he was the most senior person there.

Q. And in any event you arranged with Mr Whittall to undertake these underground compliance orders, right?

A. I –yes, we discussed it as I said in my brief. I actually arranged to meet with Mr White to discuss further how we would do it. The conversation with Mr Whittall was pretty brief from my recall so it was really a matter of okay I meet up with Mr White and then take it from there.

Q. And the purpose of these audits was to check whether Pike was complying with New Zealand legislation relating to mining, right?

A. That was the prime focus of that part of it and as you may have observed, within the reports, the rolling reports that I did were findings against specific parts of the Health and Safety in Employment Act. I also looked at the HSNO Act primarily round classes 1 to 5 related to explosives and that was primarily around procedures et cetera and I also looked at the Resource Management Act quickly just to see how they were dealing with that, but the big focus was the Health and Safety in Employment Act and the regulations under it, yes.

Q. So you would agree with me that the company of its own volition had retained you as a consultant to conduct audits to check that it was complying with New Zealand legislation relating to mining, right?

A. At that period, yes.

Q. And you would agree with me that retaining you in that role indicated that the board and senior management took compliance with its health and safety obligations seriously?

A. Yes, yes absolutely otherwise they wouldn't have employed or asked me to do the work.

Q. Yes hardly the action of a company that was lax on safety is it?

A. Well I can't comment whether they're lax on safety, but certainly their intention to deal with the health and safety issues were evident by asking me to go and do the audits as I did.

Q. Now you mentioned that your work programme involved a compliance audit of surface and underground, do you recall that?

A. The original one, yes it was yes.

Q. And I'd like to show you a document, perhaps Ms Basher if you could bring up the compliance document. This is a document Mr Stewart that was found in company files that appears to be a handwritten note on the first page. And then Ms Basher if we could also bring up the second page just side by side, see if Mr Stewart recognises it.

WITNESS REFERRED TO HANDWRITTEN NOTE PAGE 1

A. Oh I recognise that because that's my writing.

Q. And if you just look at the second page sir, I'll put a specific question to you.

WITNESS REFERRED TO HANDWRITTEN NOTE PAGE 2

1615

Q. Now the second page that's shown on the screen, there are several other pages that follow this in the complete document.

A. That's right.

Q. Do you recognise this document located in company files as a copy of your work programme?

A. Yeah, that's the work programme that I drafted initially and put forward to Mr White. And as – it is a lot more detailed because what it does it goes through all the specific things that I intended to look at during the course of that audit and that was the intention of the whole thing. So it covers a whole range of things and also within that there was the mentoring role if you like that I'd planned on doing as part of all that.

Q. Just for the sake of completeness I'll produce this as an exhibit. Exhibit 35.

EXHIBIT 35 PRODUCED – HANDWRITTEN NOTES

Q. I just have a couple of specific questions about this document now that we have it. Would you agree with me that putting aside the mentoring piece that you've already talked about in your evidence that the compliance audits that you conducted were largely consistent with the work programme that we've got here as exhibit 35?

A. The – well what happened subsequent to this was that email that I got from Mr White where he specified in that email the two issues that he wanted me to deal with. And that was what I based my work programme on after I received that email which was around the 15th of February. But, to answer your question, what I did was that I still used this really, not this specifically, but I

used the reference to the legislation which is what this is based on as my reference point as I was going through and reporting on the audit. And so the rolling reports, everything wasn't covered, but what I considered the main things that I felt should be raised to the senior management attention at that time, was covered to my satisfaction at the time and as I said I expected it was to the satisfaction of Pike River also.

Q. I'd just like to take you to four particular mentions in this compliance programme Mr Stewart and confirm whether or not you recall actually doing the work. The first one's on the second page of the document that's already on the screen and if Ms Basher could just highlight the second to last bullet point at the bottom of that page so it's easier for us to see. And there's a reference there to part of your programme involving statutory compliance issues relating to support vs ground conditions and application cleat geological conditions, fault, face conditions. Do you see that Mr Stewart?

A. Yes of course.

Q. Do you recall as part of your compliance audits, looking at that issue?

A. I have to say and on a walk around inspection I would have looked at the cleat of the coal, yes I would have an interest to see how the coal was laying for sure, because it has an impact on cutting effect and also stability. Geological conditions of course I did. One thing you do when you go into a working place is look at what the place is like. Faults, I identified faults, they were obvious there, there was a heap of them. There was full faces of stone. Face conditions, yes. So yes, yes, yes and yes.

Q. Did you obtain any documents in addition to just your underground visual inspection at the time?

A. Well I did and as I said earlier I didn't – I intentionally didn't go through all the management plans including the strata management plan which is what this would've involved and any standard or safe operating procedures around that. I didn't do that, nor did I look at the TARPs that they had in place and they did have these things in place because generally as I said in my, as I said in my comments I was actually quite happy with the way that the ground was supported. There was a lot of steel in that area, as I said there was a lot of steel still going up and probably in some places it didn't need that much steel.

So I really had nothing to comment on. I mean I suppose I could of comment – well I did comment that I thought it was actually satisfactory.

Q. If I could turn you to the next page of this compliance programme, exhibit 35, which is the third page of the document. There's a reference there, there's a bottom box, maybe if Ms Basher could highlight that for us, and in the fourth bullet point down there's a reference to "Checking statutory compliance issues relating to face machine operation," I'm reading from the document, "skill levels, face behaviour and safety, no-go zones, pinch points, visibility, crew working activities, housekeeping, noise levels, dust." Do you see that Mr Stewart?

A. I do. Every time I went into a working place where there was a machine operating, whether it was a roadheader or a continuous miner, I would observe, or one of those things, everyone of those things, but whether I reported on them is another issue.

1620

Q. But part of your compliance audit work was to check matters such as housekeeping, right?

A. Yeah, yeah, when we're talking about checking, I didn't go in with a big checklist and tick, tick, tick, tick. It's not my nature. I didn't do it that way and I didn't intend doing it that way and I informed Mr White that I wasn't going to do it that way, so all of these issues I would've observed and made comment about. No-go zones are related to where you stand when you're operating a machine, so that you don't get hit with anything that's moving, so that's really what, you know, those sort of things are about. Yes, pinch points, you know, of course I checked them, obviously had nothing to report. I wasn't – I have to say, I didn't tend to report on every little detail. This was a brief that I drew up as a draft, and as I said before, what I ended up operating to was the two bullet point email that I got from Mr White.

Q. Can we just ask you about two other issues in t his document Mr Stewart, then I'll move on. On the same page we have highlighted, just the second to last point, at the bottom of this page, there's a reference to, and I'm reading from the document, at exhibit 35, "Talk to crews about awareness of emergency situations – gas, ignition risk, ventilation failure et cetera." And my question to you is whether you recall talking to crews about those matters?

A. Yes, I do talk – when I'm talking to crews as a general term, doesn't mean to say I get all the crews out, take them out of the face, sit them around the crib room and have a little lecture to them. It wasn't like that at all. When I'm saying "talk to crews" it means I go into the working place and the operator might be operating the machine. I might have a talk with him. Just see how things are going. It might be somebody operating the LHD, is taking material away, I might just talk to him if he's stopped. So, I talk to them, but whether I actually – I don't, probably didn't go through a little tick list saying, "Ah, right, I'm going to talk of the emergency situation with this particular miner right now and we're going to go through all this." I wouldn't have done that. It was a conversation. If you want to get people to talk to you, you don't come up with a big list with a checklist and tick it all off as they open their mouth. They tend to not talk. The idea is to converse and that's what I did.

Q. I just want to ask you one more question on this document, it's the fifth page, exhibit 35 and in the middle section of this document, if Ms Basher could bring that up please? There's a reference to a check of statutory compliance issues relating to, and the first bullet point there is "Emergency response procedures and capabilities – site first response, training, equipment, maintenance et cetera." And my question to you Mr Stewart is whether you recall doing this work as part of your compliance audits in early 2010?

A. I didn't do this part of it. Well, the emergency response procedures, I don't recall looking at those as such. I did go into the surface control room and I talked to the controllers and I think they had a emergency response system in place, but I didn't go through it in detail. With regard to the other points in there, I sort of covered them and I knew some of them anyway.

Q. That's my last question on that document. That can come down, thank you. Now, when you were underground at Pike, would you agree with me that you had broad access to any area of the mine that you wanted to check?

A. Yes.

Q. And in doing your compliance audits for Pike, would you agree that you looked broadly across the legislation that may apply to mining in New Zealand?

A. You referring to health and safety or broadly in the sense of the Resource Management Act, the HSNO Act? I dealt with the things that I felt were relevant to the mine or mining operation. So, for example, if you're

talking about the Resource Management Act, what I did was that I had a meeting with Ivan Liddell, Mr Liddell and I can't remember who was his assistant – or sorry, not an assistant, who he was working with and I talked with them. I went through the resource consents, quickly, you know, just randomly. I was actually very satisfied. I mean they managed the environment very, very well and they had really good processes around that. The only thing I really dealt with in the HSNO Act was obviously explosives because it's such a massive important issue, so I went through that as I said in my findings. And I was generally satisfied with all the way that was managed. And the other thing was spell kits and all that sorts of things and I, yeah, I dealt with those in a sense to my satisfaction. I thought all that part of it they had a pretty good handle all around actually.

1625

Q. Is it fair to say Mr Stewart that if a matter is not identified in one of your audit reports, you didn't identify that matter during your audit work as being inconsistent with New Zealand legislation relating to mining?

A. I don't think it's fair to say that as a broad statement because I was there and taking sort of observations as I was there. I wouldn't admit to being seen everything that went on at that mine. It would be not possible. I'm probably saying similar things to what I have heard the Department of Labour inspectors say. You can only do a snapshot of when you're there and even though I was there frequently over a short, relatively short period of time, I observed as much as what I deemed to be things that I thought should be reportable. There probably was other little things that I didn't report on, but again the big issue to me was to make sure that I identified what I thought was significant to the senior people within the organisation, because those three individuals were the ones who would have the most influence obviously to an operation like that and report accordingly. So I didn't – I would never have picked everything up.

Q. And that report in process involved the completion of the audit reports that you circulated by email, is that right?

A. Sorry I don't understand the question.

Q. Well I'm just trying to understand Mr Stewart, the process by which you described that you identified things that you thought were significant.

A. Yep.

Q. You then wrote about them in your audit reports?

A. That was the essence of it yes.

Q. And you would agree with me that at least some of the general comments you've made in your evidence today are nowhere written in your audit reports, are they?

A. It seems that's the case, yes. so they're obviously from recall that I had. I didn't write everything down. I've got notes in other places somewhere I mean.

Q. Now you completed your consultancy work for Pike doing these compliance audits in late April 2010, right?

A. Well the last visit was 23rd I think I sent that last email 24th, 25th the one where I said that was it basically.

Q. So approximately seven months before the November 2010 explosion, right?

A. That's right, yes.

Q. And you didn't go back underground at Pike during that seven-month period, did you?

A. No.

Q. So you have no direct knowledge of whether any of the matters you observed during your audits remained issues at the time of the November 2010 explosion, do you?

A. No I don't, no.

Q. They may well have been resolved at least in part in that seven-month period, right?

A. Yeah, they may well have been. When I left I actually expected some of them to be dealt with.

Q. And in fact a number of the compliance matters you observed were corrected or resolved even before your consultancy work ended in April 2010, right?

A. That's right the one's I reported on they were changing, yeah.

QUESTIONS FROM COMMISSIONER HENRY:

Q. Mr Stewart I've just got one question about stoppings. I understand from what you say that these are structures which are designed to keep fresh air and polluted air separated. Is that correct?

A. As ventilation devices that's what the purpose is.

Q. As part of the ventilation system?

A. Yes.

Q. Were you satisfied at the time of your final audit that the stoppings were of sufficient quality?

A. No I wasn't, but I was satisfied that some changes were coming about and I had seen one that was less that desirable that had been reconstructed and been keyed in quite effectively into the ribs and was very stable. I mean I did very basic things, I go and push them and if they rock there's a problem. So it's things like that – there was one or two that were improved. The leakage where in the south section where there was recirculation going on and I didn't measure it because I could see it, had been corrected. So some of them were being improved, but I still felt and that's why I had made a suggestion early on that there needed to be a training regime introduced, which was more practically based underground rather than just sitting in a classroom and showing them what a diagram, how to construct a stopping. It's pretty fundamental stuff to me.

1630

Q. And I think you told Mr Wilding, if I heard you right, that in your discussions with underviewers on this subject that they were knowledgeable but their focus was elsewhere. Did I hear right?

A. That's right yes they were. They were –

Q. What was elsewhere then?

A. Oh the focus was on development places getting the development going on. They fixed them, when I raised them as I said they responded as best they could but they were more orientated on making sure that the production places were going because as I said in my brief towards the end there, the underlying pressure and desire to get the mine ready and capable of going into production seemed to underpin a lot of the activities.

Q. Did they tell you that or was that just your impression?

A. Again I wouldn't be able to quote you, but I think my recall is in a conversation that said yes, that focus was elsewhere. Not that they weren't wanting to fix them, it's just that that's what they were doing, but as I said they did respond. I was quite impressed with most of the underviewers, I thought they were dedicated and knowledgeable.

QUESTIONS FROM COMMISSIONER BELL:

Q. Now Mr Stewart, when you were doing your audit did you speak to Neville Rockhouse at all?

A. I don't think I – well I did in the corridor at various times but I didn't have a lot of conversation with Neville Rockhouse about it. Again, Neville will probably know better than I. I just don't, I don't think I had a lot of formal discussions with him but I certainly talked with him but was not –

Q. Did he raise any concerns with you about health and safety matters at Pike?

A. No I don't recall directly, no.

Q. Do you think he should've had a bigger involvement in what you were doing considering he's the health and safety manager?

A. Yeah obviously in retrospect, I don't really know why I didn't think about it at the time. I think the reason why I didn't really focus on that part of it was that I was doing this for Mr White primarily and reporting accordingly, so I expected that Mr White would then as the senior manager on site deal or take those any issues that I raised directly with his own team. That was my expectation. If I was the mine manager that would be what I would want to do, so and as I said in there, I was very much aware that Mr White and Mr Lerch had only recently been onsite and I've managed mines myself, okay granted quite a few years ago, and I was always a little bit sensitive that I didn't want to go in there and start and pushing if you know or overriding if you like that authority that the mine manager had. I felt that as a mine manager Mr White, or the operation's manager anyway, Mr White needed the time to be able to bring his own team together. So it was a bit of both really. But you're right I don't think I talked to Mr Rockhouse a lot about it at that time, but I did talk to him.

QUESTIONS FROM THE COMMISSION:

Q. Mr Stewart, just one matter of detail, at 28.4 of your witness statement you were speaking about the face machinery, the continuous miner and roadheaders, and you have the sentence, "I heard stories about methane sensors being overridden," I just wanted to be clear about this. Was that internal to the company or external?

A. I think it was external, I think it was basically what maybe common knowledge comments that I'd heard through my involvement you know, with the miners,

probably comments maybe that came from trainees at various times. I can't recall whether somebody said that to me underground or not but when I was there I was aware that there had been rumours if you like, stories about that, so that was why I really commented and I made a point of noticing that when there was a trigger which there was I think it was twice, the deputy actually went to release the interlock.

1635

Q. So just to put it fairly, so far as you're aware, it's external to the company and something you didn't see for yourself when you were conducting –

A. I didn't see it myself whilst I was there.

RE-EXAMINATION: MR FORSEY – NIL

QUESTIONS ARISING - NIL

WITNESS EXCUSED

MR STEVENS CALLS

CRAIG LINCOLN SMITH (AFFIRMED)

Q. Mr Smith, do you have your statement of evidence of 9 November with you?

A. I do.

Q. Could you commence reading it and unless directed otherwise by His Honour, just avoid the numerical references for documents?

A. "I have made two previous statements for the Royal Commission in the Pike River Coal Mine tragedy. An institutional statement on behalf of Solid Energy New Zealand Limited for Phase Two dated the 23rd of August, 2011 and a supplementary statement for Phase Two dated 18th of October 2011. I confirm that I have the experience and qualifications set out in the statement. I have made this statement at the Commission's request. By letter dated 12th of October 2011, the Commission asked that Solid Energy New Zealand file evidence addressing various subjects related to underground coalmining using a hydraulic monitor. Aside from a general explanation of hydraulic mining, this statement focuses on how some of the risks around hydraulic mining are managed by Solid Energy. The production aspect of hydraulic mining are not discussed in any detail. I have also deliberately tried to avoid this statement being overly technical. Coalmining is however a hugely specialised and technical occupation. The issues discussed below from identifying and assessing risk through to the design implementation of controls require input from a wide range of different specialist/experts and a great deal of technical work. While I am very familiar with them, I am not personally expert in many of the matters required to safety design, build and operate a hydraulic mining operation. The balance of this statement cover the following: A general explanation of, and introduction to, hydraulic mining; the use of hydraulic mining in New Zealand and overseas; the risks specific to hydraulic mining; the expertise involved in hydraulic mining; the steps Solid Energy takes to hydraulically mine safely at Spring Creek Mine; an underground mine visit to Pike River Mine made by four Solid Energy employees on the 3rd of November 2011. Pike River Coal Mine Limited requested this visit so that Solid Energy could observe and hopefully provide advice on the cutting technique of the hydraulic monitor operators. This section is an institutional statement, as I have been advised is allowed before by the Commission's practice note

number 1. It records the collective observations of the employees who visited Pike River. These employees have all read the relevant section and agree with it. I, myself, do not consider or comment on the practices or equipment at Pike River. I've never been underground at Pike River and I do not know how hydraulic mining was conducted by Pike."

Q. Just pausing there Mr Smith, the section headed, "Hydraulic mining basics," can you just confirm that hydraulic mining is also known as hydromining?

A. Yes. Just to clarify, I think hydromining is a common term used, at least on the West Coast of New Zealand, I don't know whether it was invented there or not, I think, I understand hydraulic mining to be the technical term for high pressure, cutting of the coal using high pressure water, whereas hydromining is a common term that originated when water was used for transporting coal from the face using other methods for the actual mining operation. So I think there is a distinction. I think that probably the terms are interchangeable on the West Coast.

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Q. Thank you. Could you continue reading please at paragraph 6.

A. "Water has for a long time been used in some underground coal mines to help transport coal. This has included both mixing water and coal to create a slow for fluming and pumping as well as using low pressure water to wash coal broken up shotfiring away from faces. From the 1930s onwards small underground mines in New Zealand, principally on the West Coast of the South Island transported coal as a slurry in wooden or steel flumes. Coal was won by blasting, shotfiring and washed into the flumes using low pressure water from pipelines to the face. This system is known as hydromining. It had the benefits of increased coal recovery and thick seams, a reduction or elimination of shovelling and perhaps an improvement in the productivity than the lower costs than through hand mining methods. The coal slurry either flowed in flumes or was pumped to a de-watering plant located at underground stations or on the surface. The slurry was typically dewatered across static or vibrating screens and the water recovered for reuse. The de-watered coal was transported conventionally by boxes on a ropeway or by conveyor. Hydraulic mining is a mining method that involves using high volumes of water at very high pressures to cut the coal. Underground mines including hydraulic mines

are normally laid out in mining sections. Each section is broken down into subsections commonly referred to as panels. In general a hydraulic mining panel consists of three to five parallel roadways with approximately 30 metres or 30 metres between there centres. The panel is typically between 300 metres and 500 metres long and 135 to 150 metres wide. At Spring Creek the dominant faults determine the size and orientation of the hydraulic mining panels, but it is ideal for the panel roadways to be sublevels, oriented slightly off strike so that the floor grading is between 5 degrees and 10 degrees to allow the coal to flow as a slurry and the gravity. Panels are extracted on the retreat maintaining a roughly straight goaf edge and extracting in a series of 20 metre by 25 metre lifts or blocks starting with the bit closest to the return side of the panel. The monitor is positioned in supported roadway and extracts the entire lift from this fixed position. Operators control the monitor from a remote cab usually positioned approximately 20 metres and at least 14 metres out by the monitor itself. The monitor will cut coal from the full height of the coal seam creating a large void between and in front of the parallel roadways. Typically the stone roof will collapse into the goaf soon after the extraction of each lift. Panels are designed so that the roof of the goaf progressively collapses after the coal has been cut. After a line of lifts has been extracted across the full panel width, the monitor retreats to a new position further back down the intake roadway so that the same process can be repeated for the next line of lifts."

Q. Just pause there Mr Smith. Ms Basher could you put up please 446723/6.

WITNESS REFERRED TO DOCUMENT 446723/6

Q. Mr Smith could you just confirm that the figure that's gone up on the board is merely illustrative?

A. Yes it's a conceptual diagram to explain the process and the features involved.

Q. And typically for instance would have more lifts and would have a lot less straight lines?

A. Yes it's a lot less regular as it follows the topography of the coal seam itself.

Q. Thank you, could you continue reading please at paragraph 16.

A. "While hydraulic mining has various advantages over underground mining methods that are more common overseas such as Longwall and board and pillar as well as some different challenges, the fundamentals remain the same.

The layout of a hydraulic mine must make appropriate provision for men and materials, ventilation and coal transport. This must be achieved in the context of the size and the shape of the deposit, the geology encountered and the need to ensure that the mine can operate safely, productively and profitably. The layout of a hydraulic mine will especially take account of how the seam dips, so a production recovery are maximised and the transport of coal takes advantage of gravity wherever possible. In hydraulic mine the aim is to drive sufficient panels so that the hydraulic mining production phase can be maintained more or less continuously with a minimum of down time. Hydraulic mining is therefore a two-step process. The first step is the development of roadways, panels and the installation of infrastructure. The second step is the hydraulic mining sequence phase. It is standard practice for all hydraulic panels to be mined and retreat sealing the goaf when the panel is fully recovered.

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A. As with many underground Longwall operations often the major operational challenge of hydraulic mines is to maintain and develop extraction panels to ensure a continuous production. This has been a particular problem at Spring Creek where development has sometimes lagged behind expected rates and there have been gaps between extraction panels of some months. To Solid Energy's knowledge underground and hydraulic mining was pioneered post-World War 2 in the Soviet Union. The method has since been used in various countries including China, Canada and Japan. As described below Solid Energy adopted hydraulic mining technology from Japan. Solid Energy understands that hydraulic mining has now ceased in Japan and Canada but that a small number of hydraulic mines continue to operate in Russia, China and Czechoslovakia. The development of Longwall mining technology and the availability of coal resources able to employ Longwall methods mean that this is now the dominant form of underground mining around the world. It is possible that hydraulic mining will become more common in the future when those reserves able to be mined using Longwall technology are exhausted and where coal scene conditions make the use of hydraulic mining more favourable than Longwall or other methods. Solid Energy first trialled hydraulic mining at the Strongman Mine in 1992 using pipes, pumps and monitors from the

Sunagawa Mine in Japan and with technical advice from the Mitsui Mining Overseas Limited. The Mitsui Group operated the Sunagawa Mine as well having an interest in they hydraulically mined South Balmer Mine in Canada."

Q. Just pausing there Mr Smith, the reference at paragraph 21 to Strongman Mine, is that also sometimes referred as the Strongman No 1 Mine?

A. Yes, it was called Strongman Mine where you often adopted Strongman 1 when Strongman 2 was in operation.

Q. And at paragraph 22?

A. "Some variables of hydraulic mining are difficult to predict, in particular size distribution and moisture content of the coal produced and the productivity of the monitor. These could not be predicted confidently for West Coast conditions and the Strongman Mine trial was conducted to prove the feasibility of hydraulic mining on a large scale. The trial sought to determine the productivity of hydraulic mining and the saleability of the product and again sufficient confidence to open up another hydraulic mining operation following the imminent exhaustion of the mineable reserves at Strongman Mine. The trial mining at Strongman Mine confirmed that the method was applicable to West Coast conditions and sufficiently successful to allow the development of Strongman Two Mine as a hydraulic mine. A feasibility study for Strongman Two showed that at the time there was no other mining method practically or economically viable. The Strongman Mine trial set up was also used to mine the remainder of that mine's reserves until it closed in 1994. Strongman 2 Mine which opened in 1994 was the first New Zealand mine designed from the outset for hydraulic mining. Strongman 2 was hydraulically mined until its reserves were exhausted in 2003. Solid Energy's Terrace Mine was also converted to hydraulic mining using a Chinese monitor, albeit at a lower pump pressure to set the pressure rating of the existing water reticulation system. Spring Creek commenced hydraulic mining production in mid-2004. Of the Mitsui people who initially trained Solid Energy and helped to commission the Strongman Mine hydraulic mining operation, the project manager (inaudible 16:48:32) Oki Masaoki Nishioka, that's Okie we referred to him as, was the key advisor. Oki was Mitsui's hydraulic mining specialist, a mining engineer who had spent most of his career in hydraulic mining operations in Japan and

around the world. I have read the statement that Oki has made the Commission date of the 25th of October 2011. As stated above I have no relevant knowledge of Pike River however I do know Oki, have worked with him and have a great deal of respect for his experience, skill, knowledge and integrity. Coal seams on the West Coast are typically thick and geologically very disturbed. They have very variable gradients, have variable thickness up to 20 metres and are typically severely faulted. Virtually all West Coast mining targets have relatively close base major faults which displace the coal by more than the thickness of the seam and within those blocks of coal which are separated by major faults, there are many more minor faults which create a non-uniform mining environment. The challenge of the West Coast does not therefore lend itself to other Longwall operations or continuous miner extraction methods. Greymouth coal seams other than the higher rank coal such as within the Morgan and Kimble seams are highly prone to spontaneous combustion and are moderately gassy. The coals in the Morgan and Kimbell seams are still gassy but significantly less prone to spontaneous combustion. The most effective economic method for underground mining at any scale and most current risk case coal deposits is hydraulic mining. While hydraulic mining presents some unique challenges as discussed during Dr Elder's evidence on Phase One, it also has some safety advantages and can be employed in moderate to steeply dipping coal seams and achieve relatively high recovery of the in situ coal despite complex and difficult geology.

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A. Hydraulic mining is most suited to very thick seams, for example 10 metres or more, that dip or incline steeply and these are typical West Coast conditions. Conventional mechanised mining methods have difficulty extracting coal in steeply dipping coal seams and are unable to extract the full seam thickness, leaving behind much valuable coal. Other high volume and/or thick seam mining methods require moderately uniform seams over large distances. Such conditions do not present in the West Coast coalfields. The safety advantages of hydraulic mining include mining personnel are remote from the active mining face and goaf edge; there are no potential sources of ignition at the face; the application of water creates a dust-free environment and it is relatively easy to recover mining equipment should the goaf override the entrance to the working

face and bury the monitor. The health and safety aspects arising from the operation of a hydraulic mine have the same fundamental basis as those faced by all underground coalmining, including both strata control and ventilation and gas management. However, the way in which the risk of underground coalmining present when hydraulic mining and the methods for controlling those risks are unique. I agree with Dr Elder's evidence for Phase One that a wide range of specific expertise and experience is required to undertake hydraulic mining safely. Like other methods of underground coalmining the hazards will also depend on the mine itself. For example, not all underground coal mines are gassy and those which are gassy will produce different volumes of methane and at different rates. The risks that need to be managed in a specific way for hydraulic mining are a ventilation design and methane management. The coal being mined at Spring Creek is moderately gassy. The minimum ventilation quantity prescribed for all monitor panels while in extraction is 40 cubic metres per second. Under routine operation this results in an average methane content in the panel return of 0.3%. There is however the potential for high gas volumes to be discharged into the panel return. Higher volumes can be produced, particularly by goaf falls, the impact of the monitor water jet displacing accumulated methane in the goaf, by unusually high coal production and by a rapid fall in the barometric pressure. The second risk is spontaneous combustion control. The coal in the Greymouth coalfield has a high spontaneous combustion propensity. The R70 which is an index for spontaneous combustion propensity, for Spring Creek Coal is approximately five. I discuss this further in paragraph 76. Understanding and managing spontaneous combustion is a priority focus in all aspects of the mining operation.

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A. The planning, design, operation and monitoring that have been 70 recorded goaf headings between November 2004 and 2011. This is at Spring Creek. On five occasions the mine has been evacuated after panels were sealed until the goaf gas readings confirmed the sealed atmosphere was inert. Coal recovery from hydraulic panels is approximately 75% excluding barriers. It is impossible to avoid leaving coal in the goaf which has the potential to heat. The third high risk I'm referring to is the safety of the monitor operator. Given

the location of the cab operators are exposed to two hazards which are specific to hydraulic mining. First is the possibility that a very large roof fall will push gas from the goaf down the intake roadway as well as the return. In sufficient quantities this would make the atmosphere around the cab irrespirable. The second is the possibility of light volumes, locally referred to as puds, of coal slurry overwhelming the monitor operator. Obviously these risks also have a strong relationship with the characteristics of the particular mine as well. For example, hydraulically mining in a non-gassy mine is unlikely to give rise to any heightened methane gas management risks. However, these are the main hydraulic mining hazards that Solid Energy has encountered over the time it has been using the mining method on the West Coast of New Zealand. I want to talk about the expertise in hydraulic mining. A copy of the Spring Creek organisational structure is attached. This is similar to any underground mine of a similar size. The difference from the conventional continuous mine or a Longwall operation in the specialised hydraulic elements and the expertise to install, maintain and operate the integrated high pressure pumping system, coal slurry infrastructure, the contract support system and the de-watering operation. The ventilation requirements are again, similar to other underground operation that is mining coal that is gassy and highly prone to spontaneous combustion. The operation does differ somewhat from a Longwall operation and the very close interaction between the monitor operators, extraction co-ordinator, extraction superintendent and the technical staff, in particular the ventilation engineer. Solid Energy has the benefit of research into the hazards design and constraints and the intricacies of hydraulic mining starting with the research and development programme at Strongman Mine in 1992. Solid Energy bought up a wealth of in-house knowledge and expertise through research by the trials at Strongman and by discussion with classed hydraulic mining practitioners. The relationship with Oki and others from Mitsui was invaluable in gaining a starting knowledge into the equipment options, the critical controls and effective use of the monitor. Solid Energy staff had visited organisations with experience in hydraulic mining and in the manufacture of hydraulic equipment in Canada, China and Japan. Experience of those people involved hydraulic mining at Spring Creek included general manager of underground

operations," sorry restate that. "As the general manager, that's me, of underground mining operations I have 39 years experience, most of this has been with underground mines including the past 31 years in New Zealand conditions. The mine manager at Spring Creek has 30 years mining experience at Huntly and on the West Coast in management and technical positions. The extraction superintendent at Spring Creek has 30 years experience gained in a variety of roles at Spring Creek, Strongman, Strongman No 2, and other smaller mines in the Grey District. The ventilation officer has 40 years experience including appointments as mine manager, chief inspector of coal mines and mines inspector more than 20 years of this experience was in the Greymouth operations. And the extraction co-ordinator has 30 years experience in the Grey matter coal field in a variety of roles." Going on to talk about the hydraulic steps that Solid Energy takes to hydraulic mine safety at Spring Creek. And this section of my statement details how Solid Energy has responded to the risks that can be associated with hydraulic mining and therefore need to be managed in a specific way. "Spring Creek was originally established with two stone drives accessing the coal seam from the surface. The intake roadway is used to transport men and materials while the return roadway contains the coal conveyor system, the pump line supply high pressure water to the monitor, the low pressure water line and the slurry pump line that transports the fine coal slurry to the stock pile and load-out plant for de-watering and processing. A return roadway is the second means of egress of escapeway in the event the main intake roadway is not available. This second means of egress has a concreted walking surface for much of its length and the mine is equipped with a CABA system in addition to belt worn self-rescuers. This system meets our health and safety requirements for the current mine plan. To meet our ventilation requirements as the mine develops beyond the current mine plan we have commissioned a study into the options for establishing a third entry and have selected up a third option which is an upcast shaft and new fan. The feasibility study and design of this option is underway. Once a new shaft is installed the existing return would become an intake airway allowing the second means of egress to be a segregated intake separate from the main travelling road." Before discussing through your risks in paragraph 34 in greater detail, at a general level mine safety depends on

three broad considerations. "The mining plant infrastructure and equipment must be fit for purpose. For example, the mine design, size of roadways, the number of roadways, the main fan installation, ventilation and mobile plant must be fit for the job. These are all fundamental attributes without which a safe operation is not possible. Secondly the mine needs to have a standard system of operation. Solid Energy calls this a mine operating system. It is a statement about how we do things, breaking down every part of the operation into a series of processes which control the way in which the job is carried out. The third area of consideration for a safe operation is ensuring the competence and experience of the people involved and the culture that is established at the mine. In this regard hydraulic mining is no different from any other mining method or operation. An organisational structure is required that has the appropriately qualified people with specific roles and responsibilities and all these people need to have sufficient training, expertise and experience to carry out their role."

Q. Just pause there Mr Smith.

THE COMMISSION:

Q. Can I just ask one question Mr Smith before we adjourn. You've used the phrase "lift" in relation to the operation of the monitor, can you just, for the avoidance of doubt, define a lift for us?

A. A lift is a, if you can refer to this – the diagram.

Q. Yes.

A. And one, two, three, four, five, six are all what we would call lifts. So they're a part of a, a smaller part of a pillar that we are cutting with the monitor to lift off.

COMMISSION ADJOURNS: 5.00 PM

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