Hugh Taylor

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Interviewer: Margaret Cook

I started in the industry in 1968, straight from High School. I started as a cadet mine surveyor with Rhondda Collieries and graduated through there. I became a mine surveyor. I worked in the industry until Rhondda Collieries closed in 1996. I was the last employee left here to turn out the lights and lock the door. I have continued on in the main Rhondda Colliery mine administration building running my own business from 1996 until now.

Interviewer: Why did you go into mining?

The attraction was more surveying. I didn't want to be sitting in an office all day or out in the field or sun all day. So I found surveying a good mix of both – some field work and some office work. From the start I thoroughly enjoyed the occupation. I got to mix with people from the workface – the miners – to the Chairman of the Board of Directors.

Plenty of people to meet with and talk to and it gave me a broad spectrum of the industry to meet with and gain experience from.

Interviewer: What did your training involve?

It involved a number of years of practical experience working with a mine surveyor. Also college work – some by correspondence and some at the Technical College in Ipswich.

Interviewer: It was quite an established mining school wasn't it?

Ipswich TAFE had a long mining background for a reasonable period of time. There were still a number of mining subjects being taught. After I started they started a programme with the industry running mine managers' courses through there. More subjects became available through that course, rather than through correspondence. The lectures were

much easier to do. I didn't mind the correspondence but the lectures were better for talking and discussing rather than researching on your own.

Interviewer: Was it taught by people who had worked in the industry themselves?

Generally yes, unless it was a purely maths or drafting subject. Generally it was mining industry personnel.

Interviewer: Did you have a mentor on the practical side?

Only my boss at work, Mr George Lawrie. The Lawrie name is well renowned in the industry in Ipswich. He had worked underground, became a mine surveyor, a manager and was even the superintendent of Blackheath Collieries at one stage. Rhondda Collieries purchased Blackheath Collieries and offered George in the later years of his working life the position of mines surveyor that they needed at the time. He was a big asset to the company as they had acquired the Blackheath Mining leases and he had a great knowledge of those leases and those mining operations. He was a great asset to the company to have for any future work they might do in those areas.

Interviewer: Did they do further mining in these leases?

Yes we did. We worked quite a while in those leases and then open cut mining as well.

Interviewer: How would you describe the job of a mining surveyor? What does it entail?

It entails a good understanding of maths and communicating. You need to draw plans of your work and make good field notes that you can understand and redraw off those notes when you get back to the office.

We generally work with a chain man. In the mining industry it was not acceptable practice back then to be working alone. You also had to have someone within eyeshot or earshot of you. If you were doing menial tasks you were checked on every couple of hours to see you were ok.

Most of your work was underground or in the open cut where it involved a few hours of underground work and then back to the office for a few hours to finish your shift. It involved starting early in the morning a few mornings a week as the mine didn't want down time for the surveyors to put up sights to keep them in line. We had to go in and start at 6am and the men would start at 7.30am. So we would have 1 ½ hours and would get out of the main working area. We would finish some of the work

we needed to do in the outlying areas so we didn't hold up production.

Interviewer: What was it like underground? How would you describe working there?

HT: It was like going to work in a high-rise building. Instead of going up in the elevator you went down. The environment in the main airways was quite consistent in temperature so it was like being in a building, except out of the main stream airways in certain parts of the mine it became quite warm. Conditions were generally quite consistent and they used to give you a comparison of occupations and health standards and they used to compare miners with diary farmers. Dairy farmers were in fresh air all the time and miners were supposed to be. If you read the history rarely were they in fresh air. But in my time it was quite good. In fact in winter time you wore a coat underground all the time. But if you got out of the main airways it could get quite humid.

A lot of our work, doing survey work, was in the main airways, but I was also in the back areas where it could get quite hot.

Generally the mines I worked in were quite good – about 8 feet high or higher. But my boss, George Lawrie, told me the story of when he left the Boys Grammar School he went to work in a mine at Rosewood which was only 2'11" high. He had a permanent scar in the middle of his back as he was working on coal as well. After a year or two of that he went to another mine nearby, I think Malabar. It was 3'5" and he thought he was in heaven. The extra 6" was a god send.

I didn't find the conditions constrictive. They were very black if you lost your light. It didn't happen often but the battery could start to fail or fade. You did have a second lower voltage bulb in your light which gave you enough light to get out. But if the battery totally failed you were in the dark. It is pitch black, you can't see a thing.

You can't see your hand in front of your face. The environment is rough, often with a wet floor. The floor is rough, not like walking on a pavement.

It is very uneven so you are generally watching where you are stepping. You are steeping over rocky ground, and mostly coal. The main roadways were generally tidy but in the back roads where we were doing catch up surveys and setting sights they were quite rough.

Interviewer: How much gear were you carrying?

We didn't carry much. A theodolite and a field bag which carried nails, survey spads. We used to drill a hole in the roof and knock in a spad which was really a horseshoe nail.

One of the jobs I did as a junior cadet surveyor was to make these spads out of horseshoe nails. The company used to make their own spads. The horseshoe nail is fairly unique. It is a softish nail with a rectangular end. The workshop fitters and turners (the people working in the shop) used to hate it when I turned up because I used to sit at an anvil with a hammer and pound the heads of the horseshoe nails flat. I would do a few 100 at a time and I would be there for an hour or two pounding away at the anvil. The fitters used to throw a bucket of water over you and tell you to get lost.

The horseshoe nail was flatted out. Then you would use a drill press to drill a small hole in the flatted head. Then bend the nail over to form a reasonably thick shaft. When we went underground to put the survey marks in you would drill a hole in the roof and drive in the spad. As it was softish metal it would drive ok as long as the hole was firm enough. They stayed well in the rock face and it was a good long term survey mark.

Interviewer: That was well-used technology?

Yes. Eventually we found someone in NSW who made spads so we didn't make them ourselves. They still use spads in the roof for survey work underground. In poor roof conditions they would drive a nail or spad into the timber crown but it wasn't as secure as putting it in the roof as the timber crown could get bumped and move a bit and you could lose your accuracy of your line of sights.

Interviewer: If you had to remeasure? Did you remove the old ones?

You would restraighten if you could or put new ones in. Generally you had mined through that area so it was a matter of carrying on the survey line projecting it forward so you know where you are further down. With underground surveying you have no real checks as to where you are other than carrying the lines forward. By doing a close with adjoining roadways you could survey through a cut through and check for any converging of the two roadways.

Pannelling would be generally 4 or 5 roadways wide and you would want to see the roadways stay parallel. Every few cut through you would check across the panel to see you weren't getting any convergence.

Interviewer: Why did they need to be parallel?

It is for the stability and regular shape of the pillars. You have to correct the shape and control of your drives. If they are converging internally then you are losing size of your pillars which puts pressure on the roof. If you were on an outer workway and diverging and working near old workings then you could break through accidentally. It is a health and safety issue.

Interviewer: It sounds like you weren't working that far ahead of the miners.

No we were generally putting on sights to show then where to go. The resource of coal is usually found by surface drilling. We would have a geologists report telling us where the better coal was. We were also constrained by our mining lease boundary. We would have a mine layout that we would follow.

We were generally showing the miners where to go and keeping them on straight lines. In the modern times, when I was doing survey work we were using conveyor belts and they had to be run in straight lines. In earlier times the surveyor was only brought in every few months, just prior to my time, to measure where they had been. After the 1960s we were showing them where to go.

Interviwer: Is it quite pressured then if you were only a little way ahead of the *miners? There's not a lot of margin for error.*

No. You needed to be fairly accurate and checked. If you get a drift in the line the conveyor belt would run offline. The other reason for doing the sighting was that the miners needed to drive the roadways fairly straight. If the conveyor belt got off line then the conveyor belt would struggle to get through the roadway so there would be down time to reset. They would have to take out timber, recut and reset. A lot of lost time.

Interviewer: How many surveyors would be attached to a mine?

Generally only 2, depending on the size of the mine. The bigger mines might have more. But at Rhondda we only had 2.

When we grew with 4 underground mines we had two surveyors and two cadet surveyors. They then qualified and we had 4 qualified surveyors.

Interviewer: You talked about the technology change of conveyor belts, what other changes occurred. Were there major change in theodolites?

No there were some major changes to the instrumentation. The first theodolite I used in the 1960s was quite modern for its time. It was a

microptic theodolite. You could read the verniers more easily through the optic magnification. Previously using verniers it was harder to read the scales. The microptic theodolities were much more convenient and accurate. You could read them down to about 20 seconds of arc. It made life more pleasant.

Today the instruments are electronic and have digital readouts. So you don't need to read the scale bar and estimate. We used to read the scale bar down to five seconds of arc from the estimations. They were quite accurate for that sort of work. Today they get down to 2 seconds of arc with electronic readouts. That has come in since the mid to early 1990s.

Interviewer: You used the same equipment from the 1960s until then?

Yes. There was always a concern about using electronic equipment underground because of safety. It had to be intrinsically safe to use underground in coal mines. The instrument manufacturers started to put batteries into instruments and the Mines Department took a dim view of it. It is very difficult to find a manufacturer who will give you a $5000 piece of equipment (or today the equivalent of $50,000) to give to the Mines Department to see if they can blow it up to test it.

It became difficult to get the safety guarantee. So we had to rely on mechanical equipment rather than electronic, especially in a gassy mine.

Safety is a big part of the industry. Creating sparks from survey instrumentation wasn't anything we saw ourselves doing. The miner's heads hitting the roofs, where there was some sandstone, could let off sparks.

There were always concerns about safety and at times it could get out of hand about the type of metals we could use. Aluminium has a deal of magnesium in it and if you strike it, it can set off a good spark. There was a time that aluminium framed glasses were banned underground, in case they fell over or got hit. They would have to be in a very explosive situation but for a time they were banned. At one stage they banned aluminium foil on chewing gum which the miners loved. They couldn't smoke underground so they chewed gum. So it got a bit out of hand.

These days electronic instrumentation can be used underground if they are given the tick of approval from the electrical engineer. There are certain areas they can't be used. They can't be used within a certain distance of a mine face as fresh methane gas might be emanating from it.

Interviewer: What about the gear you wore underground did it change much?

No the gear didn't change much. The safety light was always a wet cell battery you carried on your waist belt and the chord went up under the back of the helmet and you became quite comfortable with that. You would be on the surface sometimes with a dark environment and you would be waving your ahead around trying to lighten the area but of course it wasn't there!

We later carried a self rescuer which is another piece of equipment everyone had to carry. It was a little stainless steel box you carried on your waist belt and if you got into an area where there was monoxide in the air you put on the self rescuer and it would convert some monoxide into oxygen and you had enough to breathe. If you didn't over exert yourself you had enough to breathe for an hour or so.

The instruments would reportedly get hot and burn the inside of your mouth but that was better than being dead.

In that hour someone would rescue you or you could walk out. You should have enough oxygen to survive. I fortunately have not had to use one nor have I seen one used. But it was a piece of safety equipment that changed in my time. It was extra weight.

When we had the Moura Disaster they banned the flame safety lamp in Queensland. It is still used in NSW. They went then to electronic instrumentation for testing for min gasses which is still in use today with some improvements. It is much more accurate I guess but the flame safety lamp was used for a long time and is as good. A lot of the good deputies could read what gases were going through their lamp from the nature of the flame.

It was part of their training. They knew from the colour and height of the flame what gas was going through. They were quite proud of themselves as to how good some of the Deputies were at this skill. Some Managers will tell you some of the Deputies weren't worth much but some were very good.

Companies were buying different brands of instrumentation. They were more safety conscious from the 1990s and you had to do inductions that were site specific. A Deputy might change from one company to another and he would have to relearn the new instrumentation as they could be quite different. It was quite a change from the flame safety language to the different instrumentation.

Interviewer: Changing from state to state would be more of an issue. Did people move around much?

Not a great deal. In certain areas they did, such as metal mines. Coal was a bit more stable. Mine Management moved around rather than mine workers to get advancement and experience.

Interview: Was the equipment within Rhondda's 4 mines much the same?

Yes they used the same equipment.

Interviewer: Did people more around within Rhondda?

A little bit but not a great deal. The people that mostly moved around were the underground managers and the surveyors which moved around regularly. They were the more mobile visiting the different mines in the group.

Each mine is quite different. Some are quite steep, some flat, some are higher workings

In my younger days I found myself up a ladder being held by a miner. You only had to say the wrong thing and he would give you the wobbles or threaten to drop you in water or something. It was quite challenging. Or you would stand on a 44 gallon drum if there was no one around to hold the ladder or a lump of coal, Today they wouldn't allow you to do it. Anything to get the job done.

Interview: What was the camaraderie like between the different disciplines? Was there pretend rivalry?

There was pretend rivalry. We were like one mining family really. Whilst they liked to give cheek to each other and give you a hard time sounding like they will beat you up or abuse you, if there was trouble or the chips were down they would help you.

Interviewer: What was the company like to work for?

Rhondda Collieries was a fantastic company to work for. Initially it was a family company till they sold out to the Bond Corporation in the late 1970s. It was a privately owned company – the Haenke, Dixon and Jones families. They were a very good company to work for. They looked after their staff and their employees. It didn't stop miners' strikes but that was part and parcel of the industry. They had the opinion that they were only as good as their staff so if they looked after their staff the staff would look after the company. The company allowed the staff to feel they were part of the company and not just an employee. They were always quite good to work with.

The other advantage of it being a small family company was that the Chairman of the Board would be at the mine site on a regular basis. He

would be in my office on a regular basis and we would be looking for other sites and going over old bore logs and driving round the country to see where mines had been and if there was anything we could mine.

Interviewer: Very hands on management and you had a sense of where you fitted into the company picture?

That's right, especially the staff.

Interviewer: You make the distinction between staff and employees. Who was in that group?

The staff members were the chief electrician, the chief surveyors, the mine managers.

Interviewer: The miners were on contract?

No, there was a little bit of contract mining when I first started. They were at Bogsite Colliery. They were the last contract miners in the district. The Long Brothers – Frank and George Long. That mine closed in 1971. That was the end of contract mining. After that they were all employees of the company.

Interviewer: I assume they were all unionised?

Yes they were all members of the colliery employees union and it was a strong group. There was a union rep at each mine and he was generally a person of strong viewpoints and nature – not always – but generally. It was someone the company was always battling with.

Interviewer: Did you have strikes?

Generally they were industry wide. There might be a particular issue at a mine. The main strikes for a particular company were more over bonus payments than general wages. Rarely was it a safety issue. Sometimes it was, but generally the company responded quickly to those issues.

Interviewer: How did Rhondda Collieries fit into the big picture of mining in Ipswich? Was it a big company?

It started off as a middle range company growing to one of the more dominant companies. Box Flat Collieries was always the biggest from the 1960s. They were sitting right at Swanbank Power Station and the McQueen's had done quite a nice deal to attract the building of a power station right at their doorstep. They had good reserves of coal and good resources of coal, producing the major share that went into the powerhouse.

That meant that there was still quite a lot of coal being produced by others to feed the power station. Rhondda grew to acquire the Box Flat and Westfalen leases along the way. They bought Blackheath Collieries in the mid 1960s. They

bought Box Flat and Westfalen operations in the late 1980s. Box Flat/ Westfalen closed in 1986. They bought them at the end of 1988/ start of 1989. Rhondda Collieries became one of the major companies here.

New Hope bought Southern Cross Collieries and they became another major player. There were four main companies – Rhondda, New Hope, Aberdare and the Box Flat/Westfalen Group.

The closure in 1996 was from finishing up of contracts with Swanbank Power Station. They had slowly gone away from West Moreton coal. While the Rhondda operations could continue on to do export markets they were always lower priced. They struggled during the 1990s with lower prices. We saw New Hope continue on in this district until the closure of the last underground mine (Newhill) in 1998 and in 2003 the closure of their Bogside open cut which was part of Rhondda leases. It was one decent deposit that Rhondda hadn't mined when they sold off their leases in 1996. They continued until 2003. If they could have hung on for another couple of years you would still see a lot of mining in this district.

Interviewer: Do you think mining will come back?

No , not in the form of mining that we know today. The residential encroachment was a concern to us in the 1980s. It has been growing and growing and it has reached the stage with the planned growth in the area that it would be difficult to secure a lease in the area. Most of the mining leases have been surrendered and let go. To go through the process to get the activity of mining going would be very costly especially with the restrictions that would be put upon them from development.

Interviewer: So it is not because there aren't seams there still waiting to be tapped?

There are a lot of coal seams that could be tapped. I guess I always had the view that necessity is the mother of invention. Somewhere down the track they might need to be used but certainly mined by other technologies.

Our coal didn't lend itself to the large long wall technology that was used in the Hunter Valley and Central Queensland to make them still productive and profitable. The deposits of coal in the Ipswich area are small seams of coal. They cover large areas similar to central Queensland but they are distorted by faulting and steep pitching – folding and faulting. It puts them into small sections – pockets of coal. It doesn't lend itself to this

technology. The cost of setting up the infrastructure for long wall mining would not be economically viable here.

There are lots of different technologies coming around – robotic technology, in seam burning of coal, methane drainage of coal. A lot of other technologies will come along in the foreseeable future that will make us look at those resources still. It will only be used if they can guarantee the integrity of the surface and will not destroy the development.

Interviewer: Is it a long way down?

A lot of it is deeper now and the mining operations here generally took the shallower coal. Certainly with the open cut mining in the 1970s, from the 1974 floods on, the industry here was allowed to open cut a lot of countryside to get a lot of quick coal fairly cheaply for the power station. So we saw a lot of open cut mining here from the 1974 floods on. There is still a lot of deep coal.

Interviewer: When was the last open cut mining in Ipswich?

In 2003. There is still open cut mining in the district at the Rosewood field. Jeebropilly closed earlier this year and their Oakleigh operations are to close in 2009. There will be no more mines in Ipswich unless something else opens.

It has been a real part of the culture of Ipswich and it something that could be lost. It is part of our heritage that could be lost.

Interviewer: In the days that you were supplying Swanbank, probably its peak, what sort of numbers were working at Rhondda Colliery?

Over 300 men. They were a large employer. Quite large numbers worked in the mines. That was back in the days when it was cash for pay. On Friday one of the Directors would come out from town with a policeman in the car and deliver the pays.

They were big employers and generally we worked on the basis that for very employee there were 4 or 5 that worked in supportive industries in Ipswich. That industry supported 4 or 5 other jobs – spare parts, machinery, oils, fuels, ropes, building materials – all sorts of things needed in the mines were bought locally. Generally the company tried to purchase in the area.

Interviewer. Did you find that people followed their fathers?

Yes very much so. A number of fathers got their sons involved in

the mines. It was very much a family oriented industry?

Sitting round the dinner table talking about mining would encourage them.

Interviewer: The language of mining is a special language. Can you share some more with me?

Sprags – a piece of timber tapered at both ends so they could stick it under the coal skips to act as a brake. There were rope riders, winder drivers.

Interviewer: What is a rope rider?

A fellow who used to stand on the rope at the front of the skips. He would have a piece of metal like a hacksaw blade in his hand so he could signal the winder driver when to stop. There was a code of signal bells. Along the haulage roadway, because the haulage driver couldn't see where the rope rider was as he was way down the mine, you had two wires running on insulators on the prop line. The rope rider would use his hacksaw blade to short circuit the current between the two wires which would set a bell ringing near the winder driver. So there would be one bell to stop and two bells to go and so on. It was only a low voltage spark – a safety issue. That was a communication technique they would use.

In timbering they would use props and crowns. The crown was the timber that ran across the roof. In normal conditions they would use a half round crown that was simply a log that was cut in two with a flat side on it. The flat side would be put up against the roof with a prop at each end. You would use a wedge to tighten it up. You would use a seven pound or bigger hammer to drive the wedge in to make sure it was nice and firm. You would drive it in between the prop and the timber crown to tighten things up so they didn't fall over. In young timber you would get some shrinkage so you belted them in pretty tight.

On bad roof times you would use a full round crown. A bad roof is where the conditions are poor and the roof was likely to sag and fall out a bit. So you needed a bit more strength and a full round crown. This was a full tree generally about 6 inches in diameter and about 5 metres wide to cover the width of the roadway, depending how wide it was. You needed a couple of fellows to put them up.

Because the crown was round they used to cut a flat end for the timber prop to sit on. The prop was likely to slip off even if you drove a wedge in, so they used to use an axe to cut a flat piece on the end of the crown so the prop would sit on the flat end.

Interviewer: You would have to do that work underground?

That's right. Apart from using hand saws to cut the props to a certain length they had a measuring tool to measure the height of the roof from floor to crown. A pile of props lay near by which they would they measure up and use a bandsaw to cut the prop to the right length, throw it over your shoulder and cart it in to the face. They would set it underneath the crown or roof and set it in.

They were quite adept at it. It would take a matter of minutes to cut it into a crown. This developed into using compressed air chain saws after a while.

They were specially developed compressed air chain saws for use underground.

Interviewer: Is there continual activity underground?

There was continual activity as far as the mining going on and with the setting of props. But we would generally be out of the road, maybe in an outer roadway away from the main roadway, but we would do our job and get out. They would cut coal. They stoped cutting coal to set timber. So this was down time. With the development of mining machinery they could set the timber while they were cutting coal. They developed air legs and the timber setting machinery on the continuous miner itself. It allowed them to get more production time.

Roof bolting was an important part of the whole process. When roof bolting came in, it changed to drilling a hole and putting a five foot bolt in there. The initial bolting system was to have a split steel wedge in one end of the bolt and a threaded section with a nut on the other end. You would drill a hole up and belt the end of the roof bolt up into the roof so the metal wedge would split the bolt and you would then tighten up the nut. You could put a few ton pressure on the head of the nut.

They later used chemical anchors which was a bit like a sausage. The sausage would be a two part mix of a very strong glue. The glue would give you a far better encapsulation of the bolt into the rock. Once they pushed the sausage up with the roof bolt, they would rotate it to stir it and squash the plastic sleeve it was in. They mix the two chemicals by spinning the roof bolt which would allow the chemical to come down the bolt. Instead of the roof bolt being anchored by the split wedge at the top of the bolt it was now anchored by a couple of feet of the rod by this chemical anchor at the top of the hole. This chemical anchor would set within ten seconds whether the hole was wet or dry.

They could put a few ton pressure on the bolt after a ten seconds.

The process used to be you'd drill the hole, you would put the sausage on the end of your roof bolt, push that up the hole, rotating it as they pushed so it broke the plastic sleeve and stirred the chemicals together, the drag on the compressed air drill would slow it down as the glue would be starting to set. They would stop and wait ten seconds for it to set and then spin it again this time tightening the nut on the bolt. The technology wasn't initially well accepted by the miners as they liked their timber. We made an advancement from timber to metal support. The timber would always crack, split, groan and make all sorts of noises which was a tell-tale sign for the miners that something was happening.

You could see a timber prop starting to split or bend and you would see the pressure building on the roof or ground, whereas the steel tended to hang on. After a while the miners became more comfortable with it but it took some transition time.

They were replacing the heavy timber crowns with a steel strap. One man could carry these – a strong man as they were fairly heavy. The straps were about 6 inches wide. You would put the strap across the roof and there were a number of holes in the strap which you could put the bolts through. They would hold a lot more than the timber crown. The miners weren't happy with that as the crowns also were their telltale sign and so for a transition period there was a timber crown and a steel strap. Eventually the miners got comfortable and they just used the steel straps. But they still have timber props. That was the main source of early warning system. Those were some of the advancements that took place.

The chemical anchor roof bolt had a square steel washer behind it. At times there was so much roof pressure that it would bend the washer over the nut and form a lock washer around the head of the bolt, that takes a large amount of pressure but the important thing is that the chemical anchor is still holding on. They were quite good.

Interviewer: Were they an Australian invention?

Not sure, they could have been from the States but they were widely used in Australia.

Interviewer: You said the surveyors would come in about 6.00 am and the miners would start at 7.30. When did the day finish?

3 o'clock, 3.30pm. Then there would be an afternoon shift till

about 10pm. Depending on the size of the mine and how much work had to be done they would have a dogwatch crew that would work through doing the maintenance of the machinery – oiling and greasing – or doing additional timbering that needed to be done. We were using electronic machines with pretty heavy cables so they might set up the continuous miner in a new roadway. They might have to manhandle a big length of cable to move to another roadway. They would curl it up on the machine and feed it back out as it goes out.

Interviewer: So they would be cleaning up from one day and setting up for the next. How many men would be on the dogwatch?

Generally 4 or 5. The sections came down from generally ten men to about 6. A section was the crew that was working in one part of the mine. There would be a continuous miner driver, two shuttle car drivers. You used to have four timbermen, two on each side of the machine and a mine deputy.

Generally you had a spare person who looked after the boot. The boot was the end of the conveyor. When a shuttle car driver would come to the boot to offload his coal there used to be a fellow there that would break any lumps up or shovel up any spillage to keep things tidy and operating smoothly. After a while they reduced numbers and did away with the boot man. There were two timbermen – one on each side – as there was automated machine on the side of the continuous miner. The numbers came down to 6 people in the section,

Interviewer: Before the continuous miner there were how many in a section?

Depending on the operation there were a number of advancements in coal cutters. Early on there was drilling and blasting. Then there was coal cutting which also used to drill and blast the coal. Before that it was pick and shovel.

Pick and shovel operations had a lot of miners working on various roadways and then drilling and blasting. Continuous miner came in the 1960s. Long wall technology developed as well.

Interviewer: Which mines have you worked at?

Working for Rhondda Collieries I have worked at a number of mines. Rhondda No. 1 mine which worked a number of seams but mostly the Striped Bacon and Rob Roy seams. We commenced a new venture into the Rob Roy bottom seam from a new Rhondda No. 1 mine which they started in 1985. We had one colliery that I worked at in my younger years- the Edward S Cornwall Colliery – which was

always a challenging colliery because it went from a flat bit of country to a steep bit. It was a faulted and distorted piece of geology. That was always a challenge to do survey work there. There I did the sort of work I mentioned before – being held up a ladder to put sights in. It wasn't an A-frame ladder it was a single sided ladder so you were relying very heavily on the man to hold it.

I worked on Bogside Colliery which caught fire in about 1970. I had been underground there and seen them hose the miners down because of the hot conditions.

When they closed that mine they moved those men to the MW Haenke mine which I was part of the development when it first started. It was quite an eye opener to those fellows who had moved from Bogside as they had worked with heating in an underground mine for quite a period of time until the fire became so bad they closed the mine down. About a year later seeing the Box Flat disaster, there were some very white faced fellows the day after.

I also worked in the mid 1970s at Rhondda No 5 and worked underneath Blackstone and Blackstone Hill. One of the best feats was sinking the air shaft on the backside on Blackstone Hill. It was a 205 metre deep shaft, five metres in diameter. It was concrete lined all the way. It was a great project. Making the survey connections to the shaft were quite exciting and everything to come into place.

Doing some other survey places from tunnels to intersect a certain place underground and having the tunnel coming out at the right place is a challenge.

Interviewer: It must be very rewarding.

It is. Typical of the camaraderie you would be down one day checking the sites and the next day you would get a phone call first thing in the morning from the deputy or mine manager. One day the last thing I said to him is that he should be striking coal fairly soon in the floor of the drive. Two days later I get a phone call "we have gone umpteen metres and we haven't struck coal. You'd better get over here". So you race over, get your light on, go underground and they had sprayed stone dust all over the floor and you kick it out and there is the coal seam. They are all sitting there laughing at you. They did that to get you out and down the pit.

Doing survey connections when you have to meet up with a roadway or you are surveying around a fairly large block and make sure the drives come round and intersect where they are supposed to with an old

section of the mine is always rewarding to know it all works out.

The Haenke mine – Haenke No 1 and No 2 were very challenging mines. They were about 400 metres deep and there was a lot of ground pressure. It was quite frightening to see the rib fretting and the coal crushing. You could feel the pressure in the atmosphere with the amount of roof pressure on the timber. They continued to mine there and sometimes. You would come in a see the shuttle car pressed up against the roof because the floor had heaved.

Interviewer: How can the floor heave?

If the floor stone is weaker than the roof stone then the floor will tend to break up from the amount of pressure on the pillars of coal. The floor will actually heave in the centre and break up. It has been known that it can lift up a shuttle car. There have been cases when miners have come back from an overnight shift and found they can't get their shuttle car out. That is only in some areas.

Interviewer: Have you seen it?

Yes in the Haenke mines. They have to dig out the floor underneath the wheels and use another machine to dig or drag it out.

Interviewer: Do you redesign?

No you just put it in an area where you hope the floor won't heave or where there is more roof clearance so if it heaves it won't get stuck.

I have seen Welsh bord mining. They have a very wide roadway and a skinny pillar, and a wide roadway and a skinny pillar and it is typical to have a 6 metre roadway and a three metre pillar. In Cornwall colliery they had roadways 12 metres wide and there are so many timber props that it is just like a forest and you can't see the other side. In bad country they set so many timber props and it would split and break then because of roof pressure. They had pig sties in bad areas or pillaring area. A pig sty would be a row of props which were laid horizontally to form an interlocking square. You would throw coal or rock into the centre to make a support pillar. It would only be a couple of metres square but formed a strong support.

Interviewer: I need to ask about accidents

The worst one in this area was Box Flat but there were others. Generally after an accident the surveyors are called in to draw a plan of the accident. We would have to try and measure up where everything was – the props, crowns etc depending on the type of accident. One of saddest accidents I ever attended many years ago was Kerry Werder, an electrician working on the dogwatch shift. He

was doing some live testing. He had the side of the continuous miner control box open. The top side rib was only 1.5 metres or 2 metres behind him. We don't know if the rib cracked and he got a fright and turned around but he put his finger tips onto a live terminal and electrocuted himself. He was found slumped in the side of the box. The rib may have cracked as they were pillar splitting and causing the ribs to crack and fail quite a bit.

The survey job required us to go in and measure where he was. They had removed the body by then thank goodness. We measured how he was positioned, where the machine was, everything about that site. The worst part about that job was a week later the mine manager said the inspector wasn't happy with the plan we had drawn and we had to go back to check a couple of things. But by this stage the mine had re-started working again and they had split more pillars so to get to the area whee the accident had happened was now quite scary. The mine deputy came in with me and we very quickly and gingerly made our way in, made a couple of measurements and bolted. There were some scary times.

Interviewer: I imagine Box Flat shock the whole industry?

It had a big impact on the industry and safety procedures. The Mining Act had said stone dusting was to be carried out even before Box Flat. There were a lot of areas that had been little lax, mines that had not been keeping their stone dusting programme up-to-date. I guess the inspectors weren't keeping them enforced to any harsh degree. But after Box Flat this was certainly a requirement and many mines were threatened with closure to catch up with the backlog of stone dusting.

Interviewer: What does stone dusting involve?

Stone dust is a white powder like talcum powder. It is a limestone dust. It has to have less than one percent free silica because one of the early diseases for miners was pneumoconiosis which was fine dust getting on the miners lungs and you can't wash the lungs out. He had to breathe it out or choke. They used to die because they simply couldn't breathe. Woking in a dusty environment was a problem. The silica was the main problem. It depended on the mine you were in. It wasn't always there. It caused a lot of problems for the miners in some mines but not in others.

When spraying limestone dust all over the surface of the mine it had to be les than 1% silica. The main safety feature of it relates to mine explosions. There are two explosions. One is set off by gas which is bad in itself but generally it

just shakes the ground. If the mine hasn't been dusted there is generally a fine layer of coal dust all over the surface of the mine. The gas explosion shakes the ground and puts coal dust into the atmosphere which is just like gunpowder and it goes off like a bullet. Once that starts happening it will propagate through the mine and totally rips the inside out of the mine. That is what has happened in a number of cases.

The stone dust programme means that the majority of dust that gets shaken into the air is a non-combustible limestone dust. With ongoing mining it puts coal dust over the limestone so dusting is an ongoing programme.

Mines inspectors go around and do dust inspections and take samples from the surface of the mine. 70 to 80% has to be non-combustible dust. If it fails then the mine manager has to stop production immediately and fix it. They might get a dispensation to fix it that night on the dog-watch shift. But get it done now.

Interviewer: Or the operation is shut down?

Yes many were shut down for a day or two to get their stone dusting programmes back in order. This mainly happened after Box Flat.

Interviewer: Was that found to be the problem?

It didn't help. The men that were killed in No. 5 tunnel and No. 7 blew up. The men in No 5 tunnel were working the tunnel they weren't fighting the fire but they were in an area where the stone dust was thought to be lacking and it blew out the No. 5 tunnel and they were right in the gun barrel.

They developed along the way stone dust barriers. They would set up behind sections a stone dust barrier where they set up on top of the timber crowns and props they would set a whole lot of timber with stone dust spread on top of it so if there was an explosion it would get to the barrier and put a lot of dust in the atmosphere and would quench the blast. They also used water barriers to do the same thing. They used to have tubs of water in styrofoam or a thin membrane that in the case of a gas explosion would burst and put water into the atmosphere which would quell a fire. The gas explosion would set off a flare. The gas flame would be doused by the water.

These things were part of the mine and had to be shown on the mine plans and that was part of the surveyor's job to show stone dust zones, fire fighting plans and also the ventilation plans.

Interviewer: You had to do regular reports to the Mines Inspectors?

The Mine Manager did but he used the plans prepared by the mines surveyors. The mine plan had to be certified by the surveyor once each year and sent to the Mines Department. We had to have up-to-date plans for the mines inspector.