IN THE COURT OF)
COAL MINES REGULATION)
HOLDEN AT BULLI)

No. 1 of 1965.

BEFORE HIS HONOR JUDGE GORAN.

ASSESSORS: MESSRS.MAHON and BUCK.

MONDAY, 7th February,1966.

IN THE MATTER OF AN INQUIRY IN PURSUANCE OF THE COAL MINES REGULATION ACT INTO AN ACCIDENT WHICH OCCURRED AT THE BULLI COLLIERY ON 9TH NOVEMBER 1965 AND ITS CAUSES AND CIRCUMSTANCES.

MR. REYNOLDS: I would like to make a plication to interpose a witness who is here to-day and who would give evidence concerning the fan, the actual manufacturer of these fans. He is Mr. Wasson and he is a man of great experience in dealing with fans.

MR.LEE: Before my friend proceeds, I may state I did not know we were having any technical evidence today and my experts are not present. Do I understand Mr.Reynolds will be leading evidence from this witness about the effect of the fans along the lines, although it may be different, given by Mr.Griffiths? If so, I think I would be severely handicapped by Mr.Griffiths not being present.

MR.REYNOLDS: He will give evidence of tests he did and about the facts concerning pressure differentials.

HIS HONOR: I think the only way to deal with it would be for Mr.Wasson to give his evidence and I will reserve Mr.Lee's rights to cross-examine further if he so desires after he has had an opportunity to read the transcript.

JOHN FREDERICK WASSON
Sworn and examined as under:

MR.REYNOLDS Q.Is your full name John Frederick Wasson?A.Yes.

Q.You live at 16 Hume Highway, Greenacre, and you are the General Manager of the Hi-Flow Fans Division of Placer Exploration Limited? A.Yes.

Q.How long have you been associated with the manufacture and installation of industrial type fans? A. I would say since the war- 20 years.

Q.The last 20 years? A.Yes, 20 years.

Q.And did you start the business of Hi-Flow Fans ? A.Yes, I created the business.

Q.Yourself? A. Yes, developed it.

Q.And have you yourself designed industrial fans through those years? A.Yes.

Q.I understand that you have no formal academic qualifications but you did a course in engineering when you were a younger man, which you did not complete? A.That is right.

Q.But you have actually designed these fans through the years?A.Yes.

Q. And supervised their installation?A. Yes.

Q. Have you through that time read and studied the matters related to Air-flow pressures and the effect of fans?A. Yes.

Q. Have you experimented in that respect?A. Yes.

Q. Do you have any experimental or research division?A. We have, yes.

Q. Was that established under your supervision and direction? A. That is right.

Q. And was your company taken over by the Placer company in recent times?A. Yes, since September.

Q. It now forms a division of that very large company?A. Yes.

Q. And you are still in charge of it?A. That is correct.

Q. Over a period of about 15 years have you been supplying main ventilation fans for the B.H.P. - A.I.S. group of collieries?A. Yes, that is correct.

Q. These are the very large fans which control the main ventilation system?A. That is correct.

Q. And not only to those collieries but to other collieries in New South Wales?A. Yes.

Q. Outside New South Wales as well?A. The whole of Australia, and overseas.

Q. Would it be true to say - I do not know, that you are one of the main suppliers of colliery ventilation fans?A. We are one of the three main suppliers in Australia of this type of equipment

Q. We have been discussing here a set of fans in series in that part of the mine at Bulli known as 8 Right? Did you supply those? A. Yes.

Q. First of all over what length of time have you been supplying to the A.I.S.-B.H.P. collieries auxiliary fans of that general type?A. Approximately eight years.

Q. Were they known and in use prior to that time?A. No, I would say not in this particular --

Q. Could they fairly be described as a comparatively modern introduction into the mining industry in this country?A. Yes.

Q. Could you give His Honor some idea of the generality of their use now in mines?A. Well, I would say in modern mining these days with its very large outputs, I would say that 75 per cent of collieries would be ventilating with this particular type of auxiliary tubing system. It has been brought about by the modern mining machinery developing such a large amount of dust and gases with large outputs from small faces that we have had to develop a system to give us a much more efficient means of ventilation and better conditions for working the face. And this has been done over - it took us more than 12 months to develop this system and it is very satisfactory.

Q. Do I understand it is inherent in what you say that modern mining techniques with higher powered machinery create more dust in the mine?A. That is correct.

Q. And this, apart from anything else, needs more effective ventilation?A. That is correct.

Q.Have you insofar as the design of these fans and this ducting is concerned had dealings with the Mines Department? A.Yes, we originally submitted these fans, the particular fans, for approval to the Mines Department that they would fit within the Mining Act. We have approval.

Q.You have approval in respect of this? A.Yes.

Q.Would this relate to the question of inflammable gas and whether they were safe in that respect or to what aspect? A. That is correct.

Q.Is that the main aspect? A.That is the main aspect.

Q.Have you had the opportunity to observe these fans actually being used from time to time in Bulli Colliery? A. Yes, we have been underground several times and run tests on them in different sections.

Q.That is before this incident? A.Yes.

Q.Did you have anything to do with the original installation of them, I do not mean 8 Right, but anywhere in the mine? A. Yes we installed them, tested them and made sure they were working correctly.

Q.In this case we are dealing with two fans which are said to be in series. Would you just tell us very shortly what if any effect that has to the general efficiency of the system? A. In this particular case they were put in series because we were generating much higher resistence in the ducting, such as to keep the flow of air up to the face,we have had to put them in series, which means they develop a much higher pressure, the fans themselves. This is a standard engineering practice and we have done this and carried it out,in fact at the Snowy we have had fourteen miles of these fans in series. It is nothing unusual. The main function is to develop more pressure to keep a constant flow.

Q.Have you produced a plan which is diagramatic only? A. Yes.

Q. and not intended in any way to represent the actual position of the ducting and the fans on 9th November of last year, but is intended to indicate the general set up? A.That is correct.

MR.REYNOLDS: I think I have sufficient copies to distribute round the Bar table and three for the Bench.

HIS HONOR: Do you tender it?

MR.REYNOLDS: I will tender it now if there is no objection on the basis it is an explanatory device and not intended to prove the fact of anything. On that basis I would think there is probably no objection.

(Document marked Exhibit KK and copy handed to witness)

MR.REYNOLDS: I venture to suggest this will be very useful when we are pointing out things later on.

Q.Perhaps you would be good enough to indicate to the tribunal the general features of this plan. We can see the portion labelled "Intake air flow". That of course would be indicative of in this instance No.2 cut through, would it not? A.That is so, yes.

Q.The shunt is of course so marked. You show in Blue the flexible vent tube which we have at times called the bleed tube, but

there is nothing significant about where you have the end of it in relation to the particular day of 9th November?A. No.

Q. You have shown by green arrows something of the movement of the air you would expect with the fans operating?A. That is true, yes.

Q. There is a date at the foot of this plan, 9th December, 1965. Did you go into the mine that day?A. That is correct.

Q. And was the general set-up much as is shown in this diagram? A. Generally, yes.

Q. There was a brattice stopping in the shunt in A heading?A. That is right.

Q. The coal face was much in the same place, as far as you know, as the day of the fatality?A. Yes.

Q. And the ducting went down to the vicinity of the face?A. That is correct.

Q. Have you been told that a suggestion has been made in this Court of an area of low pressure being created in the intersection by the operation of those fans?A.That is right.

Q. And were you asked to apply your mind to the question whether that was so or not?A. Yes.

Q. Firstly I would ask you, as a matter of your theoretical knowledge and your experience, would you expect that to have happened?A. No.

Q. I will ask you why in a moment, but did you on that day measure pressures at various points?A. That is right.

Q. What instrument did you use?A. I used our inclined monometer which is a copy of the Sydney University monometer, which will measure down to one thousandth of an inch of water gauge.

Q. On this diagram you have indicated positions at which you took readings?A. That is correct.

Q. And they have been numbered A, B, C, and D?A. That is right.

Q. Would you tell us why you chose those positions?A. Well, it was relatively in the middle of the ducting and it was about as long as the rubber hose I had with me at the particular time.

Q. This is the hose which is attached to the inclined monometer so that you can put it at a place and then read it on the gauge? A. That is correct.

Q. For the purposes of the ascertainment of the facts you wish to know, was it sufficient that you should take them at these places? A. Yes, quite.

Q. Were the readings as you have marked on the plan?A. That is correct.

HIS HONOR: Q. "W.G." stands for Water Gauge?A. Yes.

MR. REYNOLDS: Q. In all instances there is a difference between each point and the other of .0072 inches of water gauge?A. That is correct.

Q. That does not mean of course that that is the reading at that point, but that that is the difference between one reading and and another?A. That is correct.

Q.And I suppose you took from that that there is an even diminution in pressure where you would expect it to be equal, is that so? A. That is correct,certainly.

Q.And is it right in your theory that if you have a column of air moving in one direction, the further you go away from the direction of travel the lower the pressure reading will be? A. That is correct,relative.

Q.And if it is a steadily moving column of air, do you expect in every 20 yards or 30 yards or 40 yards the same difference will be recorded? A.That is correct,yes.

Q.You wanted to find whether, having regard to the general body of the air, there was in the vicinity of the intersection any reduced pressure which might tend to attract the flow of gases or air from other places into that area of reduced pressure? A.That is corr ct,yes.

Q.How did you go about that problem? A. Well, on position A I measured the pressure difference between A and B, which was .0072 inches, and then I measured the pressure difference between A and C which was up towards the shunt, which was again the same, and then I put another 10 yards of tube on it to take it into the centre of the shunt and there was no difference between A and C and A and D because our instrument cannot read low enough to measure the difference, say, of 10 yards of extra rubber hose so that actually the pressure difference was uniform throughout the whole system.

Q.So that it goes on to the notes, do you swear that in your opinion it is true that - and I am reading from the notation on the plan - "these differences in airway pressure show a constant and uniform pressure difference between airway, intersection and shunt. A localised low pressure area at the intersection, as proposed, is unfeasible"? A.That is correct.

Q."The high water guage developed by two fans in series is necessary to overcome the resistence of the steel duct, so that efficient ventilation is available at the working face." You have already given some evidence about that? A.Yes.

Q.There has been some evidence given here, as I understand it, that with the fan in operation a difference in pressure between the outby side of the brattice stopping in the shunt and the inby side of the same stopping can be measured? A.Yes.

Q.What do you say about that? A. Well, if there is a pressure difference it is of very minute nature. - very minute.

Q.In your opinion would it be of such a nature as to cause gases to flow through that brattice screen? A.No. I would say the pressure difference would not be great enough for the gas to move through the brattice.

Q.At one time it was suggested in this Inquiry that the open end of the bleed tube into the shunt would, because it to the layman seems to present an action of suction, tend to attract, if I may use the word, gases in the goaf through the screen into the shunt. What do you say as to that? A. Well, at the end of the small tube we would have I would say a velocity of, say, 1000 feet a minute or it could be possibly less, but say 1000. At 4 feet away this velocity would be down to in the order of 200 feet a minute, 8 feetaway it would be down to 25 feet, so that the air -

Q.Would you tell us the formula there? A. The velocity decays at the rate of the square of the distance.

Q. And we are measuring in terms of cubic feet per minute? A. Yes, feet per minute. The flow into the face of the tube is of a spherical nature. The air would move around into like a sphere. I mean, if you measured the streamlined velocities --

Q. So that we can understand you would you be good enough to roughly sketch what you say? (Approaching with piece of paper) Just roughly sketch it so that we can understand it, without saying anything yet. (Witness sketches). When you described it as coming in in a spherical pattern, you say that is illustrated by this sketch plan?A. Yes.

(Plan handed to His Honor)

Q. You have just indicated the nature of the air flow into the mouth of the tube?A. Yes.

Q. We are dealing with the question as to why in your opinion there would be no drawing of the gases from the goaf through the screen in to the shunt or the mouth of the tube. Would you go on?A. I am saying this: the flow into this tube would not create enough pressure or velocity to move the gas through the brattice. It would take the easiest path to the tube. It would sweep from intake airway across the floor and into the tube and the velocity in the direction of where the brattice is would be much lower than the velocity coming down intake airway, sweeping across the floor into the tube directly, so the small tube, the velocities from there would not create any difference across the brattice because it would not be of high enough nature to draw air through the brattice on account of the resistance through the flow, of the brattice.

Q. That is if there were air on the other side of the brattice and equally so if it was gas?A. No, it would not create enough.

HIS HONOR: Q. What about the sides of the brattice, assume it was not tight?A. If it is not a tight stopping this stuff would flow underneath and around the sides.

Q. And would do so?A. Yes.

MR. REYNOLDS: Q. Would it do it under the influence of the fan or naturally?A. It would do it naturally.

HIS HONOR: Q. Would the fan accentuate it?A. Yes, I would say so.

MR. REYNOLDS: Q. To what extent?A. Not a great deal. I would say the natural difference in ventilation would be of greater effect than the fan effect.

Q. What is your view as to the adequacy of the vent tube to ventilate the shunt insofar as it deals with the change of air in that shunt?A. If the shunt was a natural area which had to be ventilated according to, say, the Sydney County Council regulations, the amount of air coming out of that tube would be more than adequate to meet those regulations. It was in the order of 10 air changes an hour.

HIS HONOR: Q. I don't know that that really answers the question being dealt with here unless I know the relationships between the regulations and the conditions in the shunt. What is the relationship?A. I am just putting this up as a sort of evaluation of this particular area of the shunt inasmuch as if this Court room was a shunt and these were the type of ventilation requirements that we would have to provide - ten air changes an hour out of this room or shunt.

Q. Is this what you are putting: a ten inch or 12 inch tube, was it - ? A. Yes.

Q.Placed in this particular position in this shunt would provide ten complete air changes an hour, complete air changes, in the shunt. Is that the proposition you are putting? A. Yes but it would do this in the quantity of air that would move. Whether it was correctly distributed is another question which we would go about doing in other ways.

Q.In other words you are saying you get ten air changes in a particular portion of the shunt? A.Yes, there are certain areas where the air does not move into such as the corners.

MR.REYNOLDS:Q.It does not mean a bit of air that was there would necessarily be eliminated in that period of one hour? A. That is so,yes.

Q.But the volume of air that went in and out would be equivalent to ten times the cubic capacity of that shunt in the hour at least? A.Yes.

Q.You say "At least"? A. Yes.

HIS HONOR:Q.Putting it another way: Assume this tumbler - (Demonstrates) the area - it doesn't matter the shape - it is a volume ?A.Yes.

Q.You put a tube in near the edge? A.Yes.

Q.You are getting, coming into the shunt through the tube, ten air changes per hour? A. Yes.

Q.Of a specific quantity? A.Yes.

Q.That may not affect what is happening up here to anything like that extent? A.No, the pattern of the velocities is such it does not reach into the corners and it takes the shortest route.

Q.In other words it is a localised distribution? A.Yes.

MR.REYNOLDS:Q.Is is possible in ventilating an area like that to ensure that every bit of the air is changed within a certain period of time? A. Not under mining practice - it is not economical and - - -

Q.His Honor seemed shocked at that. Would you just explain? -

HIS HONOR: I did not want to interrupt but something fell from the witness, "not under mining practice. It is not economical"

Q.That is the word you used? A.Yes.

MR.REYNOLDS: I was going to ask why it is not economical.

HIS HONOR: I just want to know what is meant.

MR.REYNOLDS: It may cost £1,000,000 to ventilate a shunt, I don't know.

Q.Can you tell His Honor what the problem is? A. The problem is you have to regulate it, you would have to run duct work right into the back corner of the shunt and mount it up say about 4 or 5 feet off the ground and have regular ports into it, it would have to be controlled up a shunt to a certain degree so that you have a uniform velocity of air throughout the whole shunt. This becomes a bit of an engineering problem and requires, shall we say, a bit of technical knowledge from the underground mining people.

Q. Is it feasible to do it in respect of each place which may be used for short periods in a mine?A. No.

Q. Is it only appropriate to a permanent installation?A. That is correct.

HIS HONOR: Q. I suppose the real answer is you either do not create these pockets - ? A. Yes.

Q. - or find some other method of ventilating them than by fans?A. That is correct, yes.

MR. REYNOLDS: Q. It has been suggested that measurements indicate a pressure difference on either side of the stopping out by the fan in the return airways. Would you expect that?A. Outside the return airways stopping, yes, there should be some pressure difference there.

Q. Would that have any effect on the induction of gas into the intersection?A. I should not think so. No, I would say not. We develop a positive pressure blowing from the fans.

CROSS-EXAMINATION:

MR. LEE: Q. Had you made tests for pressure differentials in various places before you made this test you have spoken of? A. Yes, we have done this before.

Q. You?A. Me personally?

Q. Yes. A. Yes.

Q. Under what circumstances, briefly?A. Ventilation survey in mining to fit a main ventilation fan in.

Q. You have done it in respect of mines?A. Yes.

Q. This is the position: When you took these measurements were you advised as to the nature of evidence that had been given in this Inquiry on this matter?A. I was told that somebody suggested there was a large pressure difference in the shunt.

Q. When did you make these tests? 9th November?A. 9th December.

MR. REYNOLDS: I think it may be in your opening.

MR. LEE: Mr. Longworth said there was only a very slight pressure difference. I never said "large".

MR. SULLIVAN: Page 601.

MR. LEE: Q. The points you took, are you aware they were not the points where the pressure differences were measured by Mr. Griffiths?A. I wouldn't know where he measured.

Q. Do you know Mr. Griffiths in fact measured the pressure difference behind the brattice in the shunt and in front of the brattice?A. No, I had not known that.

Q. Let me assure you he got a different pressure from the front to the back of the brattice of .005. A. Very small.

Q. In fact you might think the pressure difference at those two points might be your own figure of .0072?A. It could be.

Q. A bit more than Mr. Griffiths got?A. It could be, yes.

Q. Would you not agree that that differential would be sufficient to permit a flow of gas?A. Not through the brattice.

Q.Not through, but around it? A. It could be around it,yes.

MR.LEE: I am looking at pp.601 and 602. Unless Your Honor thinks it should be pursued, the witness' last answer seems to be as far as the Inquiry need to know, that there is that difference.

Q.Your plan, which we know is not intended to be a factual representation of the situation - ? A. Yes.

Q. - shows air in the intake air flow going into the shunt area? A. Yes.

Q.I want you to assume the brattice in the shunt is 30 feet back from the intersection. You saw that did you not? A.Yes, I saw that.

Q.I want you to assume the intake air naturally entering the shunt is minimal? A.Yes.

Q.Is it not the position that with the bleed tube, the vent tube, all you could expect by way of ventilation would be ventilation limited to around the end of the vent tube? A.That is generally correct, the movement around the corner and movement into the base of the tube. There would be corners up there where there would be no air movement at all.

Q.When you say "corners" in fact depending where you put the vent tube there could be quite substantial areas where gas could come through and by-pass the vent tube, if it were moving? A. There could be pockets, I would say, yes.

Q.In order to be sure the shunt was effectively ventilated you would need, would you not, to consider, or you could consider - in order to have the shunt effectively ventilated you could consider, as one desirable approach, the deflecting of more air naturally into the shunt from the main air stream? A.Yes, that would improve things.

Q.And, with your vent tube in there you would have, first of all, more air entering? A.Yes.

Q.And then your vent tube operating on that air and creating better ventilation? A. That is correct.

Q.You would be the first to agree that to rely upon a vent tube to ventilate an area 30 feet back from the main air stream could not be said to be effective ventilation? A. It would not be the way I would do it. It is not what I would call sound engineering practice.

Q.Let us take it one step further:If you knew or thought that behind the brattice there was probably either in existence, or going to come into existence an accumulation of gas, you would want something considerably more effective than a vent tube to deal with the problem, wouldn't you? A.Yes, I should say so.

Q.Of course the auxiliary fans were introduced, were they not, in the first instance to deal essentially with dust? A. Dust and gas.

Q.Dust and gas? A. Yes, we generate gas at the face.

Q.At the face, did you, until you came upon the situation as outlined in your plan,have any knowledge at all of the auxiliary fans being used to ventilate a shunt area in this fashion or a working place in the fashion indicated there? A. It is the first time I have seen it.

Q.You would have thought, from your knowledge of the fan, that the way it would be used would be to ventilate at the face? A. That is the general function.

Q.You would not have imagined a dual ventilation going on from the fan, one at the face and one in some other working place? A. I should not think so.

Q.Looking at it now I suggest you would agree if you had a shunt properly, or almost properly ventilated by natural air, the introduction of a vent tube could be of considerable advantage? A.That is correct.

Q.But you would not have imagined the auxiliary fan would be used to rely exclusively upon the vent tube as a method of ventilation in a working place? A. No, I probably would not have done so but it is mining practice, miners have their own practices in these things.

Q.You have not seen this set-up before till you went to Bulli? A. I had not seen that trunking type of thing.

MR.PARKINSON: No questions.

MR.CRANE: No questions.

MR.SULLIVAN: No questions.

MR.McNALLY: Q.The diagram, does it show roughly speaking where the bleed tube was situated on 9th December? A. Oh well it appears in relatively but it was down on the floor and about the middle of the floor. Really the tube should come down the wall and be in three or four feet along the floor.

Q.How may extensions were on the bleed tube? You may not remember? A.I could not say, but it was round about, I would say, about 30 feet long - 34 - 35 feet long.

Q.35 feet long? A. Something like that.

Q.That is - ? A. From where it went into the ducting.

Q.I think you will agree that the shunt there was approximately 30 feet long? A. Something in that order.

Q.You know No.2 cut-through ,do you? A.Yes.

Q.I think that is about 21 feet wide? A.Yes, that is so.

Q.So that the end of the bleed tube would be at least 21 - in fact more than 21 feet from the - ?A. 40 feet, I would say.

Q.40 feet from the end of the shunt? A. That is right.

Q.That was on the day you were there? A. Yes.

Q.So I suppose it is fair to say the amount of air being supplied to the outby end of the shunt would not be as much under this situation as it would be if the end of the bleed tube went right to the back of the shunt? A. The quantity of air would be relatively the same but the distribution in the shunt would be different.

Q.If one wanted to ventilate the back of the shunt one would extend the bleed tube closer to the back of that shunt? A. That is correct, yes.

Q.Do you know just how much air or gas would be pulled through the bleed tube under the operating conditions,you saw on 9th December?

A.I did not actually measure it but I believe the Mines Department have been in there and it is about 1200 c.f.m. - cubic feetper minute.

Q.There has been suggested 1500 - -

MR.SULLIVAN: I was being careless when I did that. I knew the figure was 1200 but I put 1500 to the witness the other day.

MR.McNALLY: I am a little confused as to the evidence. The calculation was to be made and was not actually made.

MR.SULLIVAN: I put 1200 to Mr.Griffiths and he agreed. I am sorry, Your Honor.

MR.McNALLY: Q.I think you agree that the shunt is 30 feet long and approximately 21 feet across? A.Yes.

Q.Approximately eight feet high? A.Yes.

Q.Is it correct therefore, and this is my calculation, that the quantity of air, or whatever it might be in the shunt, would be approximately 5000 cubic feet? A. I have not worked it out but I would say something like that order - yes, about four and a half thousand or something - five thousand.

Q.5040? A. 5040. Right. That is correct.

Q.So assuming that the capacity of the bleed tube was 1200 cubic feet per minute it would take approximately four minutes for the bleed tube to pump 5000 cubic feet? A. That is right,yes.

Q.Assuming the bleed tube went to the back of the shunt near the brattice then could we assume that approximately every four minutes the air on the ground where the end of the vent tube lay would be changed? A.Yes, that is correct, the volume of air would be such but again distribution is the thing that matters, I think, in this matter.

Q.At least on the floor of the shunt, if the bleed tube rested on the floor that air there would be changed approximately every four minutes? A.Yes.

MR.SULLIVAN: That is in front of the bleed tube?

MR.McNALLY: I differ,Your Honor.

Q.Not necessarily in front of the bleed tube, it may be behind the entrance of the bleed tube, as demonstrated by the plan.
A.Yes, with the distribution of velocities around the end.

HIS HONOR: Q. Ten feet away it may have a minimal effect; is that the position? A.Yes.

Q.MR.McNALLY: Would the air be changed? A.Yes, it is changing the air all the time, bringing fresh air in and diluting the general area in the shunt.

Q.Under that situation, the bleed tube going to the back of the shunt and resting on the floor, would all the air over some period of time in that shunt, as you inspected it, be changed by reason of the bleed tube? A.Yes, I would say Yes.

Q.Over what period of time would you estimate it? A. I mean at the top where the velocities are less, lower,and where we have sagging it might take 15 minutes.

Q. No longer?A. Well, I am only just having a rough old guess.

Q. What about the general area there - do you say less than 15? A. Yes, it would be changing every four minutes, approximately.

Q. Would that apply to ten feet away from the end of the bleed tube?A. No, I would say not.

Q. How long?A. You could say 15 minutes - ten minutes.

Q. Ten to fifteen minutes?A. Yes - that is only velocities.

HIS HONOR: Q. Would you feel so competent about that answer? A. No, just a wild guess, Your Honor. You do not create pockets of empty air, I mean the air falls and fills up the spaces.

(Witness retired)

(Sketch attached to Exhibit "KK")

JOHN PUDDLE
On former oath:

MR. PARKINSON: Q. On Friday, one of the last questions I asked, or I think His Honor asked it, was this:

> "Q. From what source did you get the information on which you rely that it was Mr. Cambourn who had made a mistake? A. Mr. Ryan who was the overman in charge of the night shift when he came to the surface at 7 a.m. on Sunday morning spoke to me in the Report Room and in general discussion of the colliery itself he said the machine was now set up where Bill Cambourn wanted it set up. "

Was that Sunday morning?A. No, Monday.

Q. That was on Monday?A. Yes.

Q. That was the first information you had that the machine had been moved or withdrawn and that the goaf had not been holed into in that particular area?A. Yes.

Q. Is it customary for you to have an accurate idea when you commence a lift as to the distance that you expect to have to travel before you hole into the goaf?A. Yes.

Q. Had you any idea of the distance to be travelled in this particular lift before you expected the holing to take place?A. Yes.

Q. What was the distance you expected to traverse before the holing took place?A. No more than 150 yards to the holing.

Q. 150 yards?A. Yes.

Q. I do not know whether you misunderstood me: from the commencement of the lift - I am talking about No. 2 cut-through. A. I was talking about No. 13 heading.

Q. You were taking from the intersection?A. Yes.

Q. When you turn around the sweeps there what would be the distance you would expect to travel across the end of the pillar - what has become the end of the pillar?A. Approximately 50 yards.

Q. To your own knowledge had you any idea how far the machine had travelled when it completed the shift on the Friday night, I think November 5th?A. No, I left the colliery at 3 o'clock and there was another production shift started at 3 o'clock, before 11 o'clock on Friday night.

Q. Did you ask Mr. Ryan had he any idea what distance the machine had travelled?A. No.

MR. PARKINSON: Q. Did Mr. Ryan say anything to you about probably missing the goaf and had bypassed the goaf?A. I can't recall it.

Q. You cannot recall it?A. No.

Q. Is it a fact that the machine was actually on line and would eventually have holed into the goaf on that particular lift?A. Yes.

Q. and would this holing have occurred early in the day shift on the Monday, November 8th?A. It should have. Actually we expected it to hole on the Friday afternoon, but there was some breakdown and hold ups in machinery and other causes which resulted in somewhere about half the normal production being won on the afternoon shift on the Friday, so after taking the position at the face on the Friday night at 11 o'clock we would have holed early - or would have holed on Monday morning on normal production.

Q. Had this holing taken place on Monday morning in day shift, what effect would this have had on any gases which may have built-up in the goaf area up to that time?A. You would get a slight flow of whatever was in the air behind the holing coming through the holing. Whatever it was I would not be able to say now or then, but there would be a slight flow of the atmosphere from behind the holing would come through, but it would not come through very far.

Q. But it would have been draining off gases if they had built up in the goaf area or even if they had not built up in the goaf area, it would still have been bleeding off some gas, wouldn't it? A. It could have been bleeding off some gas through there, yes.

Q. Wouldn't this holing have had pretty much the same effect as a bleeder heading?A. Once you had done that you would have formed a heading then, and this is the same thing - the bleeder heading was then already completed.

Q. That is right, because the holing had done this, hadn't it? A. That is correct.

Q. So it was very important to have that particular lift hole into the goaf?A. To have the place holed into the goaf, yes, but not that particular lift - as long as it was holed into the goaf.

Q. Let me now put this to you: What would have been the situation had it been found that either one of the shuttle cars, there was not sufficient length of cable to continue wheeling from that machine at the position it was in when they completed the shift on the Friday night?A. There would be at least two alternatives. One would have been to change over to a longer shuttle car cable. We had no shuttle car cables there. We turn our cables over once they come down below 165 yards, I believe it is, so that if the shuttle car cable had been too short to go down, it would have meant the shuttle car cable would have been shorter than the distance we normally use and so the changeover would give us the distance to hole. The other thing that could have been done would have been to add a little bit more cable out. The cable length is determined by the amount of cable that can be accommodated on the reel and if for instance you had 140 yards of cable on, well, our reels take 150 yards so if you had 150 yards of cable on and you wanted to travel 153 yards, then what we have done in the past is to position some person at the anchor point to look after the cable when it is going on to the reel so that the car approaches the anchor point and the reel becomes fully charged and you have somebody there to look after the cable then because the cable will not run any more then, and to see it goes on evenly and will not become damaged.

Q.The other alternative would have been to withdraw the machine and commence a new lift which would have solved the problem of any cable having to be changed and having to follow the procedure you have just outlined? A. I have already stated that the cable will hold approximately 150 yards and we have found we have travelled this distance and we should have been able to have holed without changing. You have put forward a supposition and I did not say we did not have enough cable to hole at any time.

Q.Well, did you know that there was enough cable on these particular shuttle cars at that particular time?A.I knew there was sufficient on the car to take sufficient cable to allow the holing.

Q.But let us assume the cable was short. Couldn't that have been one of the reasons why the machine was withdrawn and put into the new lift? (Objected to by Mr.McNally; rejected in that form)

Q.Well, if the shuttle car cable was too short, would it not be a simple matter to withdraw the machine to overcome that problem and commence a new lift? A. You always withdraw the machine for a new lift at any time at all, but the purpose had been there to hole the place.

Q.Could there have been any problem with the miner cable? A. There could have been a problem with the miner cable but none was ever raised, for once again the miner cable itself was followed up by a reticulation cable which feeds into the miner box and the actual long cable leads from the gate end box of the machine. Then by positioning the miner box, the gate end box of the miner, you can then travel as you wish provided the gate end box is safely situated.

Q.Now, Is the policy of operation at the Bulli Colliery to employ gangs of men on dog-watch in various districts? A. Yes. The dog-watch is made up of both maintenance and preparation and Federation side and mechanical side and, as you say, teams of men put in the tunnels to carry out their various duties. And generally the same men comprise the same team that goes to the panels each successive night.

Q.And there was such a gang as this in employment in this particular section on the dog-watch?A.Yes.

Q.You say their task primarily was, apart from general maintenance, to prepare places for coal production the following morning? A.And to prepare the area for production, yes.

Q.And one of their tasks would be to withdraw the machine from a given place, say in this instance withdraw the machine from this particular lift, to make it all ready and in readiness for coal production at 7 o'clock on the Tuesday morning? A.Their task is to prepare the place according to the instructions that are left to them and have the place in readiness for production on the following production shift.

Q.And they did precisely this for the Tuesday morning, this gang withdraw that machine on instructions, didn't they? A.Yes

Q.Couldn't this have been the situation, that if that place only had a few yards to go to hole, a matter of four or five cars of coal and the holing took place, then the machine would have had to be withdrawn in the day shift, wouldn't it? A.Yes.

Q.And that would have taken a fairly lengthy time to withdraw it back to the new lift, wouldn't it? A.There was no new lift intended. It had to come back to this place that was set up with the T piece and the vent tube.

Q. Well, that would have taken some time, would it not?A. Yes.

Q. And there would have been a reduction in production on that particular shift as a result?A. Yes.

Q. Is it not possible that that could have been the idea why the machine was removed?A. It was not.

Q. Have you any idea of who actually issued the instructions that this machine should be withdrawn? (objected to by Mr. McNally; allowed) A. I am not quite sure, Mr. Parkinson - would you mind repeating the question?

Q. Let me put it this way: Did you at any time give any directions that this machine had to be withdrawn?A. At no time.

HIS HONOR: Q. Do you know who did?A. On hearsay, as I said -

Q. On hearsay, do you know who did, and I will treat it purely as being hearsay evidence. Do you know who did?A. As I said on Friday, as far as I know the position was this, that the place was driven to carry out, to make the holing into the goaf, the instructions were specific from me that the place had to hole. These instructions were passed on to the afternoon shift by Fred Wright, on to both Bill Cambourn and to Don Eager, and then on the Monday afternoon when Fred Wright saw Bill Cambourn on the surface before going in - Fred Wright had come out at 3 o'clock and Bill Cambourn was going in at 3 o'clock -he spoke to him and asked him why the machine had been withdrawn. He said he had been under the impression that the centres between the extension of No. 2 cut-through and the goaf were somewhere in the order of 30 yards and by the distance he had travelled he thought he had missed the goaf by over-driving in front of it and thought they had better come back to reduce the distance down the extension of No. 2 cut-through so that holing could be effected.

Q. So it was your understanding of the position that Mr. Cambourn took the responsibility of bringing the maching out?A. As far as I knew at that time, yes.

HIS HONOR: As I say, I will merely treat that for what it is worth and you, Mr. McNally, possibly, or anybody else, may be able to put the position by positive evidence before me.

MR. McNALLY: He has not completed his answer to the question, Your Honor. He has only indicated it was the position he understood at that stage.

HIS HONOR: Q. Do you know anything different about it now?A. I have heard in hearsay since that Mr. Cambourn got in touch with Mr. Don Eager and informed him of the position and Mr. Eager agreed with Mr. Cambourn to have the machine withdrawn to the place, the outby place.

HIS HONOR: One would have thought it would have been the simplest thing in the world to establish who made the decision. There seems to be a great mystery about it; that is the part that rather worries me. If in effect the position is that it can be cleared up by evidence rather than hearsay information concerning it, I think it is desirable that should be done. If this matter had not been raised I would not have seen anything at all suspicious in it but I must say it appears nobody seems to know who decided on this particular act and it now begins to assume some importance.

MR. McNALLY: The only two men, on my instructions, who could have any idea of it have not given evidence about it. They are possibly Mr. Cambourn and Mr. Eager. I understand Mr.Eager is away at present. They may be able to clear up the matter,

or Mr.Wright also. I do not know whether he is to be called.

MR.PARKINSON: I would suggest another person too, Your Honor, would be the dog-watch Deputy.

HIS HONOR: Q.What do you say about it, Mr.Puddle? A.Well, as far as I know, the direction to withdraw the machine to the new place was in the form of a note. That was left in the lamp cabin or the report room, addressed to Mr.G.Ryan, who was the night shift overman, in charge of the night shift. He would get this note and would then pass the knowledge from the note on to Mr.Charlie Walker who was the night shift Deputy in 8 Right, who would then have carried out the instructions set out in the note.

HIS HONOR: All I can say at this stage is to repeat that I hope this matter is cleared up properly in as brief a time as possible. I am disturbed to think that in a company when there is a change of intention such as this, in this particular area where a few hours afterwards a fire occurred, at this stage nobody knows who gave the direction and nobody at the moment can tell me positively.

MR.REYNOLDS: I do not understand what Your Honor really means by that. The witness quite clearly in the box has said he was not there and he cannot know, but no doubt there are people who can be asked and I gather they have been in the witness box.

HIS HONOR: The witness is the Under-manager of the mine, Mr. Reynolds, and this fire has now been under investigation for a considerable time. This was a change of operation and the witness himself said he had an impression that the change was a decision of certain individuals. He now finds out, having already given evidence in the box on the matter, that it is somebody else.

MR.REYNOLDS: With respect, I do not think that is right. He mentioned exactly the same thing as he said this morning, and it is there at p.769 of the transcript.

HIS HONOR: I understood the witness a while ago to say, when Mr. McNally said the witness had not completed his answer, that at one stage he thought this and another stage he has since learnt again something else. We are not talking about some ordinary employee in a mine, we are talking about a very significant person in the management.

MR.REYNOLDS: Who does Your Honor mean?

HIS HONOR: Mr.Puddle.

MR.REYNOLDS: I do not understand the implication of what Your Honor says.

HIS HONOR: I will be as frank and brief as I can. It may be that my suspicions are not at all justified and therefore I do not want to voice them too strongly, but this is a matter which for some reason has achieved a significance which I thought it would not warrant.

MR.REYNOLDS: Your Honor will remember on Friday I objected to the matter being gone into at all because we considered it had little or no relevance to the problem. Whether Your Honor thinks that somebody has told lies about the matter, I do not know, but here is an officer who can only depend on what he is told. It may be that in the industry he has not been given the full story and he may have to probe further; that may be the situation. He has told Your Honor what he was first told and what he was second told,

and it may be desirable that someone asks him clearly all he was told about this matter. But once again we get into this problem because of hearsay and we get complete confusion between fact and the relation of facts between other people.

HIS HONOR: This problem does not arise through hearsay. Here we are trying to find out what happened, who made the decision. We find the Under-Manager telling us he has been told two different things. That is the position in a nutshell.

MR. REYNOLDS: Yes. If the matter to be inquired into is what he was told, that is one thing; if the matter to be inquired into is what the actual fact was, that is another. My suggestion is that there could be a confusion between those things which is hard to unravel. That is all I wish to say.

(Short adjournment)

MR. REYNOLDS: Might I make a suggestion before we go any further, Your Honor. My instructions are such that it would seem from fragmentary questions and answers Your Honor has got an impression which is not accurate and I would invite Your Honor before this matter goes further to personally ask the witness questions as to what he was told and as to his source of information and whether there is any real inconsistency in what he was told because if the matter goes on in the way it has it can I suggest possibly lead to an unfair situation. Would Your Honor be good enough to intervene? I do not want to lead. When I come to re-examination it may be too late. Would Your Honor accept my suggestion?

HIS HONOR: I think it is an excellent suggestion. Thank you.

Q. You have heard what Mr. Reynolds just said: Let us start off with this; this miner was withdrawn at some stage in the original drive, if I may call it, it was making?A. Yes.

Q. It was withdrawn, apparently, between shifts?A. Between production shifts, yes.

Q. Does that mean it was withdrawn during the dog-watch?A. Yes.

Q. What were you told as to the reason for its withdrawal? What were you first told?A. I was told on Monday morning the miner had been withdrawn to the new place. I asked why this had been done and I was told there had been a note left by Mr. Cambourn to have the machine set up in the outby place.

MR. REYNOLDS: Q. Who told you that?A. Mr. Ryan.

HIS HONOR : Q. Mr. Ryan?A. Yes. I spoke to Mr. Wright who is the Assistant Under-Manager and the area that he covers in the 1 North District includes 8 right section and I asked him to see Mr. Cambourn at 3 o'clock on the afternoon when Mr. Cambourn started his normal shift and the day shift was finishing to find out why the machine was withdrawn.

I spoke to Mr. Wright after this and he had seen Mr. Cambourn and he told him he had withdrawn the machine because he thought he had missed holing the place. This is what I had right up until this year and I just heard that Mr. Cambourn had seen Mr. Eager prior to the end of the shift on the Friday night and before the dog-watch shift had set the machine up on the Monday morning.

Q. When did you first hear that?A. I believe it was Charlie Stewart mentioned it to me in the office, that Billy Cambourn had seen Don Eager about this.

Q.When was that? A.I think it was the week before last. The next thing I heard about it - (interrupted)

Q.Before you go any further: Is that the first time you knew that Mr.Egar had been consulted in this matter at all? A. Yes.

Q.In between that time you thought Mr.Cambourn had done this on his own initiative? A.Yes.

Q.Did you speak to Mr.Cambourn about it? A.Not personally,no.

Q.Why was that? A. I was satisfied with what I got from Mr. Wright who had already seen him about this.

Q.In other words you thought Mr.Wright had done all that could be done in the way of asking Mr.Cambourn for his reasons? A.Yes.

Q.You were about to say the next thing you heard - ? A. The next thing I heard - this was when Mr. McNally raised this point in Court on last Thursday or last Friday and on Friday afternoon I spoke to Mr.Cambourn at the pit and he told me this was right, that he had been in touch with Mr.Egar and he had said "All right, we will draw the machine back to the new place you have suggested."

Q.Have you spoken to Mr.Egar about this? A. I have had no chance to speak to Mr. Egar. He has been on holidays since the resumption of work on the 17th.

Q.And he is still away? A.I believe he should be resuming to-day at Nebo colliery.

Q.So it may be possible for us to get Mr.Egar should it become necessary? I do not know whether it will be necessary or not, but on your understanding of the position, Mr.Cambourn wanted to withdraw the machine and before he did so consulted with Mr.Egar; is that right? A.Yes.

Q.Mr.Wright was informed of this at some later stage, having asked Mr.Cambourn, and that is the information Mr.Wright received? A.No, the information Mr.Wright passed on to me was that Mr. Cambourn had told him that he, Mr.Cambourn had withdrawn the machine because he thought it had missed the holing, he hadn't mentioned to Mr.Wright -

Q.You say he had not mentioned to Mr.Wright?A.No.

HIS HONOR: Mr.Cambourn is available, is he?

MR.McNALLY: Yes, he is on afternoon shift on Wednesday. He is probably available right now.

HIS HONOR: Some inquiries may be made so that we can clear up this matter. I see no reason for anybody asking this witness any further questions about that now.

MR.REYNOLDS: I am content.

MR.McNALLY: Does Your Honor want us to arrange for Mr. Cambourn to come to Court?

HIS HONOR: I think it would be of some assistance because as I see it the real point at issue here is why was the miner withdrawn? It is obviously assuming some significance because the evidence before me is that the idea of the management, if I can speak about

them generally, was to hole the goaf as soon as possible and yet the machine did not hole the goaf directly, it was withdrawn to another position. A suggestion has been raised here by those Counsel cross-examining about it that the reason why the miner was withdraw was that it was required that the company management sacrificed safety, the principle being that that would hold the goaf as soon as possible, to get more coal. As I understand it that is the suggestion before me, therefore it is a relevant matter for me to enquire into. Mr.Cambourn may be able to clear up the matter. I think he at this stage becomes a relevant witness.

MR.McNALLY: We could probably arrange for it to-morrow morning. We have to catch him, Your Honor.

HIS HONOR: If it could be done, that would be convenient. Mr.Cambourn does not have to come today. Proceed, Mr.Parkinson.

MR.PARKISNON: Q.I would like to take you to p.5 of your statement. I cannot say what page of the transcript it is as I have not the transcript with me, it has become so large. I will read the passage which appears about half way down the statement on page 5. I understand now it is page 720, the second last paragraph: "We had previously had trouble in 2nd North G Panel where we had been making pillars of 33 yard centres and 66 yards long. G panel was within about 200 yards of the zone of the same geological paul as determined the terminal point of the headings driven in 8 Right. In G panel it had been difficult to split the pillars and retain the roof. It had been decided to make pillars 40 yards by 66 yards to enable safer splitting which would also have the advantage of allowing direct wheeling." In this particular 2nd North G panel which way were the pillars split? Were they split across or were they split end on? A. They were split across with 33 yard centres.

Q.When the pillars were reduced in G panel what effect did it have on roof control? A. Were reduced?

Q.Yes, you say "it had been decided to make pillars" - rather increased - when the pillars were increased in G panel what effect did that have on roof control? A. We tried splitting the - I think it is the pillar marked 4 between A and B heading. Yes, No.4 pillar. That would be between 4 and No.5 cut-through and we tried splitting down through that one. We could not control the roof at any part of that and that is why we did not use the direct splitting at all. The roof conditions here would not even allow us to hole the places with the 40 yards of coal on, so the roof conditions even with our intention of leaving larger blocks of coal so that when we split it would leave a still larger block of coal to support the intersections and the subsequent roof stresses, did not work out in fact because the conditions themselves were not suitable. They were bad conditions.

Q.This was despite the increase in the size of the pillar? A. Yes.

Q.On occasions you endeavoured to split pillars in 8 Right, the area that we are discussing, and you were successful in these attempts also, were you not? A. Yes.

Q.Which way did you split those particular pillars? A. On the 33 yard centres.

Q.Yes, but you split them across, didn't you; you did not split them end on? A.No.

Q.Then you decided to dispense with splitting and that was when you dispensed with the bleeder heading? A. Oh no - actually, yes, it would do. We only withdraw one pillar of coal outby of this area, yes.

Q.Have you your statement there?A.No.

Q.I do not know at what page this would appear in the transcript but it is page 7 in your statement. You said at the bottom of that particular page "I had been in this section on numerous occasions prior to the accident and the working conditions were quite normal and there was no trouble with gas." Do you remember that portion? A.Yes.

MR.MURRAY: It is the third paragraph on p.722, about the middle.

MR.PARKINSON: Q.I am reading a little out of context. It is a paragraph. I am asking you whether you are fully conversant with that portion of the statement? A.Yes.

Q.You say "I had been in this section on numerous occasions." Just what section were you referring to on that particular occasion - was it the No.2 cut-through? A. I had been in the panel on the 3rd, I think it was, the last time I was in there, and that was in No.2 cut-through . I was in the panel one week before that, once one week before that, and once one week, the previous week. I generally get into the panel about once a week.

Q.What you are saying is that you found working conditions were quite normal and that there was no trouble with gas. That is in

your statement? A. Normal, consistent with the area we are referring to.

Q.Of course, you say normal conditions. On the same page of the statement, about the middle of this page 7, you state " It is our practice, after splitting a pillar to extract the coal in lifts along the goaf edge and my intention was that, on the next shift after holing, the miner would be moved to an appropriate position in A heading and the pillars split if roof conditions allowed"?A. Yes.

Q.If you had found working conditions normal under the present set-up and no problems from gas, why was it your intention to split that particular pillar end on? A. The reason you do this is to allow successive lifts on retreating back from the goaf area to be of such length that it could be reasonably expected to extract one lift in the one day so that the machine and the men are not exposed on the goaf edge in a lift that stands any longer than is necessary. If you turn around and make the lift say, instead of 24 yards, 48 yards or 50 yards, then it would entail keeping the machine in the goaf edge in the one lift for at least 2 days and because of this it is far better to have the machine in a new lift on each day. This is the reason for taking, giving the 33 yard splits, and that was the idea of the whole panel there.

MR.PARKINSON: Q.But then you had experienced trouble in this area and in G panel as a result of splitting, had you not? A.Yes.

Q.After you dispensed with the splitting - first of all you did not split the pillar that I take is marked 11 here ? A. Marked No.12?

Q.I am referring to No.3 cut-through and the pillar that was removed there? A. In the area marked 11?

Q. Yes. There was no split there? A. No - 33 yards centre there.

Q. There was no split in the area marked 10? A. Yes, all these are splits, all the way back. If you use the three headings, A, B and C as the criteria for looking at this you will readily see all of those pillars have been split.

Q.(Approaches witness). Explainto me, would you? A. These are sixty six yards centres. (Demonstrates) That one comes down through the centre there, this one comes off that 33 yards, this is off another 33 yards and that one off is 33 yards. This one is 55 yards. Instead of the sixty six wide there we still had 24 yards of coal left for a lift after the split had gone through.

MR.McNALLY: We cannot see it, Your Honor.

HIS HONOR: Q.I think the witness is saying, and correct me if I am wrong, the extensions of these cut-throughs are in the form of splits in pillars? A. The split of the area we are extracting,yes.

Q.Turn it around, let Mr.McNally see what you are referring to and say it again.? What I said was the intention of splitting through here, mid-way between 2 and 3, is merely carrying out the same practice we had adopted at all places in here of splitting down and taking the coal off that split.

MR.McNALLY: Q.Is No.1 a split? A.No.1 was the terminal place.

Q.2 is a split and 3 is? A.That is right, and 9 is a split. 13 and the subsequent ones between 9 and 13 would have also been a split.

MR.PARKINSON: Q.The situation is it not is your intention to split this pillar - ? A.Yes.

Q.Was a change in procedure as to what had been done in the past? -

HIS HONOR: That is the pillar created?

MR.PARKINSON: Yes.

HIS HONOR: Between the extension of No.2 cut through and the goaf?

MR.PARKINSON: Yes.

Q. This pillar created by the No.2 cut-through: you say it was the intention to split that pillar end on? A.Yes.

Q.I put it to you that was something of a charge in what you had done hitherto in that area? A. In this area,yes.

Q.Why, again I ask the question, were you changing to that particular split down? A. This actualy method of splitting down behind and coming across wasn't the first time it has been practised in the Colliery and all other panels have had this same system done before. In Green panel we carried this out and the reason is if you form your outby split first your machine has holed

the goaf and then when you bring your machine back in to the split between that the goaf itself your machine takes the splits down there and is then in a position to start extracting the coal without the necessity of having to move the machine around more than one - if you had done this alternatively and driven the split first then on completion of that split you would have to go back out to the one which has already been driven now, drive that one through and bring the machine back from there to the preceding lift and then start pillar extraction.

HIS HONOR: Q. What I do not understand is this: I am referring to the pillar between 13 and 10. I just said 10 but I meant 9 - ? A. Yes.

Q. On the completion of holing into 9 you split the pillar longitudinally alongside 9; is that right?A. No, you split the distance up, it would have been midway between 9 and 13.

Q. You split it down?A. Yes.

Q. But you lift - ? A. To the right.

Q. In other words you lift from the goaf side at the No. 9?A. You lift to the goaf side.

Q. Is the purpose of that that you take your machine right up to the end of where you hole into the goaf and then drive it round and extract from the other way, or do you withdraw it, coming right back to the original heading, and then start again from the heading side?A. No, from the original one, or you have got the first one, you split down here through, you join the holing that has gone into the goaf and then using that holing as the full extent of your extraction you then retreat in successive lifts parallel with this lift here.

Q. Do you actually drive the machine, the miner, so to speak? A. Yes, you take a right angled lift off from the split.

Q. In other words you run the machine in reverse direction?A. No, the machine is still carrying for'ard. As soon as you complete one lift of coal you drop the machine back out until the face of coal is met again on the next lift outby and then you shear that again, still on that particular plan.

MR. PARKINSON: Q. You did not do this in the area between No. 2 and No. 1, did you?A. Yes, No. 2 and No. 1 is the split itself - the centres there are only 33 yards.

Q. Isn't there a pillar formed there then?A. I am not quite following you, I am sorry.

Q. I am referring now to the area on the colliery plan marked number 2 and number 1. We have a pillar formed there. A. Yes.

Q. You did not split that pillar end-on?A. No.

Q. Nor did you split the pillar end-on - the area between No. 1 and No. 3?A. As I explained before the idea of splitting in this direction was to leave sufficient coal for a lift between the splits marked 2, 1, 3 and 9, to have the lift somewhere round about 24 to 30 yards of coal and this, in effect, had been done right back through and also that was the idea, for the 66 yards centres, so that there would be the split in between, the same here again, the split down here would have been doing the same thing as was carried out in there and carried out in there, as you mentioned.

Q. You made an important qualification in your statement in connection with this particular split that we are discussing now didn't you? When you stated that the miner would be moved to an appropriate position in A heading and the pillar split, if roof conditions allowed?A. Yes.

Q. Roof conditions had beaten you in the past,hadn't they?
A. They caused us concern to try and do what I have tried to Axplain in the last few days here, yes. We were concerned with roof conditions.

Q. But roof conditions had beaten you in the past?A. They had certainly limited output on the inby places - the recovery of coal from the inby places.

Q. What happened to the area marked No. 4, the pillar marked 4?
A. There were little bits and pieces taken out of that. It was ratholed. That is all it was.

Q. Why were little bits and pieces only taken out? What was the reason?A. Because of the roof conditions that were there.

Q. The roof conditions were bad. Wasn't it as a result of bad roof conditions that you arrived at a conclusion that in your opinion it would be better to form the pillar, dispense with the bleeder and quickly extract the pillar while it was green?
A. No.

Q. I thought you have that evidence. A. No, not the way you said it.

Q. Just exactly what did you say? A. I said after we dispensed with the bleed tunnel for the extraction of 11 and then we were going down here, as I have said, and driving 13, hole into the goaf, come back into A heading and split between 2 and 3 parallel with 13 and then we would have our bleeder heading back in use again.

Q. How did you come to dispense - what was the reason you dispensed with the bleeder heading?A. As I told you last Friday I dispensed with the bleeder because of the roof condition itself. Roof conditions in the past had resulted in very poor percentage extraction of coal, with poor extraction of coal, we also had roof conditions which deteriorated to the extent that the drivages were left open before they were used to take lifts off the blocks of coal in the pillar and because of this and our success as subsequently shown by taking the lifts out of 9 while that lift had only been driven over a short time, showed the roof conditions were far better controlled by the quicker extraction of coal after the formation of that area.

Q. Assuming you struck bad roof conditions in this particular area that you intended to split end-on, what would have been your action then?A. What were the roof conditions?

Q. I beg your pardon? A. What were the bad roof conditions? You are telling me of bad roof conditions, what are they?

Q. I am only going on your statement: your statement is that the miner would be moved to an appropriate position in A heading and the pillar split if roof conditions allowed. Now, assume roof conditions did not allow the split to take place, what would you have done then?A. In that case one possible alternative that would quite easily be put into use would be to drive a parallel place to No. A Heading, slightly inby of A, along extension No. 2 cut-through.

Q. (Approaches witness) Where?A. If I came down here and through here leaving a barrier of coal of sufficient size to support this intersection and support the intersection I was taking off, split through there, which is from there, coming down here, and then extract that.

MR. McNALLY: I wonder if we can use the other plan?

(The witness went to the plan on the floor of the Court)

HIS HONOR: Point out what you have just described to Mr. Parkinson.

MR. PARKINSON: I suggest it might be a good idea if Mr. Puddle describes it on the major plan, Your Honor.

WITNESS: The question is still the same: What would I have done if roof conditions in this area prevented my intention of coming down here and splitting here. My answer is one possible alternative was we could have come down this extension of No. 2 cut-through sufficiently far to leave coal here to support both this intersection and the intersection we were turning away from and then drive a place parallel to A heading and off the goaf. From this heading another face then could be driven down here and holed into the goaf down here again and once again this area could be successively lifted back to the split that was in.

MR. PARKINSON: Q. Wouldn't it be true to say that the very development of that split would immediately weaken the pillar? A. It must have some effect, on the roof.

Q. And it could re-create the very conditions that gave birth to the idea of larger pillars?A. Yes.

Q. You say there would be probably round about 48 yards of coal from rib to goaf ?A. Yes.

Q. In width. You drove a split that would be anything from 21 to 24 feet, wouldn't it?A. Approximately 19 or 21 feet, I suppose.

Q. Allowing for the ribs fretting and pillar areas it would be very difficult to get out under 24 feet, wouldn't it?A. It could go up that far.

Q. That is another 8 yards from 48 yards. What size pillars are you going to drive?A. Just a moment, I think you misunderstand me. The centres between 2 and 3 cut-throughs are 55 yards. Our placers are driven somewhere round about 7 yards so there would be 14 yards off the 55, which gives us 41 yards, which leaves over 20 yards of coal for the lift.

Q. So you would have 20 yards by 100 yards pillars. 100 x 20 yards pillars. A. There would not be quite 100, but approximately that.

Q. Would you say that would be conforming to maintaining larger pillars?A. Maintaining larger pillars?

Q. Would not you be inviting the development of bad roof conditions by splitting that pillar end-on?A. I did not think so. As I said to you before, if you could drive this area and immediately upon driving it drop back and extract the coal that was left available for extraction by the split itself, by doing it this way we had shown there was a marked improvement in the inby pillar that was extracted and I expected the same to eventuate in this.

Q. Would not the split tend to create roof stresses into the centre?A. Into the centre of where?

Q. Into the centre of the pillar, the centre of the area you are splitting?A. There would be roof stresses there but whether it would come into the centre - I would hardly think so - there would be stresses there but whether the arch would come back into the centre of the face, I very much doubt.

HIS HONOR: I am at a loss to see where this is leading. Is this a general criticism of the method of working the mine or is it leading to something which will be of assistance to me in determining the cause of the fire?

MR. PARKINSON: Only this: I did not see any reference to this in Mr. Stone's statement, that they intended to split that pillar and of course the significance of the splitting of this pillar, after that had holed they split, and then they have a bleeder. (Indicates on plan)

HIS HONOR: Are you questioning the statement that that was the Under-Manager's intention?

MR. PARKINSON: Yes.

HIS HONOR: Assume you do question that statement, what is the next thing, the next inference you ask me to draw?

MR. PARKINSON: The whole thing, as I see it, is that there is a statement here from Mr. Puddle and on the last page, four lines from the bottom, "replaced by the bleed tube" has been erased after the statement was made and the words "omitted" inserted. The inference in my mind is that it was only temporary, and in fact I think Mr. Puddle makes that statement in the statement, that this was a development that was taking place to re-establish the bleeder heading.

HIS HONOR: Go on with your question. I see what you mean.

MR. PARKINSON: Q. Was this idea to split in this way this particular area we are referring to, was it your idea?A. Yes, I think so.

Q. Did you discuss it with anyone?A. I discussed it with the Assistant Under-Manager, yes, Fred Wright, who was in charge of the area.

Q. Did you discuss it with the Manager?A. It has been mentioned to the Manager, yes.

Q. It has been mentioned. Do you remember discussing it with him?A. Whether it was discussed - it must have been some kind of discussion, I imagine. It was talked about, yes. Yes, it would be discussed.

Q. Did you discuss it with the deputies in that particular area, for instance deputies Walker , Stewart and Cambourn?A. No, I don't recall.

Q. Did you discuss it with Overman Ryan and with Overman Eager? A. No, I don't think so. Could have - I won't swear to this.

Q. That means if this place had holed that Friday night and according to your statement the shift after it holed you were going to split this pillar, if you had not discussed it with them then you would not have been splitting this pillar?A. As I said I had already discussed it with Mr. Wright. Mr. Wright is the Assistant Under-Manager whose area includes 8 right section and he would have passed on the necessary details, I imagine, on this one.

MR. McNALLY: I ask that the last part be struck out. It may not be necessary to strike it out but I object to it. It is not an answer to any question he was asked.

HIS HONOR: I suppose this witness is presuming it. I will interpret it that way.

MR.PARKINSON: Q.When did you evolve this idea? A.What idea?

Q.The idea of splitting the pillar end on? A. The idea to split the pillar was at the same time as we came back to No.2 cut-through, to drive that one down there. Drive the extension to No.2 through first and then come back and split in between. I would like to say that this idea of driving the tunnel or the heading round the outby side and then coming back to the centre and splitting there was no inovation at all. It can quite readily be shown that all other areas in which we have used ventilation by auxiliary fans in Green panel, in Violet panel and in Yellow panel, this same system has been done where the tunnel has been driven down, holed through into the goaf and then the pillar that has been formed by that has been subsequently split and the coal taken out of this split.

Q. (Approaching Exhibit A) Would you say that this method of yours would have improved wheeling conditions? You refer to wheeling conditions as a shuttle car wheeling coal. You split and I take it the idea was to lift off to the goaf? A.Yes.

Q.So you had been coming this way, up that way, around the turn and around another turn? A.Yes.

Q.Would you say that that would have improved your wheeling conditions? A.It would have been no different at all from the places we have driven inby there.

Q.It is a bit different from the present method now, where you only take the one turn out and straight off No.2 cut-through? A. No different at all to the shuttle car road that had to be used when we developed or when we extracted the yellow portion on the plan and also when we extracted the top part of the pillars marked , I think it is 11.

Q.Are you aware that mining engineering thought strongly favours to-day the extraction of pillars without splitting if possible.? A. I am afraid I don't quite follow you in this. It has a very wide meaning and I would like to -

Q.Well, we will make it a little narrower. I look upon this (indicating) as a pillar that has been formed. Would you agree with that, that this area here is a pillar that is being formed? A.That is right.

Q.As a result of driving this cut-through down? A.Yes.

Q.I am asking you now, are you aware that mining engineering theory to-day strongly supports the extraction of that pillar without any splitting whatsoever? A.No, I don't know that.

Q.You do not know? A. Contrary to that, I do know that at Wongawilli Colliery some time ago they used with some success the idea of splitting down very close to the goaf, leaving a fender on and then robbing the fender on the retreat and this was not a matter of just going through for a yard or two. They were going through for some sixty or seventy yards.

Q.Of course, Wongawilli is another A.I. & S. colliery,is it not? A. Yes.

Q.I take it that you read mining literature - up to date, current mining literature? A. I read some of it.

Q.And you have never seen any reference at all to this question of the extraction of pillars without splitting, wherever practicable? A.In our experience up there in the other areas, we have found

this by far the best method of doing it - of going in, of taking the small lifts off, and I would say that to go into that pillar now that was formed there and try to extract that pillar on successive lifts coming back from the goaf edge you would definitely lose- you wouldn't definitely, you couldn't say that, but from all that I have seen in the place you would in my opinion lose more coal in doing that than you would be by splitting the pillar and taking out the lifts in the manner I have already described, as I was going to do.

Q.If this plan is any indication you could not have lost very much more coal than you lost in this situation, could you? A. I didn't lose it, the conditions lost it. I was trying to improve it.

Q.And you still do not agree that the splitting of this pillar may have re-created the conditions that you encountered previously in that area? A. I didn't think that way. That was the reason for my doing it.

Q.But you made provision for it in your statement, did you not, that if roof conditions allowed it -? A. All work in the Colliery is carried out if roof conditions allow it.

Q.So you strongly suspected roof conditions could beat you? A. Well, I didn't really know at that time. What I meant by that was this: At this period we dropped back and were driving the extension of No.2 cut-through and when we came back to split again we would have been coming back A heading between these areas and 30 feet down this cut-through there was a brattice stopping erected and I couldn't see what was happening to the roof conditions behind that brattice stopping, and this is the thing to which I am referring when I say "If roof conditions allowed it." Had roof conditions down there deteriorated to such an extent that you could not have got in, either some alternative means of doing it must have been devised.

Q.You have told me you did not discuss this idea with the manager specifically, to your knowledge, that you did not discuss it with the deputies, that you did not discuss it with the overman. I am going to suggest to you that never at any time did you intend to split that pillar that way. What do you say to that? A. I say to you in all honesty, Mr.Parkinson, my intention was to split that pillar.

Q. Was this idea conceived before the fire or after the fire? (Objected to by Mr.Reynolds as needlessly offensive and should not have been asked)

HIS HONOR: The witness has already sworn that that was his intention. Are you now putting that he has concocted that answer? Are you really putting that, Mr.Parkinson?

MR.PARKINSON: Yes, I am Your Honor.

HIS HONOR: Q.What do you say as to that? Is your last answer true or false? A. My intention to split the pillar is true.

MR.PARKINSON: Q. I go now to the last statement in your statement. You claim to be safety conscious at all times underground? A.I try to be.

Q.And you would not at any time compromise on safety, as an Under-manager, I am submitting to you? A. I at no time would expect a man to go anywhere or do anything that I wouldn't do, and I have a fair respect for myself.

HIS HONOR: Q.That is not an answer to the question. You might be a

very brave man, you might be a very cautious man or a foolhardy man; I am not suggesting you are any one of them. Would you at any time, for the sake of production, ask a man to take a risk in working under the conditions that obtained? A. If the risk was such that any person might be hurt at all, no.

Q. That any person might be hurt at all; that means, does it, you would not ask any man working under you to take a risk that you could foresee was possible as to his safety; is that right? A. That is right, yes.

HIS HONOR: You may take it from there if you wish, Mr. Parkinson.

MR. PARKINSON: Q. You stated on p.8 of your statement, which is the last page, "I do not attempt to justify the method adopted by me." This is in reference to the omission or the dispensing with the bleeder heading in the cut-through. "I do not attempt to justify the method adopted by me as being the only one which could have been adopted." As Under-manager, what were the alternatives to the method you adopted? A. The alternatives to the method that could have been done there would have been possibly to come back and say, for instance, instead of having the shunt down where it was, it was possibly like - may I have the plan?

Q. Go to the big plan, Mr. Puddle. (Witness approaches Exhibit A) A. The alternatives, coming down here and coming across here and by using a brattice across there and using the spiral tube -

HIS HONOR: Q. I do not think this can be described for the future simply by being recorded as going from here to there. Would you describe what those places are? A. Well, instead of using the spiral tube and ventilating merely from the fans over to the stopping itself in A heading, it might have been possible to have put a tube itself running through from a completely stopped place here back over to this other side and instead of having the auxiliary fans bringing the air through this spiral tube as it was at this time, by substituting tubes that can go back into the return and over into the inside of the stopping so that the main mine fan itself would effect the drawing off of anything that was behind the stopping. This is one possibility and that is the one I referred to at that time.

Q. I suppose the second alternative would have been to dispense with the brattice stopping into the shunt? A. In view of what happened in the subsequent flames, that would have been a far better way of keeping that edge clean, there is no doubt about that, by diverting the air around that. (Witness back to box)

MR. PARKINSON: Q. On the same page of your statement you said "We had serious roof problems but ventilation had been normal." Despite the serious roof problems ventilation had been normal. Now that was in the past tense. Is there any significance in that particular statement? A. Actually, when the statement was made was after the incident and something had happened in the ventilation in that period.

Q. You were not suggesting that with the dispensing of the bleeder heading the ventilation in your opinion was not normal, were you? A. No.

Q. Where you say the ventilation had been normal, the bleeder heading was in operation, wasn't it? A. Yes.

Q. And this normal - A. Excuse me just a minute. As I said before, not to get confused on it - when the coal in No.11 was taken out that was when the bleeder was actually dispensed with and the ventilation in that area, we had had no problems with it.

Q.And this was a normal scheme, was it not, or this scheme of normality in relation to ventilation had been devised by Mr.Muir of the Mines Department and Mr.Ryan and had proven safe and satisfactory up to that period, had it not? A. There is very little difference between the set up we have in this panel here now and the method we were using in Green panel when the system was devised by Mr.Muir and Mr.Ryan inasmuch as there was still a common return coming back out from Green panel and we still went up and drove the heading and back across into the goaf to form the bleeder and we came back in again and then split up and extracted the coal.

Q.But isn't this the position: There was a fundamental difference, there was no bleeder heading in your scheme and there was a bleeder heading in Mr.Muir's and Mr.Ryan's scheme? A. There was no bleeder heading when you are driving a bleeder heading, Mr.Parkinson. That is what I am trying to say.

Q.There is no bleeder heading when you are driving a bleeder heading? A.That is so.

Q.And there was no one working in the inby pillar, was there, when you were driving the bleeder heading? A. There was nobody working in the inby pillar when we drove this.

Q.When you drove the bleeder heading were you extracting a pillar anywhere in that particular area? A. Extracting and forming the bleeder heading at the same time, do you mean?

Q.Yes. A. Oh no, never.

Q.Well, there was a fundamental difference, was there not, if there was a bleeder heading there in one case and there is no bleeder heading in the next case? There must be a fundamental difference between the methods? A. You have got me a little bit confused about this. Just what area are you talking about?

Q.I am talking about this 8 Right Section. I am talking now about the scheme that was devised by Mr.Muir of the Government Mines Department and Mr.Ryan. It made provision for the driving of a bleeder heading, did it not? A.Yes.

Q.Your scheme made no provision for the driving of a bleeder heading as we knew it under Mr.Ryan's and Mr.Muir's idea? A. Yes, of course it did. That is what I have been saying all along. We were driving a bleeder heading now.

Q.Then you explain to me where the bleeder heading is at the present moment in No.2 cut-through? A. We are driving the bleeder heading, Mr.Parkinson. As I said, we are driving the bleeder heading now.

HIS HONOR: Q.Is this what you are saying, that the number 13 was the driving of a new bleeder heading? A.Yes, we were going down there, coming across again, and then by coming back in again to A heading and splitting down, that left a bleeder heading coming round the present drivings.

Q.But you were extracting coal, were you not, before you had a bleeder heading? Isn't that so? A.Yes.

Q.Are you suggesting this as the suggestion now - because I thought you were suggesting something else - that this was the ordinary method by which you had been working in these previous cuts, 9, 13 and 2? A.No. The bleeder heading was in use up till we came back from 9 and you will find from the evidence I gave last week that that is where we dispensed with the bleeder heading. As I just asked Mr.Parkinson then, where he was referring to, from what he answered

me I thought he was still back on the extension of No.2 heading .

MR.REYNOLDS: It is conceded at all times in his statement and it will be by me at the end that when the pillar marked 11 was extracted before the driving of a bleeder tunnel, this was a departure from the system which had been developed before and there has never been any issue about that and never will be. Then this cross-examiner goes on to say, and debates with the witness, what he was doing when he was driving No.2. The departure had been made long since and there is a big difference - and this will possibly be a matter for argument later, - between the danger that exists when we were extracting from No.11 and the danger that existed at the time of the fire, because at the time of the fire, depending on the view one takes of what was being done, a bleeder was being driven and always when a bleeder is being driven there is a situation, not precisely identical perhaps but akin to this.

HIS HONOR: Is this what you are putting, that what was being done here was merely a repetition of what was done at the commencement of these operations by the driving of a bleeder heading?

MR.REYNOLDS: Precisely so. There is very much common ground, and if I may say so with respect, it is being hashed and rehashed when it is not an issue.

(Luncheon adjournment)

MR.PARKINSON: Q.In the last paragraph of your statement on p.8 you say "In my experience an important function of an under-manager is so to control operations as to maintain an equilibrium between the problems of ventilation and roof control. There can be mutual inconsistency between the optimum solutions of the two problems and a balance must be struck. In some situations ventilation may be the major difficulty and, where roof conditions are good, some concession in roof control may be able to be made in order to overcome it. In 8 Right I believed the opposite to be the case. We had serious roof problems but ventilation had been normal. I believed that, in the interests of safety, ventilation could make some concession to roof control. I therefore formed the conclusion that, for a short time only, the bleeder from the goaf could be omitted. This appeared to be working satisfactorily and I believe that it would have continued to do so had it not been for a build-up of gas which must have either been very sudden or escaped detection." Don't you agree there was a compromise on ventilation and roof conditions on that occasion? A. As I said there, yes.

HIS HONORQ.What was your answer? A. The same as I made in the terms of the statement - there was a concession made in this.

MR.PARKINSON: Q.And wasn't this compromise effected and devised in the interests of coal production? A. Coal production, consistent with or together with safety.

Q.I want to take you to page 2 -

HIS HONOR: Q.Before you leave that, you heard Mr.Reynolds say before the luncheon adjournment that in fact what you were doing here was to drive a bleeder to the goaf? A.Yes.

Q.In fact this was part of the normal working, which had nothing to do with the fire. That was the substance of what Mr. Reynolds put; do you agree with that? A.Yes. In my opinion, yes, Your Honor.

Q.That being the case, why do you say that you conceded something here in ventilation? A. I am referring now to the extraction of the

coal as marked 11 on the plan on the Board, where the bleeder was dispensed with.

Q. Is this what you are putting: do you mean you made a concession in ventilation before the fire which had nothing to do with the fire? A. That is my opinion, yes.

Q. If that is the case why do you go on to say in your last sentence "This appeared to be working satisfactorily and I believe that it would have continued to do so had it not been for a build-up of gas"? A. The reason I say that is that there must have been a build-up of gas at this point for the ignition to take place at all. The reason why I say that it had worked satisfactorily was that it had worked satisfactorily in the previous position it was in and also had worked satisfactorily up until the time of the ignition on 9th November.

Q. If that is your answer, will you agree that when you made this statement it read "I therefore formed the conclusion that for a short time only the bleeder from the goaf could be replaced by the bleed tube"? A. No, that was not my intention.

Q. First of all, whether it was your intention or not, did you say it? A. Yes, I could have said it, I must have said it.

Q. It is here in this typing? A. Yes.

Q. When was it changed? A. It was changed this year.

Q. After the inquiry started and after attention was drawn to this particular question of the lack of a bleeder in the goaf and the institution of a bleed tube to the shunt; it was after that that you made an alteration to your statement, was it? A. I knew of the conditions that were found at the time of the fire and also the results of the investigation before the end of the year.

Q. Will you please answer my question? A. I take it the question is why did I change this statement over.

Q. Did you change this statement after attention had been directed to the lack of a bleeder from the goaf and the institution of a bleed tube to the shunt? A. No, I -

Q. Did you change your statement before attention was drawn? Is that what you are telling me? A. Well, I am not quite sure when the times were. I can tell you this: At the time I asked for the change to be made in the statement it was when I went through it again this year. I think it was only last week, and I asked for it to be changed.

Q. Will you agree with this: The part that you changed was a part of the statement which implied that you had departed from the normal method of ventilation by a bleeder from the goaf and had substituted, for a short time you say, a bleed tube to the shunt? A. Well, not actually. What I meant there was -

Q. Before you tell me what you meant, is that what your statement implied? Will you agree with that? A. It does imply that.

Q. Tell me what you meant? A. What I meant was this, that the shunt itself would be ventilated by the tube that went into the shunt but the bleed heading itself was dispensed with while I was extracting the coal out of the pillar marked 11 and that the actual replacement of the bleeder, with the air instead of coming up A heading as it may normally, without the screen across there would now have to come up further as the gases expand that far as to fill up the volume and bleed out through B heading.

Q. You understand the significance of this phrase you used, "The bleeder from the goaf could be replaced by the bleed tube"? A. Yes, I realised it when I read it through and that's why I had it altered.

Q. Weren't your words carefully chosen? A. They didn't actually convey my true meaning when the statement was made.

HIS HONOR: Q. You made this statement after discussions with your company's solicitor?A. No.

Q. You did not?A. No.

Q. I am not suggesting that words were put into your mouth by Mr. Snelson at all. Please understand that. What I am putting to you, and I want you to tell me if this is so is this: This was a carefully prepared statement; is that right?A. Yes.

Q. You thought about what you were saying and its implication? A. Yes.

Q. You not only said what appeared originally in your statement, you said this till this year until after the inquiry had started and had gone for some three weeks and you also said you were making some concession in ventilation to roof control?A. Yes.

Q. You said both of those things. Was that or was that not the position? Firstly, that you were making some concession in ventilation, a concession to roof control. Was that true or not true?A. I was true.

Q. Was it or was it not true that you were replacing the bleeder from the goaf by the bleed tube in the shunt?A. No, that is not true.

MR. PARKINSON: Q. On p.2 of your statement at the commencement of the second paragraph you said, "Mr. Parkinson" - and that is Via Parkinson - "the district check inspector came on an inspection on 9th November 1965. I met him at the pit top and he said that there was a complaint about gas in the Western Returns. I had been in the Western Returns on the day previously, that is, the 8th November. I had inspected the workings, talked to the deputy and the men in the section. No complaint had been made to me about gas. There was a complaint, however, about dust and that it was getting thicker. I investigated this complaint and found that the men were not using the equipment properly. " Did you know evidence has been given that employees had complained at different times and had been transferred from their jobs for sodoing? Do you know that evidence has been submitted?A. I have heard of this.

Q. Do you have any knowledge whatsoever of that allegation or those allegations?A. No.

Q. Would you agree that a complaint of excessively dusty conditions is a serious complaint and should be treated seriously? A. Yes.

Q. What equipment were the men not using correctly?A. On the occasion of the 8th the normal panel set-up was to use two shuttle cars. One shuttle car was down and I am not quite sure of the fault but it was not operating on this day or a few days previous to this and a 14 B.U. loader had been placed behind so that as the miner produced coal it emptied the coal from the back of the conveyor on to the floor and the 14 B.U. loader then picked the coal up off the floor and loaded it into the shuttle car, the reason for this being you could keep the machine going more consistently when you have a place to dump the coal rather than wait for the shuttle car to come back. There were sprays mounted both on the miner itself to water the coal as it is being cut and also being transported up by the conveyor and there are also sprays on the 14 B.U. loader to water the coal as the coal was being loaded. The 14 B.U. - the sprays on the 14 B.U. were not being used. The floor conditions in this panel were slightly wet and slightly slushy underfoot and the addition of the water from this the men thought would make

them even more so, more wetter and slushier and be more uncomfortable to work in - this is the reason they said they did not have the sprays working on the 14 B.U. These were the sprays I asked them to operate.

Q. Did you know there is not a great affinity between harmful dust in this particular miner area down here and water?A. I don't know that

Q. Did you know that once the micron of dust becomes airborne the only way to have it removed is by ventilation and not by water?A. I think what I had in mind was to prevent the dust becoming airborne rather than wash down after it became airborne, in the case of loading the stuff up.

Q. Would you say it would be possible to prevent dust from becoming airborne by the method that was being adopted here, for instance, the continuous miner loading on to the floor and it being picked up by the 14 B.U. or 11 B.U.?A. Any operation of handling coal will result in some airborne dust - I know the difference between using the sprays and not using the sprays was noticeable.

HIS HONOR: Was there some relationship between dust conditions and the remedy taken to avoid them and the fire? Was there some relation between the dust conditions and the methods used to remedy them and the fire in to which I am inquiring?

MR. PARKINSON: No. I anticipated that question but no from Your Honor and I did not anticipate it in the way you put it to me. I anticipated it in the way of objection. The point I want to make is that this is in a statement of evidence and there is an implication here that our members were not doing the correct thing. I suggest in this inquiry there is a graver implication than this and I want to submit it now to Mr. Puddle.

HIS HONOR: Submit the graver one?

MR. PARKINSON: Q. I am going to suggest to you in view of the fact that it is only adequate ventilation that can remove a micron of dust that has become airborne, or has become suspended, I should say, in the work place, that the ventilation conditions at Old Bulli Colliery are inadequate generally?A. No.

Q. Is it not a fact that auxiliary fans were introduced into Old Bulli Colliery for the purpose of trying to minimise the dust?A. Yes, that is quite true in part. I think this was gone through before but I would like to point out that with the auxiliary fan ventilation as against the brattice ventilation you can conduct a greater quantity of air to the face especially as the face becomes extended from your return airways and also it has the advantages of when you increase the volume of air being taken out of the place, as you say, it must decrease the dust per cubic foot, whereas if you have got so much dust, one hundred particles of the dust in one hundred cubic feet and only half a particle of dust in 200 cubic feet - also the auxiliary fans themselves have proved this up there to be a fact. There is a lot more in this, inasmuch as it leaves the rib side exposed, whereas if you use brattice for on-line ventilation that closes off any visual observation of the condition of those ribs at all so that the men who are working in the panels have a greater view of what is going on. Also, with brattice being used, brattice is recovered and used again. This is a dirty job at best after it has been used and the dust is sticking to the brattice itself. Thirdly, and mainly, you have better ventilation at the face.

Q. Are you aware that current dust counts at Bulli Colliery are

creating some concern to authorities?A. I have no contact with authorities. I don't know which authorities you refer to?

Q. Are you aware of the Dust Research Committee established by the Joint Coal Board and the New South Wales State Government of which one of your superintendents, Mr. Grierson, is a member? A. Yes.

Q. Are you aware that that particular committee is expressing some concern recently as to the tendency for greater dust counts in certain districts, in this district in which Bulli Colliery is included? -

MR. REYNOLDS: I do not know whether Mr. Parkinson thought he might get an objection to that. I have tried to remain silent but I am afraid I must object to that question.

HIS HONOR: Do you say it is irrelevant to this Inquiry?

MR. REYNOLDS: Yes, whether that committee expressed concern is irrelevant to this Inquiry.

HIS HONOR: I suppose I cannot be Bound by it unless I have evidence of the fact.

MR. PARKINSON: Q. You have been at Bulli Colliery for about 8 or 9 years?A. Since 1957.

Q. Nearly nine, isn't it? Almost? Would you say ventilation generally at the colliery has deteriorated in that period from you coming there to now?A. No.

Q. But they have had to introduce auxiliary fans since you came to the colliery?A. I don't know whether they had to or not - they have been introduced.

Q. Do you agree that auxiliary fans could be used in pillar extraction?A. Yes, in a lot of cases auxiliary fans have been used in pillar extraction. Also I know of cases where the auxiliary fan has been used for the driving of places and also where brattice has been used in pillar extraction itself.

Q. With your knowledge of the mine, as Under-Manager, it is a very wide and extensive area it covers?A. It is a very large colliery, yes.

Q. The fact that you have five main intake and one main return, would not you agree that it is an undeniable fact that if all auxiliary fans were removed from Bulli Colliery tomorrow the mine would no longer be able to work as a result of total ventilating inadequacy? -

HIS HONOR: Q. The question is do you deny it in fact? That is, if you removed all the auxiliary fans from Bulli Colliery you could not work because of a lack of adequate ventilation independent of those fans?

That is the real question, isn't it?

MR. PARKINSON: If the fans were removed.

HIS HONOR: Q. Do you deny that or do you agree with it? Are you able to say one way or the other?A. I think it is quite probable that perhaps quite a few of the face workings would not keep going but there would be sufficient going around the place. There would be more air going into the colliery now without the auxiliary fans running than there was nine years ago.

MR. CRANE: Q. As Under-Manager have you instanced any cases of timber jammed in shuttle cars?A. Prior to this incident, no.

Q. You have had no pieces of timber reported to you in any of the shuttle cars under your control?A. No.

Q. In your opinion what explanation can you give for timber being found in the car?A. The position of the piece of wood that was jammed in it, it seems as though it has been picked up off the floor itself.

Q. Thrown up by the wheels of the shuttle car?A. It would not have to be actually thrown up by the wheels of the shuttle car, it could have been lying on the roadway itself. The thing is the shuttle car road is by no means a level road, there is dirt or coal on the road itself and it is uneven right throughout and so a piece of wood could be sitting on coal and due to the depth of the shuttle car track at that particular point, perhaps through floor breakage or spillage or some other reason that could be high enough to become pulled into the position it was in just by virtue of lying on the floor.

Q. So in your opinion it could have been picked up at the commencement of the shift and during one of those trips with the payload?A. I could not say whether it would have been with the payload or not. It could have been running empty or filled but it has definitely been picked up while the car has been in motion.

Q. How many trips would the car have made on that day in question? A. I think it was six - five or six complete trips.

Q. In that time, from the commencement could you estimate what time the car would commence doing those trips?A. Yes, the commencement of the shift is somewhere round about ten to eight so had it been the second shuttle car - there are two shuttle cars - it would be somewhere between ten to eight and 8 o'clock would be the first trip with the shuttle car.

Q. Actually there would be a good portion of time when the cars would be dead and would not be driven at all?A. Yes, that is correct. The actual running time of the car would be somewhere round about, I would say, five or six minutes every ten or eleven minutes, - something less than half the time itself would be spent in travelling.

Q. In your opinion do you think you would have to have a protracted period of running to create friction necessary to generate a spark? -

HIS HONOR: Q. Do you know the answer to that?A. No, I could not say. I really wouldn't know.

MR. CRANE: Q. You were present at the colliery when the previous ignition occurred, were you not?A. Yes.

Q. Was that an ignition caused by a spark?A. Yes.

Q. That was what we might call a real live spark?A. Yes.

Q. I understand it was a flash from a welder?A. Yes.

Q. To your knowledge was this particular fire caused by a flash? -

HIS HONOR: Which fire?

MR. CRANE: Q. This incident we are referring to. Was it caused by a flash?A. I could not tell you.

Q. You have no knowledge?A. No, no knowledge.

HIS HONOR: Q. While on the subject of the piece of timber in the shuttle car brakes, there is something I wanted to ask: What effect on the actual braking would a piece of timber have? A. Very little, I would think.

Q. It would not assist the braking?A. I would not think so. There would not be very much either way - you have two 25 horse-power motors driving these - these are traction motors and the force exerted by the piece of wood jammed where it was would have little effect. It would have some effect but it would have very little effect on the actual turning or non-turning of the disc itself.

HIS HONOR: I asked for the reason that one has to rule out the possibility of a piece of wood being deliberately placed there by somebody. I was wondering about it. The only person who would would be someone who may say "This will increase the braking capacity of the shuttle car". I have settled that.

MR. MURRAY: Q. On p.719 you said that after the fire had been discovered you had seen the mechanical engineer and sent him to obtain tools and equipment before you could tap into the 2-inch water line in order to connect fire fighting apparatus?A. I'm not quite sure if I said that.

Q. I will read it to you, if you like, "I sent J. Brown, mechanical engineer, to get pipe fittings, tools and hoses to fight the fire so that we could tap into the 2-inch water line". A. Yes, that is right.

Q. So the set-up was that although water was being reticulated into the work place it was not possible without special tools, fittings and work effort to attach a fire hose inby of 38 phone? A. The fire hose we use on our belt - the fire fighting attachments - there were no attachments for hoses in the panel.

Q. There was nowhere you could attach a fire hose inby of 38 phone without some special work?A. Hoses could be attached - the fire hose I am referring to was along the belt itself. Fire hoses are stationed every so often along it and these are instant snap couplings.

Q. At this work place there was no belt, was there?A. No.

Q. The nearest place, we have been told, where there was any fire hose was at 38 phone some hundreds of yards outside of the loading place, for instance?A. Yes, that is right, fire hoses were there.

Q. There was no place inby of 38 phone where you could attach a fire hose to the water reticulation then?A. There was a place to attach a hose. You could have got one to the face there because water was required at the face and Barfel hoses, which are flexible hoses, form part of the reticulation system to the face. These hoses themselves could be used as fire hoses. The hoses used on the fire I take it would be a fire hose. That is what I am trying to get at.

HIS HONOR: Q. They are not normal fire hoses?A. No.

Q. They are like a garden hose?A. Yes, about an inch inside diameter.

MR. MURRAY: Q. These are the ones used on the miner?A. Yes.

Q. Putting those aside, Mr. Brown had to in fact go and get tools, and tap into the 2-inch main before a fire hose could be "got

operation" as they say in the Fire Brigade?A. Yes, the tools in the panel were not accessible, the smoke stopped us getting to the tools but there were no fittings or fire hoses as such in the panel.

Q. Do you see, as a practical mining man, any difficulty in having fire hoses and couplings on hand in a working place such at 8 Right?A. No.

Q. You have told us you went into the place on 3rd November? A. Yes.

Q. I forget - correct me if I am wrong - you did carry out a test for gas on the 3rd, did you?A. I tested at the face. I did not test in the shunt.

Q. The 3rd was the last time you visited 8 Right prior to the accident?A. Yes.

Q. There were a number of people in the ordinary course of their work carrying out tests for gas in this work place?A. Yes.

Q. Let us take the three shifts prior to the accident including the day shift on which it took place: there would have been yourself who visited the place perhaps weekly and who usually carried out a test for gas?A. Yes.

Q. Using - ? A. An oil flame safety light.

Q. And, sometimes, a methanometer?A. No, because as I said before I have not used a methanometer on the face whatever in 8 Right.

Q. Did you ever test for gas with a methanometer in 8 Right?A. No.

Q. There would be your immediate deputy on the day shift, Mr. Wright?A. Yes.

Q. He carried an oil flame safety lamp?A. Yes.

Q. As well as a methanometer?A. He only carried a methanometer in carrying out monthly return inspection requirements, the monthly gas readings in the returns.

Q. He spent half his time each shift in the actual 8 Right working place?A. I don't think it would be quite that long. Mr. Wright had 8 Right, red panel plus the general area of 1 North panel to look after.

Q. He spent three hours a shift in 8 Right?A. No, the commencing underground on the shift, by the time they get into the place would be round about ten to eight and, similarly, they finish about ten past two. Normally he would have to allocate labour for G.U. work outby of this section and then make an inspection of 8 Right, an inspection of red panel and any other part of the 1 North he wanted to have a look at that particular day and would split it up accordingly and I would think if Mr. Wright spent two hours in any one panel that would be about all he would spend in any one day. This is an average. One day he may spend three or four hours.

Q. He would spend a couple of hours in 8 Right on the average? A. Yes, somewhere round about it.

Q. And would certainly make one test for gas in each work place? A. He would more than likely make a test for gas in the work face, yes.

Q. Each work place though, wouldn't he?A. There is only one work place, the other is standing place.

Q. Certainly Mr. Wright in the ordinary course of the day would make at least one test for gas in 8 Right panel?A. He would do it fairly consistently but of course I'd imagine there must be some times when he would not do it.

Q. Is there an Overman on the day shift, or was there on the day in question?A. There is no overman in the section that does any inspections, no.

Q. The next person who would test for gas would be the deputy on the shift, Mr. Stewart?A. Yes.

Q. Also the miner-driver, the late Mr. Stewart?A. Yes.

Q. So that there would be on that shift three people who carried out routine tests for gas each shift, Mr. Wright and the two Mr. Stewarts?A. I would not tie down Mr. Wright to this. He normally would but I would not say he would test every day. Otherwise, that is correct.

Q. On the next shift, the afternoon shift there was an under-manager - or assistant under manager - Mr. Eager?A. Yes.

Q. He had an oil flame safety lamp?A. Yes.

Q. The overman?A. Yes.

Q. What is his name?A. Mr. Cochrane - Jim Cochrane.

Q. He was also equipped with an oil flame safety lamp?A. Yes.

Q. There was the deputy on that shift, Mr. Cambourn?A. Yes.

Q. And the miner-driver?A. Yes.

Q. They would have ordinarily carried out some tests for gas? A. No, Mr. Eager would not be in this panel every night of the week.

Q. Certainly in the five days prior to the accident Mr. Eager and you would have expected to have carried out some tests for gas?A. I think so. I thought you were referring to a daily inspection, or shift inspection.

Q. I was originally. So, Mr. Eager would check some time during the week, the overman would test for gas each shift?A. Mostly, yes.

Q. The deputy would check in the ordinary way described, as would the miner driver?A. Yes.

Q. There is the night shift, or maintenance shift. There is an overman in charge?A. Yes.

Q. There is no deputy-or under-manager?A. No.

Q. Mr. Ryan is the overman. There is the night shift deputy, Mr. Walker?A. Yes.

Q. Is there any person who fulfils the function of the miner driver as far as carrying a lamp is concerned?A. Yes.

Q. So there would be three people on that shift who would ordinarily test for gas?A. There would have been two -

Q. Sometimes three?A. Sometimes there would be three.

Q. In relation to the five days or the week previously, there may well have been 12 to 14 people who in the course of their duties, be they staff or workmen, who would have checked for gas in this section?A. Yes.

Q. And possibly yourself or even Mr. Stone may also have carried out tests from 1st November up until 9th?A. I carried out one test. I cannot say if Mr. Stone carried out any.

Q. But Mr. Stone was in the habit of carrying a lamp when he went into the mine, wasn't he?A. Mostly, yes.

Q. Are you able to tell me what is known now of the composition of gas which emits from the fissures of the goaf in 8 Right - which continually issues?A. It is a mixture which has been found since - (interrupted)

Q. I realise that. Are you able to say what it consists of? A. Not in percentages, no. It is a very strong - it is a mixture of CO2 and methane but as to percentages I could not tell you.

Q. It is a fixed mixture, isn't it? It is a fixed proportion of CO2 with a fixed proportion of methane?A. No, I don't know that. I could not tell you what the - the only way you could tell what the mixture is is take a sample and analyse it or have it analysed by a chemist and look at the figures and you have the mixture for that particular time of testing. The only way to find out is to take repetitious tests at time intervals, et cetera, and compare it.

Q. Is it your view the composition of gas varies, which emits from the goaf in 8 Right?A. I don't know at the moment, but all I can say is that there was no CH_4 detected by anybody prior to the incident.

HIS HONOR: Q. Is that strictly accurate: there was no CH_4 detected prior to the incident?A. In the gas emitting from the goaf. You may have heard me say inflammable gas had been detected in the 8 Right workings during the development. That was during the driving of the 3 headings, A, B and C and their cut-throughs. As I said, these were isolated cases of very small quantities and were quite readily dispersed.

Q. They would not be goaf gases since there was no goaf formed? A. No.

MR. MURRAY: Q. We have heard of the so-called "simulation" of the set-up, for want of a better word, which existed at the time of the fire. Apart from tests carried out in association with that so-called simulation, what tests, or what results of tests for methane have occurred in this work place?A. There were tests following the simulation of the set-up as it existed before and they showed CH_4 could be readily detected - (interrupted)

Q. I am asking you to put that aside: apart from the days of the simulated tests what other results have been obtained by testing for methane with the oil flame safety lamp or the methanometer in 8 Right?A. Methane has been detected there at the goaf edge.

Q. With?A. With CO2.

Q. With what device?A. With the M.S.A. In some places you could pick it up with the oil flame safety lamp, that is in cavities and things like this but we turned the air-flow around at this time and had the air flowing around down the goaf, down the fall in No. 3 cut-through into 9 heading and coming back up along there.

Q. And would it be fair to say that all people from yourself down were fairly complacent about the likelihood of finding inflammable gas in 8 Right up until the day of the fire?A. We had not detected CH_4 there. These tests were still being carried out all the time, on a routine inspection.

Q. Of a routine nature: No one really, as far as you know, expected to find inflammable gas in 8 Right, did they?A. No, I don't think they did expect to find it, but if it had been there it should have been picked up.

Q. Speaking for yourself, you did not expect to find inflammable gas in 8 Right?A. I had not found it before but that did not say I would not expect to find it. I really did not think it was there but I tested just the same and this is the reason for testing these things, to see if there was any detectable quantity of gas present.

Q. As far as you know that was the attitude of your subordinates, Mr. Wright didn't really expect to find CH_4 in the workings either, did he?A. I could not tell you what his thoughts were.

MR. MURRAY: Perhaps he might tell us.

HIS HONOR: Q. Do you tell me you did not test around the shunt? A. On the 3rd?

Q. Yes. A. No, I did not. I did ask whether it had been tested.

Q. Who did you ask?A. It would be Mr. Stewart, the day shift deputy.

MR. MURRAY: Q. When you say in your evidence you gave instructions, having given the orders which resulted in the work described in Exhibit JJ, you gave instructions to your subordinates to watch out for gas. Do you recall that?A. No - in so many words, yes. I told Charlie Stewart to keep his eye on it.

Q. You told Mr. Wright, did you not?A. Well --

Q. You said it?A. Yes, I did.

Q. And you expected Mr. Wright to tell Mr. Eager the other staff man on the other shift?A. Yes.

Q. Because they are the people to whom you look for the supervision of actual work on the spot?A. Yes.

MR.MURRAY: Q.They were your representatives in the actual working places? A.Yes.

Q.They supervise the work of the Deputies and the Deputies supervise the work of the men, is that right? A. I beg yours?

Q.The staff men supervise the work of the deputies, and the deputies supervise the work of the men? A.Yes.

Q.You also said in evidence that you regarded the deputies as being in charge of production? A. Partially in charge of production,yes.

Q.Just to complete it,Mr.Wright for instance had a full range of responsibilities covering production, safety, as well as the supervision of what the men did? A.Yes, over the top of Mr.Stewart, as deputy.

Q.Mr.Wright and Mr.Egar were the people who made decisions in your place about changes in the system of production and so on? A.What is that?

Q.About changes in the ways in which coal was to be won, such as the repositioning of the miner? A. Yes, the general layout was set up down there. This is passed on to the other subsequent people and the general plan was adhered to where practicable.

Q.But any decisions such as the repositinning of machinery or the changing of the wheeling road would be made in your place by either Mr.Wright or Mr.Egar because they were the men who had the authority? A.Yes, they would have had authority to do this, but they didn't in fact do it.

Q.I beg your pardon? A. I said I was the person who gave this -

Q.I am not saying for a moment anything to detract from what you said. I am merely saying that Mr.Wright and Mr.Egar were staff men in the mine with your authority ? A.Yes, that is right.

Q.When you were not there? A.Yes.

Q.Summarising , I suggest to you that of the twelve or fourteen people whom we now know must have carried out tests, what I am putting to you is that these are the possibilities : Either they, none of you, tested at all - this is academic really, in your mind. I am not suggesting that is so? (No answer)

HIS HONOR: You are not being asked to agree that you were lying, but to take over my function and agree that the possibilities are these, on the evidence. What is being put to you is that you are being used as a sounding board, do you understand? A.Yes.

Q.Academically speaking it is being put to you that it is possible that you and what the other witnesses are saying, that they tested for gas,are lying when they say this. You would agree that is academic? A.I will answer for one person only.

MR.MURRAY: Q.Well, it is possible that you did not test at all? A. Well, I did test.

Q.The second possibility is that the tests were carried out incompetently or in a grossly negligent way and therefore had no chance of success? (No answer)

MR.REYNOLDS: I see one difficulty here. We can find easily in a question like that, difficulty when the Under-manager admits it is a possibility his employees were lying. Your Honor will see this. I understand the exercise but I submit it is hardly fair.

MR.MURRAY: I will withdraw the first two possibilities.

HIS HONOR: Are you going to base another question on this? Otherwise it all probably rests with me.

MR.MURRAY: Yes, except that when I am addressing later I do not want it to be said there was no evidence about this. All I am seeking to do is to have from this practical mining man who does have some position of authority and experience, looking at the benefit of what I am putting to him and saying whether there is any reason why it is not possible from the practical point of view, but as it is a matter of argument upon the evidence I will save it till addresses later.

MR.SULLIVAN: Q. His Honor asked you some questions about when this statement of yours was prepared. First of all it was prepared by the company's solicitor, was it? A. That was that (indicating).

Q.Did you have a number of sessions with him? A.Two I think.

Q.Did you bring along reports and that type of thing?A.No.

Q.Did you have any reports or notes or note books relating to the various activities in 8 Right? A.Well, prior to my seeing Mr. Snelson I was told that I would be seeing him and I thought I had gone through everything I could think of before seeing him.

Q.But you did not take notebooks along with you? A.No.

Q.Were other people present when you were having your discussions with him, at either of these series of discussions? A. The one time, no. I think Mr.Lloyd Pearce was in the room for a few minutes the first time.

Q.Did he take part in the discussion? A.No.

Q.He is an official of the company, is he not? A.Yes, he is the Superintendent.

Q.There were two alterations in it which you told His Honor have been made recently, is that right? A.Yes.

Q.Before those alterations were made how long ago was it before this completed statement was prepared? A. I had the statement prior to 24th December. What day I got it on I couldn't tell you.

Q.How much prior to 24th December, a week or -

MR.REYNOLDS: It was marked for identification quite early on.

MR.SULLIVAN: That would be on the last day of the sittings last year, would it not?

HIS HONOR: I am told it was marked on 22nd December,1965.

MR.SULLIVAN: Q.Apparently it was handed into the Court on 22nd December, is that right? (No answer)

HIS HONOR: You may take it that that is right.

MR.SULLIVAN: Q.Did you complete it the day before? A. I had seen Mr.Snelson the day before the 22nd - when I got it back I am not sure but it was before the24th.

Q.As far as this is concerned after it came back from Mr. Snelson, were there any alterations made in it again by you? A. I think there were a few alterations made in the order of working, the order

in the driving of places down in the 8 Right panel itself, and the other alterations were the ones that are on the last page now, and I brought those up this year.

Q.Were there any alterations made in the section dealing with Mr.Victor Parkinson's inspection of western returns? A. I think there was. On the original one I think I said the first time I saw Mr.Snelson I told him that I thought I only had an oil flame safety light but I did have a methanometer with me, and I changed that about afterwards.

Q.You also altered, did you not, the section which referred to Mr. Parkinson having a methanometer? A. No, Mr.Parkinson did have a methanometer.

Q.Are you swearing that Mr.Parkinson had a methanometer? A.Well, I have a very distinct impression that he had a methanometer.

Q.Are you swearing that Mr.Parkinson had a methanometer, that is what I am putting to you? A.To the best of my knowledge he had a methanometer on this day.

Q.You do not mention that he had an oil flame safety lamp in this statement. Did he have an oil flame safety lamp? A. Yes, he would have had an oil flame safety lamp.

Q.You do not mention that? A.No, I didn't.

Q.Are you aware that on the 21st, Counsel representing the company, and I think you were present, cross-examined Mr.Parkinson about this inspection? A.I was not present.

Q.Very well, I will not proceed with that. You are prepared to swear only to an impression that Mr.Parkinson had a methanometer, is that right? (No answer)

MR.REYNOLDS: He said "To my knowledge" he had one.

MR.SULLIVAN: Q.What is the best of your knowledge? A.That he had one.

Q.What do you mean by the best of your knowledge? A.Well, he tested with a methanometer, I thought, in B and C headings.

Q.What I am putting to you is that you thought he tested with a methanometer because he discovered inflammable gas, and you thought it could not be discovered with an oil flame safety lamp, didn't you? A.I found gas in an oil flame safety lamp on 9th November.

HIS HONOR: Q.Inflammable gas? A.Inflammable gas.

MR.SULLIVAN: Q.You do not mention that in your report, that you found it with an oil flame safety lamp. You did in fact find it with an oil flame lamp, did you? A. I found it with a methanometer also.

Q.Yes, but you found it with an oil flame safety lamp? A.Yes.

Q.In that statement you did appear to draw a distinction between the methanometer and the oil flame safety lamp, did you not? A. No, It really might appear that way but what I would like to say is this: When Mr.Parkinson made his inspection on the day of the 9th he was accompanied by the local check inspector, Mr.Ted Taylor, who always has an oil flame safety lamp. This is normal procedure and the reason - well, I don't really know why, but the oil flame safety lamp is always used by the check inspector or by me, so to me it is quite clear that an oil flame safety lamp would have either

been in the possession of the District check inspector or of the local check inspector when this inspection was made.

Q.At any rate the fact remains that whether he had a methanometer or not, there was still sufficient gas in the roof there, inflammable gas, to be detected with an oil flame safety lamp? A. In B heading,yes.

Q.You have told us on a number of occasions that inflammable gas had not been detected in 8 Right during the extraction of pillars. I think you have told us that at least 3 times, is that right? A.Yes.

Q.As Under-manager you get the reports from the deputies, do you not? A.Yes.

Q.And you counter-sign them? A.Yes.

Q.Have you any recollection of inflammable gas being found in 8 Right during the time when pillars were being extracted? A.No.

Q.Did you hear Mr.Walker's evidence? A.No.

Q.5th October,1965 was a time when pillars were being extracted, was it not? A.Yes.

Q.Would you have a look at that report of Mr.Walker's? (Part of Exhibit F shown) You have counter-signed that, have you not? A. Yes.

Q.That shows inflammable gas in 8 Right,does it not? A.Yes.

Q.And in the goaf area, doesn't it? A.Yes.

Q.6th October was a time when pillars were being extracted? A.Yes.

Q.Would you have a look at that? (Part of Exhibit F shown) That was a time when pillars were being extracted? A.Yes.

Q.14th October - do you want to look at it or will you take my word for it? A.I will take your word for it.

Q.14th October was a time when pillars were being extracted. Inflammable gas on the goaf edge, 27th October. That was a time when pillars were being extracted, was it not? A.Yes.

Q.Inflammable gas in miner place? 4th November 1965? A.Yes.

Q.Can you tell me why this one was not counter-signed?(No answer)

MR.REYNOLDS: Is there inflammable gas on 4th November?

MR.SULLIVAN: I am sorry.

Q.However, you would see all these reports, would you not? A.Yes.

Q.Are you prepared to say now that there was no inflammable gas detected in 8 Right after the commencement of pillar extraction, in view of those reports? A.No.

Q.That means then insofar as your statement depends on the non-existence of inflammable gas in 8 Right, it is a complete misconception, is it not? A. That is true.

Q.And as Under-manager, I am going to put to you that you had another source of information as to the presence of methane in 8 Right - the monthly returns? A.That's correct.

Q.And they showed a doubling of the methane content, did they not? A. From .1 to .2, yes.

Q.And you had those reports? A.Yes.

Q.In view of the fact that those reports show inflammable gas on the goaf edge where did you think that the inflammable gas would be coming from? A. It must have been coming from the inby workings.

Q. From the goaf? - It was found on the goaf edge? A.That is right.

Q.It must have been coming from the goaf - wasn't it? A.Yes

Q.And it was in those circumstances that you decided to extract No.11 before you drove the bleeder heading No.13? A.Yes.

Q.A complete departure from the previous practice? A. Yes.

Q.And you know now from those reports that whether you took any notice of them or not, you had been handed reports which showed the presence of inflammable gas; is that right? A.Yes.

Q.I want to draw your attention to something with which I am going to put to you you were familiar , and that was the setting up of auxiliary fan ventilation in the Green panel around November 1960, because I think you have mentioned it a couple of times in your evidence. You were Under-manager when the auxiliary fans were set up in the Green panel about November,1960? A.Yes.

Q.And you were intimately concerned, as Under-manager, with the setting up of those fans, were you not? A.Yes.

Q.You were present at the discussions between the then manager and Mr.Muir, were you not? A.Some of the discussions.

Q.Particularly those which were conducted in the particular area where the fans were set up at the face and at the working place? A.Yes, I was present at some of them.

Q.(Approaching witness and showing document) I think everybody has a copy of this, the Departmental file. It was a two-heading working, was it not? A.Yes.

Q.Do you remember that one? A.Yes.

Q.With the intake airway on the left hand side facing the goaf and the return airway on the right hand side facing the goaf, and on that occasion the workings were taken out to the right of the two headings, facing the goaf again, facing inby. Is that right?A.Yes.

Q.This is the report of 25th November 1960 and I show you Mr. Ryan's sketch. It may be, I do not know, but it is a sketch, the departmental number on it being 9068. Do you remember what happened there? The first extraction that was made was blocking off the intake airway abutting the goaf, was it not? A.Yes.

Q.With a brattice stopping, and then blocking off the return airway in No.2 with a brattice stopping? A.Yes.

Q.You remember what happened on that occasion, do you not? A. Yes,gas was emitted from the goaf.

Q.You got inflammable gas on the working side of the brattice stopping, did you not? A.Yes.

Q.And you remember that, and you knew it when you put this brattice stopping up in this heading, did you not? A.I did know of it, yes.

Q.Nonetheless, despite the fact that you knew when that was done in the Green panel you got a dangerous concentration of inflammable gas, you did it, didn't you? A.We did have - we had inflammable gas on the edge of the screen. Whether it was a dangerous accumulation or not I can't recallat the moment, but there was gas detected there.

Q.You knew about it at the time you put up this brattice stopping? A.Yes.

HIS HONOR: Q.This report reads "Up to 2% of inflammable gas was found in the vicinity of the brattice stopping erected in No.2 heading. Do you say that that was a condition which it was desirable to repeat from the point of view of safety? A. No, it is not desirable to be there, but 2% of CH_4 - men are still allowed to work in the area. Men are withdrawn at 2½%.

Q.Do you know any particular time when that 2% may become 2½ or 3%? What is your guarantee that it is going to remain at 2% or less? A. You have no guarantee.

MR.SULLIVAN: Q.And if you were not sure of the perdentage when you made this set-up in the heading, all you had to do was to go back to the Colliery clerk's office and turn up this file, is it not? A.This is the first time I have seen this written down - the first I knew of it being in the Colliery files was since I have been here this week.

Q.But you have been Under-manager there since 1959 have you not? A. Yes.

Q.And you were concerned with the placing of auxiliary fans throughout your time as Under-manager? A.Yes.

Q.And you had been present at discussions with Departmental representatives about fans? A. Yes, some discussions.

Q.Would it be fair to say this, that auxiliary fans had never been put in in any panel in that Colliery without you having something to do with it, since 1959? A. That would be correct.

Q.It would be quite fair to say that, wouldn't it? A.Yes.

Q.Including this one in Green panel? A. Yes.

Q.And also you were the one man at the Colliery who was completely familiary with the departmental requirements as to auxiliary fans, were you not? A. Yes. I would have thought so, yes.

Q.And Mr.Stone relied on you , in putting them in, to carry out the Departmental requirements, did he not? A.Yes.

Q.And in the case of these fans here, you did not carry out the Departmental requirements, did you? A. As far as I know the position is just the same as it was in Green, with one exception, that the goaf area would be one pillar further away. This is the effect of driving the heading itself.

Q.A very important one, isn't it? A. No, I can't really see it.

Q.And did you regard the fact that you had no authority to mount fans in series as being an important requirement? A.No, I didn't know that.

Q.But you knew you had never been authorised by the Department to mount auxiliary fans in series didn't you? A. Yes, I did know we had used them. We had used auxiliary fans in series in driving No.1 drift where we had to drive through a 300 feet upthrow fault.

Q.With departmental approval or not? A. The Department knew about this.

Q.When you say they knew about it, did you write and ask their permission to use fans in series? A. I didn't write about it and I didn't know if anybody else did.

Q.Another condition of course that the Department laid down was that there would be no dead ends on the intake side of the working place, was it not? A. In the development, yes.

Q.And did the same apply to pillars? A. Well, I can't see how you could avoid spaces or some places you could not ventilate and I think this was the purpose of the solids, to stop this.

Q.Now, you were creating a dead end by putting up this brattice stopping on the intake side of the working place, were you not? A.Yes.

Q.Did you not think that was contrary to what the Department had laid down about the use of auxiliary fans? A. No. We have always ventilated standing places.

Q.Was it dead end? A.It must be a dead end.

Q.Were you ventilating these? A. Yes. This is the approval that we have from the Department in the development of forming pillars, that you must have standing places at one time or another or dead ends.

Q.Did you ever get Departmental permission or ever draw the Department's attention to the fact that you were using this plastic bleeder tube to ventilate these standing places? A.No.

Q.Did you ever consult them about whether it was of any value at all from a ventilation point of view? A.No.

Q.Did you ever consult with any expert on the subject of the drawing on ventilating power of such bleed tube before putting it in? A.No.

Q.So you just did not know how effective it was going to be, did you? A. It had been effective the previous place we had used it in. As I said before we used this in the driving of No.9. It had been effective there and the -

Q.What you mean is that in No.3 cut-through in A heading, you had put up this same set-up, is that right? A.Yes.

Q.And there had not been a fire; is that what you are saying to us? A. No, what I am trying to tell you is there had been no build-up of gases, known or detected during this operation?

Q.This statement was prepared after the panel had been re set up by the Mines Department, wasn't it? It was finished afterwards? A.I think it must have been printed afterwards. I could not say quite for sure when I spoke to Mr. Snelson about it, whether it was before or after 9th December.

Q.It completely ignores what occurred when the Department re set up this panel, does it not? You make no comment on that at all in

this statement , do you? A. That is why I feel it must have been before 9th December although I can't say to this for sure.

Q.Well, assuming it was before 9th December, that would be a reason for your not commenting on the Department resetting up the panel. What is your comment on what was found on 9th December now? A. What was found there after the set up was that inflammable gas was readily detectable in the shuttle car shunt by an oil flame safety lamp, in addition to which -

Q.All right, what is your comment on that? You are saying it could not be found before the fire, are you not? A. I am saying that I couldn't. I didn't detect it down there and none of the people who tested -

Q.You have got no reports on the shunt - that is what you are saying is it not? A.Yes, that is right.

Q.And you yourself made a test? A. Yes - not in the shunt.

Q.You have never tested in the shunt? A.Not in this shunt,no.

Q.You have never tested in this shunt so you do not know from your own tests whether there was methane in the shunt or not, is that right? That is from your own tests prior to the fire? A.Yes, that is right.

Q.So all you are really doing is accepting what other people said? A.Yes.

Q.Let us get back to the position in Green panel. You were aware that methane had been found there after this type of set up of blocking off the goaf with brattice had been done? A.No - you said was it something like this. This is not exactly the same set up, there is a difference.

Q.Not exactly the same but it was a blocking off, trying to seal off the goaf gases with brattice, wasn't it? A. Well, once again I would not like to say. We hadn't sealed off the goaf gases. We had sealed off A heading, but we hadn't sealed off the goaf gases. B and C headings were still open.

Q.No, C heading was not open? Look at the plan. Do you agree with me that C heading was closed? A. There was a loose brattice screen erected in C heading.

Q.There was a stopping erected in C heading, wasn't there? A. There was a loose brattice screen. There is a difference.

Q.What is the object of that? A. Perhaps if I can explain on the plan it might be better. (Mr.Sullivan and witness approach Exhibit A)

Q. First of all is there or is there not a brattice seal shown on the plan in C heading? A.Yes.

Q.Was there in fact a brattice seal in C heading? A.To the best of my knowledge, yes.

Q.Then is a brattice seal what you describe as a loose brattice? A. You asked me was there a brattice seal written on the plan.

Q.Yes, and the next question I asked was: Was there in fact a brattice seal in C heading, and I think you said Yes. Well, was there? A.There was a loose brattice screen, as I said before.

HIS HONOR: Q.That is marked as a brattice seal, is it? A. Yes, it is marked on the plan.

MR.SULLIVAN: Q.Was it or was it not before the fire a brattice seal? A.No, not to the best of my knowledge,

Q.Did you play any part in preparing this plan? A.No.

Q.Did you see it before the Inquiry? A.No.

Q.Did you see it during the Inquiry? A.No, not until this week.

Q.Not until this week? You have attended this Inquiry, have you not? A.I spent half a day here last year.

Q.Before giving your evidence did you discuss with people representing the company, the evidence? A. Yes

Q.And was this plan used? A.No.

Q.Then you say that this plan is definitely wrong when the words "brattice seal" appear? A. Yes, when it says "seal."

Q.What do you say a seal is? A. An effective stopping, something that really seals off and stops the permiation of anything through it.

HIS HONOR: Q.I suppose everybody in the mining industry uses the same terminology, "seal", as something that seals off, stops off ? A. Yes. When they talk about a sealing off of an area that is what they mean.

Q.So the person who gave directions as to the preparation of this plan, assuming they were mining people, would have had that in mind - that that brattice meant a brattice which sealed off something; that is so isn't it? A.I could not tell you who put the printing on the plan.

Q.No, I am not interested in that yet, but assume the person who directed the preparation of the plan was a mining person, he must have understood what the seal was? It is a common term in mining? A. It might have been a lad in the surveying office. A person who was a surveying man would not use it in terms like this here.

MR.SULLIVAN: Q. "Brattice screen" is used over here, behind, you see? A.Yes.

Q.And obviously that was in fact a brattice screen, a loose brattice screen behind the fan, wasn't it? A.Yes.

Q.So he has used the right term there but the wrong term here, you say? A.Yes.

Q.Your view then of the set up before the fire was that the air was coming up C heading, is that right? A.Yes.

Q.Some of it continued up C heading through the brattice screen? A.Yes.

Q.It would go round the back of the goaf, round the back of these pillars along the goaf edge ? A.Round the back of the first pillar between B and C along the goaf edge.

Q.Air would also come up No.2 cut through? A.Yes.

Q. Some of it would go up past the cross-sticks?A. No.

Q. None at all?A. No, I wouldn't anticipate any going in there.

Q. And of course none would go up A heading?A. No.

Q. So you had a goaf edge from the end of C heading through to the end of A heading being ventilated by a stream of air coming up C heading, is that right?A. From C heading to B heading.

Q. From C heading to B heading, and where do you say it went then? A. The air cut round, followed C heading down - this is a small part that percolated through and came back through here.

Q. It came back around through here?A. Yes.

Q. On the other hand, of course if you hadn't got a brattice seal there the air would have come up B heading, is that right, and gone round the end of the Pillar between A and B headings? A. No, I would not anticipate that. If this was sealed off here and this was sealed off here, then it would mean there would be no air either way out, so you couldn't take it in.

HIS HONOR: Q. Would not air go down, if both these were sealed off, B heading down past the cross-sticks into the goaf?A. It might fluctuate but it wouldn't flow. There would not be air for it to flow to. There would have to be an outlet for it.

Q. What you are saying is that there would be three dead-ends if that were the case - the sealed off area in C heading, the sealed off area in the shunt which is A heading, and the unsealed area in B heading where marked with the cross-sticks. They would be all dead-ends?A. Yes.

Q. If that were the case, the air current would merely flow right up No. 2 cut-through?A. Yes, No. 2 cut-through only - B and C headings, to No. 2 cut-through, then through 2 cut-through to A and B headings. It would join at this point. Air would come along here, split up at A and B and join again at this point and go to A heading.

Q. Do you think that overnight you could ascertain for us who drew this plan and who used the words, or on whose instructions the words "brattice seal" were used?A. I will certainly endeavour to do so, Your Honor.

Q. I think it would be of some advantage to us to have that before anything further is done because it seems to me that if this plan is incorrect we have been grossly misinformed and we do not know where we are heading, if I may borrow that term again. On the other hand, I think that if we have been informed correctly, then you might like to reconsider some of your answers.

(Further hearing adjourned to Tuesday, 8th February, 1966, at 10 a.m.)

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IN THE COURT OF)
COAL MINES REGULATION) No. 1 of 1965.
HOLDEN AT BULLI)

BEFORE HIS HONOR JUDGE GORAN.

ASSESSORS: MESSRS.MAHON and BUCK.

TUESDAY, 8th FEBRUARY,1966.

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IN THE MATTER OF AN INQUIRY IN PURSUANCE OF THE COAL MINES REGULATION ACT INTO AN ACCIDENT WHICH OCCURRED AT THE BULLI COLLIERY ON 9TH NOVEMBER 1965 AND ITS CAUSES AND CIRCUMSTANCES.

- - - - - - - (PART HEARD)

MR.McNALLY: I have Mr.Cambourn here on that other matter,Your Honor.

HIS HONOR: I think we will hear from him xoon, but we will deal with this preliminary matter from yesterday.

JOHN PUDDLE
On former oath
Cross-examination continued:

MR.REYNOLDS: I think what was overlooked in Court at the last moments of the sittings yesterday was that this plan which was tendered by Counsel for the Minister is a plan which purports to be a plan of the panel as at 13th November,1965, and Mr.Lee when he opened this matter and tendered the plan said "as Your Honor will see, this plan supplied by the manager of the Colliery shows as the item at the top indicates, the workings in No.8 right panel as at 13th November 1965. It shows various items and there are some very slight divergences between that plan and the position as it actually existed at 9.15 on the morning of the 9th, but those differences are very slight, as I say, and I will not trouble about them at this stage."

Now, my instructions are that there was a brattice device , if I may use that neutral term, erected in the place shown on the plan as at 13/11/65 on the night of the fire and that was at any rate slightly different from what existed previously. It may be that what was put up on the night of the fire qualifies for description "brattice seal" or "brattice stopping" where that before did not. Overnight I think this witness has made inquiries, which of course are heresay to a large extent, but confirm what I am saying. If necessary Mr.Stone , who is engaged in an inspection at the mine this morning, can tell His Honor that he did take part in the erection of a brattice device there on the night of the fire.

HIS HONOR: Unless it is challenged, I shall have Mr.Puddle tell me as a matter of information his understanding of it. If it is challenged, then of course we can hear Mr.Stone who knows what was there. I will deal with that later. Have you anything to say, Mr. Lee?

MR.LEE: Only this, that it is quite apparent from the transcript that there was brattice in C heading. That appears in Mr. Ashford's evidence at p.68 although he did not describe what it was. This observation may be of some assistance to Your Honor: When we went down the mine, I think it was the Wednesday before the Inquiry opened, we went into C heading from the goaf and we went through brattice in C heading. I have checked with Mr.Menzies

who was with me at the time for his description of the brattice that we went through. He said that you would describe it as a fairly tight brattice, that it would not at that time qualify for the words "brattice seal". That rather suggests to me that whatever was there on the 13th and after the fire should not have ever been described as a brattice seal, after the fire, so that it would seem that there may be a misunderstanding, perhaps due to the nomenclature that has been used at that point.

HIS HONOR: I think there is quite an amount of misunderstanding about this. This morning I have been conferring with Mr. Buck and Mr. Mahon who have given me some advice about the nature of a brattice screen and what is called brattice seal. I might be able to get this from Mr. Puddle; I think he may agree with this.

Q. Firstly would you tell me what is your information about this piece of brattice?A. There was a brattice screen erected in C Heading inby of 2 and before No. 3 cut-through prior to the time of the fire. At the time of the fire we worked our way in as has been described, into the fire area, from the sweeps, passed No. 1 cut-through, passed up to No. 2 cut-through and by cutting off the smoke and bringing fresh air in behind us all the time we worked down here and then another brattice screen was erected in the place of the original one by the people engaged in getting in to the fire area.

Q. In the same place?A. Approximately in the same position as the first.

Q. The area now marked "brattice seal"?A. Yes.

Q. That is the one you are talking about?A. Yes, that is approximately in the same position as the previous one was before the fire too.

Q. When you erect brattice as a stopping is this the position: You may have either a tight brattice which is called a brattice seal or stopping or you may have a loose type of brattice which is called a brattice screen?A. Generally this would be the case but in cases one may be described as the other.

Q. Sometimes you call it a brattice screen, sometimes you call it a brattice seal. Is that what you mean?A. No, actually we don't use the word "seal" at all, it would be a brattice screen or a brattice stopping and actually the difference between the two, what I term the difference in my opinion, is if it is a loose brattice screen that is one that is not tightened up completely over the area of the airway it is stopping off and tightened in to the ribs and tacked both top and bottom, then that would be a loose brattice screen but a brattice screen itself would be one that would be constructed so as to be tight all the way across and held in place by brattice tacks.

MR. REYNOLDS; Q. That is brattice stopping?A. Yes.

HIS HONOR: Q. In fact the only effective seal in a mine across a cut-through or anywhere at all is a brick seal and even then that has to be rendered to be a perfect seal; is that the position?A. Yes. It is very difficult to achieve a perfect seal and it is possible to erect even a brick or concrete stopping which will allow the pressure to rise and fall so you can get fluctuations in air flow through the brick itself.

Q. The air or gas will come through the brick itself and that is the purpose of rendering, is it not?A. Yes.

Q. The purpose of erecting brattice in this position, that is across the heading or cut-through, is to stop most of the air

or gas from flowing through from one side to the other? A.No, in this instance it was erected to direct the air flow along B heading. The screen is erected in C heading so that where the air is coming down B and C headings to No.2 cut through the majority was then diverted to travel along B heading.

Q.That may be the ultimate purpose but the immediate purpose is to prevent most of the air from going down C heading? A. That is so.

Q.And that is generally the purpose of stopping that is erected across a heading or cut-through? A. To control the flow of the ventilation.

Q.But would it control by stopping air from going down there? A.Yes.

Q.It is not a perfect seal but does stop quite a bulk of the air from going down there? A.Yes.

Q.At the same time it will stop the bulk of the air or gas from coming in the reverse direction? A.In this case you still have an air current, some of the air current still travelling down the screen and travelling down C heading.

Q.For example, on one side we have the goaf? A.Yes.

Q.It would stop goaf gases or the bulk of goaf gases, or tend to stop them from coming through? A. It might do, but in this position, no. It depends on the location and the inclinications of the workings themselves. The ventilating pressure itself would bring the air up to those places and air will take the easiest route around so even though you have a wide open doorway going down 2 cut-through you will find some of the air intake would also travel along C heading, come down along the goaf and back along B heading.

Q.The difference between what you call a brattice screen and a brattice stopping, apart from the screen which is erected to divert air around the corner, the difference between them is this, is it not: A stopping is fixed whereas a screen allows traffic through it when it is necessary? A. That could be right in some cases but this is not in this case.

Q.Not in this particular case? A.No.

Q.But often that is the position. For example, your screen behind your fans in A heading? A.Yes.

Q.Was one of that type which tended to stop a flow of air through it but still allowed necessary traffic to come through? A.Yes, that is man traffic.

Q.That is what I mean? A.Yes.

MR.SULLIVAN: Q.You did use the expression "brattice stopping" yourself when you were being cross-examined by Mr.Parkinson, didn't you? A. I could have.

Q.That correction of yours gives us a new view, I think. (Approaches plan) Where we have "brattice seal" here I suppose we could substitute "brattice screen"? A. "Brattice screen" or "brattice stopping".

Q.You say quite fairly such a stopping would not be completely impervious to air, that some air would pass it? A. We are talking about the one erected prior to the fire?

Q.Yes. A. That is right, it would allow air to go through.

Q. It would allow some air through?A. Yes.

Q. Was that put up after thinking about the problem or was it just put up as a loose brattice screen without thinking about what it would do?A. The screen itself was erected to direct the main flow of air along B Heading while the pillars were being extracted between 3 and 4 cut-throughs.

Q. You were responsible for it being put up, I suppose?A. I did not actually direct it nor did I know it had been erected there but it was quite normal to do this.

Q. When you saw it there - you knew it was erected there - did you know exactly what it would be doing? Did you think about it? A. I knew it had been put up there.

Q. Did you know, or did you think about what it might be doing? A. Yes, I knew what it was erected for and what it was doing.

Q. Did you realise at the time that some air would be going through it?A. Yes.

Q. You knew that?A. Yes.

Q. You thought about it?A. I know that the type of screen that was up was to allow the air to go through it.

Q. At this stage you had a body of air coming up C?A. Yes.

Q. A body of air coming up B from O cut-through?A. Yes.

Q. Some air coming through C?A. Yes.

Q. You were aware of all these things ?A. Yes.

Q. There was no stopping in B?A. No.

Q. You would agree with me as a stream of air was coming up B Heading with no stopping in B, some would go up B inby of No. 2 cut-through?A. This was before?

Q. Before the fire. A. We are going back to before the fire at the time the screen was erected - work was taking place in the pillars inby of No. 3 cut-through.

Q. But immediately before the fire - the day - the week before - you have got this brattice screen in C Heading?A. Yes.

Q. Inby of 3 cut-through?A. Yes.

Q. You have got no brattice screen in B Heading inby of No. 3 cut-through, have you?A. No.

Q. Your intakes are C Heading and B Heading?A. Yes.

Q. You say with C Heading the intake in C Heading would put some air through the brattice screen that you put in C Heading?A. Yes.

Q. But do you say the intake in B Heading would not put air up B?A. No.

Q. Why?A. Because the flow of the air would naturally go from C back to B Heading.

Q. What you put is enough air was coming through the brattice screen here to overcome B intake insofar as it went past No. 2 cut-through?A. Not overcome the total air coming in, it is the distribution of the pressures themselves that were available on

the air and due to restrictions and the other things that were available at this time it is shown, and it has been shown since, that the air flow in fact was going down along C heading and coming back up slightly along B heading.

Q.And overcoming the air coming up through B - because B was an intake too? A. There was an intake coming in both sides to a common point. I think you have to realise when the air came together at the intersection of B heading and No.2 cut-through that formed more resistence at this point than if you had two airways in the same section going directly on.

HIS HONOR: Q.Where does this air come from at this intersection? Where are there two flows of air? A. There are two flows of air coming down along B heading, there is a flow along B heading and a flow along C heading. Thus, those two flows meet at the intersection of B heading and 2 cut-through and because of the distribution of the pressure that caused the ventilation of the mine from the main mine fan itself it was found air, in effect, was coming down along C heading, going back along the goaf and rising back out of B heading and joining the air flow again at A - at B heading.

MR.SULLIVAN: Q.You say then that there was a definite flow of air from the goaf edge down B heading to No.2 cut-through? A. There was a slight drift of air, not a definite flow.

Q.Was there a difference in pressure - a lower pressure at the intersection of No.2 and B heading and the goaf edge at the top of B heading? A. I could not tell you that exactly, whether there would be a lower pressure at this point, but one would imagine so because air was flowing in this direction.

Q.Are you putting it that air was coming in the reverse direction, that is outby, down B heading from the goaf? A.Yes.

Q.To the intersection? A.Yes.

Q.Was this something you thought out as being a system of ventilation or did it just happen accidentally? A. No, actually we have had our experience, that we can get some flow of air round a pillar in the same way as this one, on previous occasions.

Q.You could see the result of such a system of ventilation, could you not? Supposing there were goaf gases along the edge of the goaf between C and B heading inby of No.2 cut-through? A.Yes.

Q.If there was a pressure differential between the No.3 cut-through where the goaf was and No.2 cut-through, that gas would be picked up and taken down B heading to the intersection, wouldn't it? A.Yes.

Q.You would thus take goaf gas which may be picked up by the stream coming up C heading and take it back into No.2 cut-through? A.Yes.

Q.And that was the main intake for your work place? A.Yes.

Q.It would then come along and be picked up by the draw of the fans and taken down to the work place? A. Part of it,yes.

Q.Was that your intention? A.Yes.

Q.To take goaf gases down to the work place? A. As long as they were quite safe and there was no problem with them, yes, as long as it was not detectable and causing no discomfort or any danger at all, this could quite readily be done.

HIS HONOR: Q. Why adopt a system of ventilation where you take goaf gases down to the work place?A. To drive the bleeder heading you must go down to the goaf, to drive the bleeder heading itself, and it has never been the practice to seal the gas off and this would be the only way to see there would be no goaf gases coming from the goaf at all.

Q. Why can't you take it past instead of taking it into the working place?A. You could, - it would be difficult.

Q. It would be most desirable, wouldn't it, however difficult? A. No, you can actually work it and control by looking after the area itself and maintaining the ventilation in good and proper state and there is no reason why you should have any undue fears that noxious gases which we thought were existing in the goaf area --

Q. You are just ruling out inflammable gas at this stage, are you? You just say "it is all right to take noxious gases down there"?A. In the quantities that have been detected there was no - had it come up and caused concern at all we could have handled the position from then.

Q. It all depends, does it not, on whether you are able to foretell how much gas is going to come down, and if you get an increase of gas suddenly and it is undetected because the testing system is inefficient, you are creating a position of danger for your men, are you not?A. In effect, this could happen in certain circumstances.

Q. Well, why do it at all?A. Well, because this is the way that the panel was laid out in this particular section and I cannot see where it has been overcome by any previous system that has been devised, where at one time the goaf gases were not open to come back, the goaf was not open to allow some of the air to bleed back into the area that is being ventilated.

MR. SULLIVAN: Q. May I put another question to you to complete this system of ventilation. You have got goaf gases coming down, getting in to No. 2 cut-through where the fan is likely to pick them up and take them down to the working place. You agree with me on that, don't you?A. Yes.

Q. But then you have done something else, have you not; you say you put in the bleed tube? You know what I mean by the bleed tube. I do not mean the bleeder heading, I mean the bleed tube. You put the bleed tube in the shunt, you say, to ventilate the shunt? A. We put the spiral tube in the shunt to ventilate the shunt, yes.

Q. In ventilating the shunt you did not intend to draw goaf gases through the brattice, did you?A. No.

Q.What you intended to do was to draw intake air from No. 2 cut-through in to there?A. Yes.

Q. But you have already allowed so that that intake air contains goaf gases, have you not?A. It could contain.

Q. Well, it must, mustn't it, if it is picking it up all down here?A. Yes, it could have been.

Q. So not only are you getting goaf gases through the brattice screen but you also have a system with the vent tube which takes goaf gases into the shunt on this very ventilation system?A. That is true, the goaf is open and gas rises up there and will mix with the air current itself. It will become diluted to such an extent that it could not possibly cause any hazard, and then go down to the place.

Q.Did you really think about this ventilation system at all? A.Yes.

Q.You are a pretty busy man, are you not? A. Reasonably busy.

Q.And how many sections have you got to look at in the mine? At that time how many sections did you have to look at ? A.There are six working sections.

Q.Six working sections, and you were counter signing the gas returns from all the six working sections? A.Yes.

Q.You were trying to get into every working section to see how it was working? A. As often as practicable, yes.

Q.You were getting production reports from those six sections every day? A.Yes.

Q.You were examining them? A.Yes.

Q.Reporting on them? A.Yes.

Q.Going to the sections when the production fell? A. Not necessarily.

Q.Making inquiries ? A.Making inquiries, yes.

Q.Did you really pay much attention to this ventilation system in this panel at all? A. As I have already stated, yes.

Q.You did, did you? Did you pay a lot of attention to it? A. I paid the attention I have already said. I thought -

Q.And you devised this system? A. As I said before, this devising of the system here has been in operation at the Colliery ever since Green panel started in 1960.

Q.What I am going to put to you -

HIS HONOR: Q.May I interrupt. Is not this the position: You said that the work in Green panel was satisfactory, therefore it would work in 8 Right? Is that the way you said it? A.It had worked satisfactorily in other parts of the Colliery, yes.

Q.Green panel particularly? A.Yes.

Q.So that it would work all right here? A.Yes.

Q.Is that the way you looked at it? A.I knew it had worked before, and by the ventilating with the spiral tube I thought it would do the job that was necessary.

MR.SULLIVAN: Q.But Mr.Puddle, this would have only been the same as Green panel if you put 13 through as a bleeder before you took out 11, wouldn't it? There was always a bleeder heading in Green panel? A.Not when you were driving the bleeder, there was no bleeder heading in Green panel.

Q.If you had carried out what was going on in Green panel by agreement between Mr.Muir and Mr.Ryan, you would have driven 13 before you took out 11, would you not? A.Yes.

Q.And that would have meant then that there would always be two pillars ahead of you? A.Yes.

Q.And they are much easier to ventilate, aren't they? A. If you have goaf areas to ventilate -

Q.It is much easier to ventilate the goaf? A.To ventilate the goaf?

Q.While you are driving the bleeder heading? A.It is not easier to ventilate the goaf.

Q.The goaf edge - it is much easier to ventilate the goaf edge? A.No.

Q.I will just show you Mr.Ryan's sketch again; I showed it to you yesterday. It is the thing that is numbered 9068 with this sketch by Mr.Ryan on it. (Approaching witness) Your intake goes up what I suppose is A heading or No.1? A.Yes.

Q.The miner is at the face here, you see? A.Yes.

Q.It goes round there and I am indicating from left to right now, and it goes out the bleeder these two pillars back from the working place. That was the set up in Green panel? A.You asked me about the driving of this one here?

Q.Yes. That was driven before the third pillar up there was extracted, where the miner is? A. Yes, that is true enough, but I wish to point out there is no bleeder existing while you are driving this bleeder round here.

Q.But the point is, is it not, that you are two pillars at least, probably three, back from the goaf edge? A. Is your question still the same, would it be any easier to ventilate the goaf edge after -

Q.No, not after this is out; while you are driving the bleeder with those three pillars there? A. It is no easier to ventilate the goaf, no, because this is your area up here.

Q.But you still have goaf gases passing the working place, have you not? A.Yes.

Q.But you have got nothing drawing them in? A. But this is being driven at the same time, while this is up here the goaf gases still have to come down the common return. This is the place being driven along here, so the gases coming out from the goaf must be mixing with the air stream and -

Q.Are you saying the bleeder is of no use? A.No.

Q.But you say that while the bleeder is being driven you have got a situation just exactly the same as what you had here? A. No. As I said and as you pointed out, there is an extra pillar there, but the position of the goaf gases -

Q.An extra two pillars, are there not? A.No, only one pillar.

Q.What do you say? A. Only one pillar.

Q.No, there are at least two pillars ahead of the bleeder here, are there not? (No answer).

Q.Would you have a look at it again? (Shown to witness) A. Well, perhaps on the plan that is over on the Board there, I might first be able to point out this. The heading that was being driven to be holed back into the goaf had to be again split, longitudinally. That made the two pillars there and the set up is exactly the same -

HIS HONOR: Q. You mean there was one pillar but it would become two pillars when split? A. Exactly the same as we have here as shown in the numbering for Green panel. The split has come back two pillars along the wheeling road and taken out and formed up to take the hole into the goaf. Afterwards this is split through again here so that actually you have two pillars here as you would have two pillars on that existing plan. The third pillar that was in existence in Green panel was taken out on No.11 on this one here.

MR.SULLIVAN: Q.Well, if the creation of a bleeder heading was not a better system than the one you were using here, why were you returning to it after discussing the matter with Mr. Stone? A. After discussing the matter with Mr.Stone?

Q.Yes? A. No, this was discussed at the time of the driving of the continuation of No.2 cut-through.

Q.That is right, you discussed it with him? A.Yes.

Q.And Mr.Stone suggested to you that you return to this system which had been used in Green panel and which had been used in 8 Right prior to the taking out of No.11 before driving the bleeder tube, did he not? A. No, I can't say to that. I know this was my intention and our intention to form the pillar as I said.

Q.Didn't you discuss it with Mr.Stone? A.Yes.

Q.Do you remember Mr.Stone coming up to the panel, looking at what was going on and telling you to return to the system of bleeder headings? A. I don't remember him telling me to return to the system of bleeder headings, no.

Q.Do you remember discussing it with him? A. Yes.

Q.Well, do you remember his suggestion to you that you return to the system of bleeder headings? A. It was our discussion together to have the bleeder system carried on.

Q.Re-introduced? A.Yes.

Q.And you agreed with that? A.Yes, definitely.

Q.And you agreed with it because it was a better way of dealing with goaf gases than the one you had there, wasn't it? A. It did have some advantages.

Q.What I am suggesting to you happened now is this: After that discussion with Mr.Stone you decided to push on with the extension of No.2 cut-through as a bleeder heading? A.Yes.

Q.And hole into the goaf, is that right? A.Yes.

Q.During the period that that was being driven you were going to take a risk with the goaf gases by blocking off A heading with the brattice in the shunt and putting the bleed tube in? A. I did not visualise it as a risk.

Q.Well, you had reports of inflammable gas in this section? A.Yes.

Q.From Mr.Walker, which you had counter-signed? A.Yes.

Q.You knew there was inflammable gas? A. I knew inflammable gas had been detected.

Q.You knew there was inflammable gas being detected; you knew that the methane in your return airway analysis or inspection had shown a doubling of methane? A.It had risen from .1 to .2 per cent.

Q.Yes, a doubling of methane? A. It was negligible in the quantity given off.

Q.Well, you knew it had had a doubling of methane, is that right? A.It had doubled, it had gone from .1 to .2.

Q.You knew it was coming from the goaf? A.And the working place.

Q. I think you said to me, from the goaf?A. Well, it would be from the goaf and the working place.

Q. Had you found any inflammable gas in the working place?A. No, you would not detect .1 or .2 per cent with an oil flame safety lamp.

Q. You realised that in the return airway it was .2 per cent with a dilution of 26,500 feet per minute, did you not?A. Yes, that is so.

Q. You knew at the best that less than 2,000 cubic feet per minute of fresh air, if it was fresh, was going into that shunt? A. Somewhere round about this.

Q. A much smaller dilution than 26,500, isn't it?A. Oh yes.

Q. You knew that?A. Are you suggesting that all the gas --

Q. I am asking you questions at the moment. Did you know that? A. No, I don't know that.

Q. You had the opportunity of knowing it?A. Knowing there was gas in the shunt?

Q. You had the opportunity of finding out how much that bleed tube was drawing to the shunt?A. Yes.

Q. Did you do anything about finding out what it was drawing? A. Only to the extent of ascertaining it was sufficient to keep the area clean.

Q. Wait a minute, did you do anything about finding out how many cubic feet per minute it was drawing?A. No.

Q. Did you ever take a methanometer up to the brattice screen in A Heading in the shunt to see whether there was any methane in that bottom gas?A. No.

Q. Methanometers were available to you, weren't they?A. Yes.

Q. You knew that in green panel .2 per cent methane had been found behind a brattice seal that had been put up in No. 1 heading? A. In green panel, I think it was 2 per cent.

Q. Yes, 2 per cent; you knew that 2 per cent had been found there? A. Yes.

Q. Don't you think it would have been an ordinary precaution one day when you went up there to take a methanometer up?A. I never thought it necessary or I would have.

HIS HONOR: Q. You did not think it necessary to ask anybody else to take a methanometer, other than yourself?A. No. I would like to point out that the increase to .2 per cent of gas in the return airways, if anything, is normal, and in some sections is even less than normal in the return, in solid workings, and the rise to .2 per cent did not indicate to me any significant change at all.

Q. Assuming there was a concentration of these gases in the shunt, did you think that the bleed tube would rid the whole shunt of these gases?A. Well, I thought we had the means of finding out by testing, and if the stuff came through the brattice screen to such an extent that it was not being diluted and it could be detected, then other steps would have to be taken.

Q. Did you conceive of the possibility of a pocket of gas in the shunt which may be missed by the deputy testing unless he tested all along the shunt, right round it and right round the brattice screen? Did you conceive of that possibility or did you think

that the bleed tube would adequately rid the whole shunt of gases that might collect there? What was your view on it? A. My view on the thing was this, that if we could have a flow of air through the bleed tube out of the shunt, then while it was obvious it would not go right into the far corners or disturb the far corners with the bleed tube being there with no movement -

Q.That was obvious to you, was it? A. When it was still, but the deputies themselves,and I had never tested there, - when the deputy tests for gas he does not take one spot reading, he usually takes a test on each rib.

Q.You gave no special instructions to the deputy about there being a possibility of a pocket of gas in the shunt and therefore the testing had to be most searching? A.Well, as I said before, I spoke to Charlie Stewart about this at the time of the erection of the screen inby No. 3 cut-through and we knew there were noxious gases inby of there and to keep an eye on this area so that it would not contaminate the shunt itself. The thing I think that might be taken into account too, is that when you are talking about places where the flow of air was not sufficient to go into the corners of the shunt itself, with the movement of the shuttle car itself in and out this would have the effect of stirring up of the air in itself.

Q.But stirring up is a vague term, is it not? Is not this the position: All it does is to push back the air, and as it goes back it lets it expand and you merely get flow in and out of the same pocket? You would not suggest that a shuttle car is some means of ventilating a shunt? A. Oh no, but I am saying it is an aid.to making sure that your air in the shunt is turbulent is mixed up, Your air does not become compressed by having a shuttle car in it - after it goes out it is still the same. The volume of the shuttle car as it is going in would displace that amount of air . Coming out that same volume of air , and it must replace it from the intake airway again.

Q.You mean the shuttle car forces the air out of the shunt into the airway, and then what happens when it goes out again is that the air flows back? A.Yes.

Q.Not the same air, but other air replaces it; is that your suggestion? A. It is replaced - it would not be the same air.

Q.I am not suggesting it is the same. You suggest that what happens is that when the shuttle car goes in it forces air out of the shunt, and when it comes out again new air goes in? A. New air goes into the place that is vacated by the shuttle car.

Q.Have you ever heard of the principle I learnt in my school days, that there is an elasticity of gases? A.Yes, I have heard of that before.

Q.Gas is inflatable, something which compresses and expands, is that right? A.Yes.

Q.And then when you push an object against this body of gas, although there may be some displacement, it also has the tendency to compress this gas into a small area and when you remove it, the gas merely expands? Do you know about that? A. If you had a closed cylinder with a piston in it and you acted on the full volume of the thing, you lose no gas.

Q.Tell me if I am wrong or you think I am wrong. Even in the case where you have not got the closed cylinder you will not merely drive out the whole body of gas and then replace it by some fresh air or gas, whatever it may be, when the the compression is removed? A. There would be a slight elasticity of the air but I think it would be only slight.The majority of the air that would be

displaced by the shuttle car entering the place would be displaced out into the airway. It was quite readily alongside it, and then you would get the airflow again.

Q. One thing is in my mind and I draw your attention to it: After these conditions were simulated, substantial concentrations of methane were found continually in this very airway in which the shuttle car had been working?A. Yes.

Q. Assuming now that there was no sudden change, and there is nothing here so far to suggest it in the evidence, but assuming there was no sudden change after the fire, that leads me to an inescapable inference that these conditions obtained before the fire. In other words, in the shunt there were, for a period before the fire and during the carrying out of these operations, substantial collections of inflammable gas in the shunt. That must mean, must it not, that the ventilation system was ineffective, if they are allowed to continue?A. If this is true, yes.

Q. The ineffectiveness of the ventilation system remained undetected by those responsible for it; that also must be true, must it not?A. I would not like to say that, Your Honor. Perhaps you could, but I do know tests were made there and gases were found.

Q. You did not test there?A. No.

Q. You relied on others to test there?A. Yes.

Q. The reports revealed some methane there in the [illegible] working area, in the panel?A. No, noxious gas, I think.

Q. No, methane, it was put to you yesterday?A. Yes, traces.

Q. But the men who were supposed to test in the shunt area and who reported that they had tested in the shunt area found none? A. Yes.

Q. I am loath to ask you this question because strictly speaking it is objectionable, but to assist me could you give me any explanation as to how that came about?A. Well, firstly I cannot see how the gases that had been in this shunt area since the simulation was set up as it was on 9th November could have escaped detection. It was quite easily detected on both ribs and up to a height of 4 ft. 6 ins. above the floor on an oil flame safety lamp. I would like to point out that the deputy or one of the deputies who had been reporting traces of gases previous to this was one of the deputies who also made inspections in this area himself so that he knew what he was looking for and he obviously knew how to test.

Q. That was Mr. -- A. Walker. Noxious gas had been reported by deputies on various occasions and also I myself had found noxious gas prior to this when we were driving No. 4 cut-through. I can only say - I can't really say what has happened down in here. There could be several theories for it, but I feel that the gas that was there at the time of the ignition, and surely in my opinion there must have been gas to burn at this time -

Q. I think we can accept there was gas. A. Yes, I think so. These gases came very rapidly, in my opinion.

Q. And have been coming very rapidly since?A. And have been coming back in this period since this time, yes.

Q. [illegible] where it came from - either from the floor or the roof or some other reason,I could not tell you where, but the quantity of gas that was detected in the shunt afterwards surely could not have gone undetected had it been present prior.

Q. Had the men who were testing done their job, that is the other position?A. Actually you are asking me -

Q. I am not asking you to pass judgment on these men. That is my function. But I mean, that must be the position, must it not? A. In my opinion of the findings of the people concerned, they have been conscientious and capable of testing for this gas, and the three people who made the tests found none.

Q. What your theory is implying is this, is it not, that at some time, in fact deputy Stewart tested that morning, the morning of the fire?A. Yes.

Q. And detected none?A. He detected noxious gas, I think, in small quantities.

Q. Noxious gas, but he was the man who should have been able to detect inflammable gas too?A. Yes.

Q. Deputy Stewart tells us he tested on the morning of the fire and found nothing, and one might say that in the space of a few minutes after - half an hour, 30 minutes - on your theory a sudden flow of gas occurred which has been coming ever since, just at the time when the ignition point was available?A. Yes, well, even the fact that Charlie Stewart has reported noxious gas and the finding of noxious gas in this area shortly before, it shows that he must have tested for noxious gas and had the inflammable gas been there in the quantities that have been shown since, then in my opinion he would have had no difficulty at all in detecting inflammable gas in this area at that time.

Q. If he were conscious that he was looking for it. You yourself have told me, have you not - perhaps I had better read what you said from your evidence so as to be quite accurate about this. I asked some questions as to noxious gas being in the mine at the time. I asked you about it twice and I will refer firstly to p.738:

"Q. You were mindful all this time of the possibility of noxious gases, is that right?A. Yes.

Q. Is there any particular danger in a shuttle car working in a shunt in noxious gases? A. Other than the effect it might have if it was present in sufficient quantities to cause physical discomfort to the people who would be exposed to it.

Q. The only man would be the shuttle car driver, would it not?A. Yes, he would be in the shunt.

Q. He would be in the shunt only such time as he took to back in and come out again?A. Yes.

Q. And the action of coming in would tend to swirl the gas around away from the shuttle car driver himself, would it not?A. It would cause turbulence in this area, yes.

Q. It would tend to push it away from him?A. Yes.

Q. So it would not have very much effect unless it was in very substantial quantities, on the shuttle car driver?A. No.

Q. And then of course if it did affect him in any way, he would immediately report it?A. Yes.

Q. You correct me if I am wrong but is not this the position: from the point of view of those in control, and I am talking about deputies and yourself or any assistants who may be there, looking at the situation and expecting only noxious gas, it

was a risk worth taking to keep production going to run a shuttle car in and out of the shunt, since it was only a shunt and not a working place and since if it became substantial in volume you would expect the shuttle car driver to report it. Is that the position? A. No. It was actually a part of the working area and as such had to be kept clear and this is fully understood by all the people in the place but -

Q.I know what the Act says and I know it is understood. I am now talking about the practical situation as it exists when the work is being carried out, that the working place you are talking about here is a shunt where only a shuttle car goes in and out and there is only noxious gas in there. You see, you started off with the assumption, did you not, that the gas in there is noxious? A. Yes."

Then later on Mr.Lee asked you "Q.Did you yourself at any time give any consideration in Section 8 Right to the presence of bottom gas? A.No."

I am reminded by Mr.Mahon that at p.824 this was put to you:

"Q.Speaking for yourself, you did not expect to find inflammable gas in 8 Right? A. I had not found it before but that did not say I would not expect to find it. I really did not think it was there but I tested just the same and this is the reason for testing these things, to see if there was any detectable quantity of gas present.

Q.As far as you know that was the attitude of your subordinates, Mr.Wright didn't really expect to find CH_4 in the workings either, did he? A.I could not tell you what his thoughts were."

Have you had a situation where the Deputies are thinking in terms of noxious gas and not thinking in terms of inflammable gas? You would agree, would you not, their minds would be directed with special attention to inflammable gas? A.This is a possibility.

Q.And using an oil flame safety lamp, they go there and they find noxious gas, they say "it is noxious gas," they report that and may not go any further; would you agree that that is a possibility? A.That is a possibility,yes.

Q.And again it is of course a possibility that the deputies, although they look for noxious gas, and find some, at other times may not carry out a full test, a proper test in the area of the shunt, because they say "there is noxious gas there, it is not worth worrying about, it is only a shuttle car driver going in and out." Is that a possibility? A. I would not think that would be right.It is a possibility but -

HIS HONOR: I cannot really ask you that; I would not ask any man to pass an opinion on whether another man thought it.

MR.SULLIVAN: Q.Returning to the testing about which His Honor put some questions to you, I want to remind you of the position in western returns. In D heading on the ribs at the roof level, 20 yards back from the standing place you found up to 2% of methane with the flame safety lamp? A.Yes.

Q.You found that with the oil flame safety lamp, did you? A. Yes.

Q.And I am instructed Mr.Parkinson did. There was a deputy, Doug Harvey, there, wasn't there? A.Yes.

Q.And when you came into the place you asked him how things were and he said everything was okay? A. This is in relation to the working place itself.

Q. Yes. DId Mr. Doug Harvey have an oil flame safety lamp?A. Yes.

Q. And he had not found it ?A. I don't think he had been in the section before I spoke to him.

Q. What I said to you was he had not found it, had he?A. He hadn't found it up till this --

Q. He said everything was O.K., didn't he? (objected to by Mr. Reynolds and Mr. McNally).

MR. McNALLY: The report tendered as an Exhibit shows he tested at 8.15 and reported inflammable gas.

MR. SULLIVAN: May I have the report, Your Honor?

WITNESS: It would be the big one, the composite general report.

MR. SULLIVAN: Q. C heading. We were talking about D heading, weren't we?A. I am not quite sure. I thought you said C heading.

Q. Is that what you swore, that you thought I said C heading? A. When you were speaking just then I thought you said C heading.

Q. When I was putting to you those questions about Mr. Harvey's test?A. Yes, I thought you said C heading.

Q. Then may I read you what you said in your statement, " We came back to C heading which was a standing place being bolted with the roof bolter. There was no gas detected with the safety lamp at the roof level. However, 1 per cent to 2½ per cent of methane was picked up in the cavities with the methanometer 20 yards inby the roof bolter"?A. Yes, that is right.

Q. Then you gave certain instructions, " We then moved to D heading. We inspected D heading. In the general body of the air there was no gas detected with an oil safety lamp. We tested the ribs at the roof level. However, 20 yards back from the standing place found up to 2 per cent methane at the roof level and over the roof bolter which was not working," and you did that with a flame safety lamp?A. Yes, in D heading.

MR.SULLIVAN: Q.How do you explain, if Mr.Harvey tested, why he did not report inflammable gas in D heading, - - -

MR.McNALLY: My friend has not seen the report.

WITNESS: I imagine he would report the thing. I am reporting what I found there.

MR.SULLIVAN: Q.Do you think Mr.Harvey found it? A. Yes.

Q.Do you suggest he reported it? A. I suggest he would report it, yes.

HIS HONOR: If I remember work stopped that very morning.

MR.REYNOLDS: Almost at this instant.

MR.SULLIVAN: There is one of Mr.Harvey's on the third. It did not stop in that split till later.

HIS HONOR: It would not be very much later. There would not be much work done.

MR.LEE: Would not you have to know whether Deputy Harvey reported what he found or the result of this finding for this evidence to be of any value?

HIS HONOR: I am reminded by Mr.Mahon there is a smaller report which deals specifically with the ventilation.

MR.SULLIVAN: Q.Incidentally, Mr.Harvey had put no hurdles or brattice up in that section to disperse the gas, had he? A.This is immediately after the start of the shift. There was no much time to do anything.

Q.What time did you get in, about 8 o'clock? A. We got in with the men going in on the transport.

Q.About eight you got into this place? A. It would be about 8 o'clock, possibly five past or ten past.

Q.There was a man in the place and Mr.Harvey said to you "Everything is okay" and no hurdles or brattice had been put up. Is that right? A. That "everything is okay" I am afraid refers to the working place itself.

Q.He said "Everything" according to you, did he? A.Yes.

MR.SULLIVAN: We do not seem to have a report of the ninth. We have the eighth and the tenth.

HIS HONOR: I would have thought there would be perhaps a brief report.

MR.McNALLY: I have a recollection of seeing it. I thought I tendered it.

MR.REYNOLDS: It may be a separate exhibit.

MR.SULLIVAN: It could be a separate exhibit, Your Honor.

HIS HONOR: Mr.Bevan tells me there was only one report of the ninth and that was the deputy's report, Mr.Dunlop.

MR.McNALLY: Here it is, Your Honor. It is only a small one.

MR.SULLIVA : "Shows inflammable gas in C and D headings. The inspection was completed at 9.10 - started at 8.10".

Q. Returning to what I was putting to you before: That brattice screen in the shunt was put up to keep gases back in the goaf? A. To contain the gases in the goaf, yes.

Q. The bleeder tube or the vent tube was put in to ventilate any gases that may come through the brattice?A. It was put in primarily to induce the flow of air from the intake airway in to the shunt itself.

Q. To dilute any gas that might come through the goaf?A. Yes, and help dilute any gas that might infiltrate through the brattice itself.

Q. That was only a temporary expedient until you put through a bleeder heading?A. Yes.

Q. You thought all your problems would be solved when the bleeder went through?A. I did not think I had any real problems.

Q. No, but whatever problems you had. A. I thought the way we were doing it would meet the situation satisfactorily.

Q. You intended the driving of the Bleeder heading to go on and hole into the goaf?A. Yes.

Q. After you left the section and whilst it was not directly under your supervision someone without your authority - am I right - failed to hole through into the goaf and brought the machine back to get coal out on another lift. Is that a fair statement?A. No, it is not a fair statement. It is generally true.

Q. It did happen --

MR. REYNOLDS: You introduced the words "without authority".

MR. SULLIVAN: Q. Did it happen?A. Yes, the machine was brought back.

Q. Without holing into the goaf?A. Yes.

Q. Yet you wanted to put the bleeder heading through?A. Yes.

Q. Was that done with your authority or not?A. No.

Q. It was done without your authority. So, what I put to you was a fair statement of the position, was it not?A. The machine was brought back not to start a new lift, but it came back because of the fact --

Q. The machine was brought back to start a new lift?A. But you are asking me to answer the question you asked before, aren't you?

Q. Yes. A. Did not that question include the fact - (interrupted)

HIS HONOR: I will have it from the witness please?

WITNESS: I understood Mr. Sullivan to say isn't it right the machine was brought back to start a new lift?

HIS HONOR: Q. Yes. A. What I would like to qualify is it was brought back to start the new place off which was adjacent to the other one which in terms could be called a new lift but the fact was the reason it was brought back to there --

MR. SULLIVAN: I never asked the witness this. It was done without the authority of this witness.

HIS HONOR: The witness is questioning the accuracy of your description that it was brought back to start a new lift. The witness, as I understand it, is saying that truly it is starting a new lift but not merely for the purpose of starting a new lift, but that to start the new lift was incidental to carrying out the original intention.

WITNESS: Yes.

MR.SULLIVAN: Q. Why would not your original intention have been carried out in the first place? A. Because of a mistake.

Q.You did not make this mistake? A. No.

Q.You were only told it was a mistake? A.Yes.

Q.By whom? A.Mr.Wright.

Q.Mr.Wright. Is that right? A. Yes.

MR.McNALLY: I assume my friend is going on with this? I thought your Honor asked certain questions yesterday and indicated that there the matter must end till we heard Mr.Cambourn?

HIS HONOR: Mr.Sullivan is attempting to get something else from the witness. I take it you are not trying to solve the problem? As a matter of fact, Mr.Sullivan deliberately tried to avoid saying there was a mistake.

MR.McNALLY: We are still relying on the same heresay.

MR.SULLIVAN: I am prepared to leave this aspect till Mr.Cambourn comes. I only wanted to get out the fact.that a new lift was started without his authority.

(Short adjournment)

MR.SULLIVAN: Q.There was a question asked by my learned friend Mr. Murray in which the suggestion seemed to be that the miner driver has a lamp - he has an oil safety lamp, hasn't he? A. It is usually the miner driver,yes.

Q.But of course he is under no obligation to test other places than where the continuous miner is and see if there is an inflammable percentage of methane? A.We do not depend on any inspections made by miner drivers. The company officials themselves make all the inspections.

Q.It is purely there as a safety device for the miner driver to keep an eye on it? A.No, to use for testing gas if he so requires.

Q.Around the machine? A.Yes, or anywhere else he may think, as long as it is in the working area itself.

Q.You are not suggesting he would be either required or expected or would desire to test for gas in the shunt, are you? A.No, I am not saying that, I mean in the working place itself.

Q.Apparently when up in 3 cut-through after you brought the bricklayer in,Mr.Lake - you brought him in to cement render the brattice - you warned Mr.Deputy Stewart to be on the lookout for noxious gas? A.Yes.

Q.You intended that instruction to cover the whole of the workings thereafter? A.Yes,to keep his eye on the control.

Q.You yourself, you have told His Honor,were well aware of the mixture of methane,carbon dioxide and nitrogen which constitutes what

is known as Illawarra bottom gas, are you not?A. I have known of its presence in Bulli Colliery prior to this.

Q. You know if there is sufficient carbon dioxide and nitrogen in such a mixture it will stay at floor level, you knew that? A. Yes, depending on the mixtures themselves and the relative density.

Q. You knew that?A. Yes.

Q. You knew also I take it from your reading and experience that such a gas, whilst it remains on the floor, could contain an inflammable percentage of methane?A. It could contain some methane.

Q. It was inflammable gas. A. Inflammable gas, yes.

Q. And that the mixture could be inflammable. You knew that, didn't you?A. No, I did not know that. I knew when it became diluted, depending on the dilution, you might get sufficient --

Q. Given sufficient dilution of oxygen it could be inflammable? A. Yes, assuming there was sufficient CH_4 in the first place.

Q. You could get it in such a percentage, yes. I will ask you this general question: Is there any provision made at your colliery for submitting specimens of goaf gas to a chemist for analysis?A. There are avenues available but it is not done under any system or --

Q. There are avenues available?A. Yes.

Q. Supposing you had said to Mr. Stone, your manager, you wanted a specimen of the goaf gas analysed, it could have been done? A. Yes.

Q. Quite quickly?A. Reasonably quickly, I would imagine.

Q. Whilst you knew there had been inflammable gas found in these workings and you knew there was some form of bottom gas there you did not think it a wise precaution to take?A. It did not occur to me as being necessary.

Q. In the same way as it did not occur to you as being necessary to take a methanometer up there one day and test the gas in the shunt?A. Yes.

Q. I want to ask you about the regulators there. How are they constructed? How is the regulation through which the air goes into 8 Right? What sort of a regulator is it?A. The regulator is constructed by the erection of props and flat sheet metal nailed to the props leaving an opening for the regulator itself. The regulator is in the opening.

Q. The frame of the regulator is flat steel?A. The face of the regulator is flat sheet.

Q. Nailed on to the props?A. Yes, and/or 3 x 1 battens.

Q. With an apperture?A. With an opening.

Q. Is that opening adjustable?A. Inasmuch as you can vary the opening you have got there by taking off a sheet of tin and replacing it, which is quite readily done.

Q. Quite a simple operation. Regulators are very important in a mine, aren't they?A. Yes.

Q. Have you in your mining experience seen the other type of regulator which has a sliding door on the apperture?A. Yes.

Q.Are there any of those in Bulli Colliery? A.No.

Q.They are capable of being locked - either pad locked or - ? A.The one I saw at the State Mine was capable of being locked but - -

Q.Let me put this to you as a precaution in the use of regulators: Do you not think it a proper precaution that they should be lockable and the key kept in the manager's or under-manager's possession? A.I have never seen the necessity for this.

Q.The regulations provide, and I am referring to schedule 6. This refers to your duty. Regulation 30 is the one I am going to read. There are really two. There is regulation 27 at p.175, "Subject to the instructions of the mamager he" - that is you - "shall have control of the regulators and prevent if possible any improper interference with them and in all cases see that they are kept securely fastened." 30 provides "He shall not, without the knowledge and consent of the Manager, himself undertake or commit any subordinate officer or person in the mine to undertake any work or make any alteration which would materially affect the system of ventilation". At the Bulli Colliery there has nothing been done at all to see the regulators are kept securely fastened? A. In my opinion,yes, they are securely fastened. The things are properly constructed. The sheet iron is tacked on. It would have to be a deliberate act to go and break it.

Q.We are contemplating a deliberate act? A. There would be no more difficulty in altering the size of that than there would be in altering the size of a chained door or pad lock.

Q.They have got brick stoppings with the sliding door at the State Mine at Lithgow?A.Yes, I saw this there.

Q.Brick stoppings with a sliding door that could be locked? A. There was provision for locking.I don't say it was locked.

Q.There was provision for it. And, the key could permanently have been kept in the possession of the Manager or Under-manager? A.Oh quite possible,yes. I do not know if it is required in the Act that it should be locked.

Q.It is not carried out at this Colliery? A.In my opinion it is being carried out. The regulator is constructed (interrupted)

Q.Locking is not carried out? A.Where does it say "locking"?

Q."Securely fastened"? A. As I said before the construction of the thing was securely fastened. Even with the regulator Mr.Sullivan is referring to, Your Honor, it must have a surround of some kind. You have a frame with a sliding door so by opening or closing it you could vary the size of the aperture. Usually it is constructed, the frame itself,from something else, either brickwork or tin or something of this nature, so actually you still have the surround which could be just as easily interfered with in this case as you would with what I have here.

HIS HONOR: Q.You say it is fastened by either having batons or props nailed to the sheet iron; is that right? A.Yes.

HIS HONOR: I suppose it could be said you can fasten a door either by a lock or you can nail it up?

MR.SULLIVAN: Q.There is another form of regulator which could be locked and the key kept with the Manager. I just wanted to bring that out. You were present during the fire fighting operations? A. Some of them, yes.

Q. The earlier part?A. Yes.

Q. The fall occurred about 11.20 a.m., did it not? Do you remember?A. There was a fall in the morning. I think there was a fall somewhere about 11.20. I heard some noises that sounded like a fall prior to this, before 11 o'clock.

Q. Do you know where that was?A. It was inby of the area where we were. We were at O cut-through at A Heading and it was down inby of there. It is hard to say where. It would be impossible to say.

Q. When you got an opportunity to look at the fire area the fall was actually in the heading, or in the cut-through, perhaps I should say, between A and B heading, was it not?A. Yes, and in the intersection of No. 2 cut-through and A Heading.

Q. It was a fall that did not completely block the heading, wasn't it?A. It did not completely block the heading

Q. No. As a matter of fact when the fire fighting operations continued the fire fighters were able to stand on top of this fall and hose in towards the fire?A. Yes.

Q. Of course when such a fall occurs the place from which the fall comes is vacated by its contents. In other words, if some of the roof falls down it leaves -- ? A. Yes.

Q. So it could not be suggested in any way that that fall blocked the heading or the cut-through in No. 2 cut-through? A. It did not block it but it partially blocked it.

Q. Not very much though?A. I think - (interrupted)

Q. Men were able to stand on it?A. I am not quite sure of this but I believe broken stone would occupy a volume of at least 1½ times its solid volume.

Q. About 1/3rd. Do you agree with that?A. It is a fair while ago.

Q. So it would be fair to say that the restriction would not amount to more than 1/3rd and because the place from which it had come in the roof had been completely vacated it would be a good deal less than 1/3rd?A. No, what would happen would be where the fall terminated in the intersection it would come straight down and instead of falling into the space immediately below where the stone fell it drew back under the lip that was still supported - (interrupted)

MR. REYNOLDS: Let him say what he wants to say.

MR. SULLIVAN: Q. There were no other blockages of the intake airways other than that fall - intake or return airways?A. There was partial obstruction along C heading itself. During this period the activities that were taking place round there were considerable. There was some movement of traffic inasmuch as bricks were brought in to form preparatory seals across B and C headings. These were being unloaded at some period. Sand had been brought in, the battery locos had brought brattice in to the area so that the actual track road itself in C heading I imagine most of this time would have had some obstruction along it.

Q. There was a lot of movement there?A. A lot of cars and other things like this.

Q. But only the type of movement that takes place to a less extent in ordinary mining operations?A. It might have been greater at this time because they would be stationed for some time at the particular point whereas in normal conditions they would be moving.

Q. Where were they kept stationary?A. We unloaded bricks between 0 cut-through and 1 cut-through on A heading. We unloaded bricks at the intersection of 0 cut-through and C heading - C heading, I am sorry.

HIS HONOR: Mr. McNally, do you want to interpose Mr. Cambourn at this stage?

MR. McNALLY: If it is convenient, Your Honor.

HIS HONOR: It depends how long you might take with Mr. Puddle.

MR. McNALLY: I shall not be long with Mr. Puddle.

HIS HONOR: Perhaps you may ask questions of Mr. Puddle and then call Mr. Cambourn and perhaps we may save Mr. Reynolds' re-examination till later.

MR. REYNOLDS: Perhaps we may finish with the witness?

HIS HONOR: I would be very happy to do that.

MR. REYNOLDS: These things are a great strain to a person.

MR. McNALLY: Q. I think you said you did certain tests in the shunt that was then at 3 cut-through on 5th October 1965?A. Yes.

Q. Is there any particular reason why you did those tests or was it just part of the normal inspection?A. As I stated before the day I was in there noxious gas was rising up along A heading and being diluted by the main air current at the intersection of A heading and No. 3 cut-through so I knew noxious gas was rising up along there and tested there and found some there and after the screen was put up, we put a diverting screen back into it again for a period and I was there after the diverting screen was put up - the working area was quite safe, A heading was not being used as a shunt, the face area where the machine was working was quite clear, the area where the men were working around the machine was quite clea r.

Q. This was the day when Mr. Stewart with the assistance of Mr. Wright and Mr. Lake and I think one other gentleman erected a brattice screen?A. Mr. Stewart and myself worked on the erecting of a brattice screen.

Q. I think you and Mr. Stewart had actually started it - ? A. I helped in the erecting of the brattice screen.

Q. You started to put the brattice screen up before - ? A. No, Mr. Wright was in the panel but in another part of the panel. When I went down to the work face itself and into this part the screen was in the course of erection at this time and I gave assistance in erecting it.

Q. As, or after you left, Mr. Lake came and took over?A. After I left Mr. Lake came.

Q. You went out of the mine and telephoned Mr. Stewart to tell him you were sending down an elephant's trunk?A. I did not go out of the mine, I went to an inby section and rang from there. I located a T-piece to fit into the vent tube line that would allow the attaching of the spiral tube to the same. I rang from this other panel and told Mr. Stewart I had found this stuff and I thought we ought to try it out and put it into this area to see if we could keep the area clean so that it could be used as a shunt.

Q. You actually arranged for the bleed tube itself to be brought from another colliery, Appin or Nebo?A. One piece of spiral tubing did come from Appin.

Q.You arranged that yourself? A. I spoke to the Manager who arranged that.

Q.Very briefly, on this day when you tested, on 5th October, you used an oil safety lamp, I think, only? A.Yes.

Q.Just what size light did you use in the lamp ? A. Testing down towards the bottom I used a fairly full flame and this was to try and locate the extent of noxious gases or where the noxious gases were coming to, or find out where they were. The tests for inflammable gas I made below with the oil flame safety lamp at the level above the known presence of the noxious gas.

Q.And that is the non-luminuous flame? A. Yes.

Q.That is the one you tested for methane at the roof with? A.It will test for methane anywhere, with this.

Q.Did you test for bottom gas down nearer the floor with the non-luminuous flame ' A.Yes.

MR.REYNOLDS: Do you mean Illawarra bottom gas?

WITNESS: Did I test for Illawarra bottom gas down near the bottom? I tested for the presence of noxious gas and after finding there was noxious gas down close to the floor coming out I then tested immediately above this area to see if there was any CH_4 over the top of it.

HIS HONOR: I do not understand this.

Q.Is this your understanding of Illawarra bottom gas: That you have a layer of noxious gas and then a layer of CH_4?A. No, it is intimately mixed but as the mixture would come out of an area of Illawarra bottom gas and was meeting with the air I feel the methane would rise more quickly into the air itself.

Q.In other words you are saying they are in a process of separation as they existed on the floor? A.Yes.

Q.And the methane was rising above and coming out? A.Once it meets with the other air, with the incoming fresh air.

MR.McNALLY: I think this is in accordance with Mr.Menzies' statement when he said you test for the top of the layer.

HIS HONOR: I recall that also. Unfortunately, since that time one has heard so many other theories that it becomes difficult. One came from Mr.Buck, that they only separate out in what he calls geological time.

MR.SULLIVAN: That is Mr.Donegan's evidence.

MR.LEE: Yes. If Mr.Menzies did say you tested the top that would be wrong.

HIS HONOR: Mr.Buck tells me you have in fact at all times an intimate mixture of both gases and the position is it is more diluted on the upper level near what is called the fringe area by the air with which it is coming in contact. If you test down below that your lamp will tend to go out so what you do is test in a more diluted place. That strikes me as a very speculative method of testing for gas.

MR.McNALLY: That is what Mr.Menzies said.

HIS HONOR: I realise that. It may well explain why from time to time you may get deputies who do not know how to test for methane in

bottom gas, because they go down and put their lamp down far enough and see it has gone out, or is tending to go out and they say it is noxious gas and when they try to test above it in this fringe area there must come many occasions when they have missed the methane. They might even be missing the bottom gas. You might get a stage where you gradually lower down into it and see what happens to your flame and unless you have very good eyesight you might well miss the cap. However, that seems to be the situation.

Q. Do you agree with what Mr. Buck has just put to me, as I told the Court?A. Yes, I think that is just about it.

MR.McNALLY: Q.On that occasion you did not detect Illawarra bottom gas? A.No.

Q.Do you concede the possibility that it may well have been Illawarra bottom gas you were dealing with at that stage in view of the subsequent happenings? A.It could have been.

Q.Have you in fact in the Bulli Colliery, you yourself, ever found Illawarra bottom gas near the floor? A. Yes, I can remember - it is only once, I was down in Purple tunnel quite a few years ago. When purple was developing we came into close proximity to a dyke passing through the seam and on a very small occasion round there we had a mixture of gas coming out from the coal which could be detected down near the bottom of the seam and detected in an oil flame safety lamp held hard up against the coal where it was emitting from and also you could by smell alone and the feeling itself, there was a slight trace of CO2 also present in this. So you had the CO2 and the methane in this mixture down in there. That is the only place I have actually detected it myself.

Q.Where you really found Illawarra bottom gas? A.Yes.

Q.Do you know the old 8 Right section? A.Yes.

Q.That was the goaf, looking outby in 8 Right, slightly to the right of the present 8 Right? A.Yes.

Q.Did you know that there was Illawarra Bottom gas in that area? A. Not to my knowledge,no.

Q.You did not know? A.No.

Q.I think certain tests were carried out on or about 8th December when the brattice screen was re-erected in the shunt? A.Yes

Q.That situation, those so called simulated conditions, were set up I think for a period of 24 hours only? A.Yes, I think it was somewhere round about the period it was set up for. It was not set up for very long.

Q.It was completed late one afternoon and taken down the next afternoon? A. I think it came in about 10 o'clock on the previous - on one afternoon, and I think it was removed somewhere on the following night.

Q.During that time did you yourself actually carry out any tests with a flame safety lamp? A.Yes.

Q.And did you have any difficulty at all in detecting the presen e of bottom gas - Illawarra bottom gas?A.We found that from the results of the tests then, it was quite easy to pick up somewhere between 1½ and 2½, and I think it was 3% at one stage of methane.

Q.These are your tests I am talking about? A.Yes, this is my own tests, plus the face and the stopping that was in the shunt, and also CO2 was proved to be present. There was an instrument that they used to detect CO2 - that conclusively proved that CO2 was also present at this time.

Q.Just where was it in relation to the brattice that you found the methane? A.I found it on both the left and right hand ribs.

Q.How high up? A. Well, I found it up to about four and a half feet from the floor.

Q.And that was actually apparently coming through the sides of the brattice? A.Yes. It was coming through the sides of the brattice, yes.

Q. Was there some gap - I do not suggest a large gap, but some gap on either side of the brattice screen?A. It was not completely sealed to the coal, no.

Q. Did you find it anywhere else in the shunt besides the left and right hand side of the brattice?A. Yes, I can remember it was easily detectable even in the middle of the brattice screen itself at approximately the same height.

Q. What about further back into the shunt itself?A. Behind the shunt?

Q. No, further outby the brattice screen, away from the brattice - did you detect any methane there?A. Back along the right hand rib of the shunt itself, that is looking into the shunt, I picked up some gas. On this point I think it would be about two or three yards back from the brattice.

Q. What height was that?A. This came down to somewhere about 3½ feet, I think, or 2½ feet.

Q. Did you use the methanometer or the flame safety lamp?A. I am referring now to the oil safety lamp also.

Q. All the time?A. Not all the time. I was correlating the readings I was getting with my oil lamp with the M.S.A. at this time.

Q. You were finding the methane first with the M.S.A. and then testing with the safety lamp?A. Or vice versa. I can't say how this was - it depended on what I had in my hand at the time. I may use the oil lamp first.

Q. In the general body of air you tested, was there a reading of methane on the oil flame safety lamp?A. No, I would say a yard from either the rib or the brattice was as far as I could detect this stuff. It was being diluted after this with the oil safety lamp.

Q. So with the exception possibly of a yard from the rib or brattice, in the general body of air methane could not be detected on the oil safety lamp when you tested?A. I could not swear to this, but about a yard.

Q. Do you know what the quantity of air was going up to the turn on this day?A. There were readings taken. I think it was somewhere in the order of round about 31,000.

Q. This is 8th December we are speaking of?A. Yes, well, I can't say certainly, but it would be somewhere between 26,000 and 31,000.

Q. Put it this way: It was approximately the same as on the day of the fire?A. Yes.

Q. And I think the reading of methane in the return on that day was .3 per cent?A. On the day of the fire?

Q. No, on the 8th December?A. No, .2 per cent.

Q. Well, what was the reading in your return airway in December 1965? I put it to you it was .3 per cent?A. I am not quite sure without having a look at the records, but the records are available there. I don't think it was.

MR. REYNOLDS: As far as I am instructed, it was .3 in December. I think it is a monthly average.

MR. McNALLY: Q. Do you accept that?A. Yes.

Q.I think you did have a recollection it was about .3 per cent, is that so? A. Yes, it was either.2 or .3 and I accept it was .3 .

Q.We are now taking before the fire on the Sunday , which would be 7th November. I think you do not know who in fact started the auxiliary fans in 8 Right section?A.No.

Q.It frequently is a Deputy who works overtime on a Sunday who starts the various fans, is it not? A.Yes, this is possible.

Q.But you do not know who it was? A.No.

Q.I think Mr.Fred Wright is the Assistant Under-manager in charge of the morning shift? A.Yes.

Q.And I think he is the person you discussed the proposal to split the pillar outby the No.2 cut-through? A. It was also discussed with the Manager,yes.

Q.Just when was it you discussed this proposal with Mr.Fred Wright? A.Well, I know it was prior to the driving of the face down the extension of No.2 cut-through.

Q.I think he was also the gentleman to whom you gave instructions that the shunt should be watched? A.Yes, I mentioned it to Mr. Wright about this area.

Q.I think he was actually in the No.2 cut-through area on the day of the fire before the fire? A.Yes.

Q.Are you able to say whether or not he actually tested in the area for gas? A. My impression is that he did not.

Q.Do you know? A.I have spoken to him and he said he did not test in the shunt area.

Q.He did not test in the shunt area? A.Yes, he didn't .

HIS HONOR: Q.This is before the fire occurred, on the day of the fire; do you know what he was doing? A. He made a routine inspection, which he does every day or practically every day,tohave a look at the place, the general safety and to check up to see if anything is needed.

MR.McNALLY: Q.It is possible he may have at some time tested the shunt - not tested, but inspected the shunt, had a look around at the shunt and the fans? A.I can recall speaking to Mr.Wright since the time and what he told me was that he had not tested for gas in the shunt.

Q.But you do not really know whether he went into the shunt or not? A.No, I could not tell you this.

Q.Mr.Egar is the Under-manager or was then the Assistant in charge of the afternoon shift? A.Yes.

Q.I think he in fact at the time of the fire held a first class certificate? A.Yes.

Q.He is now the Assistant manager of Nebo Colliery? A.Yes.

Q.That Certificate is a higher certificate than the certificate you hold? A.Yes.

Q.In practice in the Bulli Colliery I think the miner drivers with their safety lamps test every half an hour; is that the position? A.I would not like to comment on that. I have never yet spent the full day in any one panel,but the miner drivers do test for gas.

HIS HONOR: Q. At the face?A. At the face area, yes.

Q. They do not take over the deputies' job?A. No. The deputies make the inspections that are required under the Act.

MR. McNALLY: Q. Just how often is a deputy required to test in these circumstances in a shunt, in this shunt?A. In that shunt there, specifically it would be once a shift because this is a working area, but there is no timber - the roof or sides are not interfered with. The face area itself when the continuous miner is in operation, then that must be tested every two hours on a production shift.

Q. So, strictly speaking, this shunt in this 8 Right section as it existed on 9th November need have only been tested once during the morning shift on that day?A. Under the Act as it stands it would have been, yes.

Q. And if the pre-shift inspection had been made by the night deputy, Mr. Walker as it was in this case, the deputy need not go into the shunt as required either by the company or the regulations for at least four hours after he goes into the area? A. That is so.

HIS HONOR: Q. But you had given instructions to deputies to look out for gas, had you not?A. Yes.

MR. McNALLY: Q. Dealing with the instructions you gave, you did not require the deputy or anyone to inspect the shunt area on occasions other than they were required to do so by the provisions of the Act, did you? You simply said, "Keep an eye on it"?A. Yes.

HIS HONOR: Q. Do you mean by that that you would expect the deputy merely to make a routine inspection under the Act when the under-manager said, "Keep an eye on that"? That all he need do was to go in four hours after the commencement of the shift, inspect and go out again? Would you expect that of a deputy? A. No, I would not expect that at all. What I intended was that it had to be inspected fairly frequently.

MR. McNALLY: Q. Just what did you tell Mr. Stewart?A. To keep an eye on the shunt itself, to make sure there were no noxious gases coming through the screens et cetera to cause any concern at all.

Q. Is that all you said to him?A. To test it regularly, yes.

Q. Think about it for a little while and tell His Honor what you actually told Mr. Stewart?A. Well, I can't tell you the exact words. All I can tell you is my intention.

Q. We are not interested in your intention --

HIS HONOR: Q. If you do not recall the exact words, just do the best you can. A. I knew that noxious gas had been detected in that heading before, and this is inby No. 9 driving, and this is the one to which I am now referring. This is on 5th October, somewhere back beyond this, and at this time we said there - I told deputy Stewart then that the noxious gas had been detected in this area, we had worked out the arrangement between us of the screen to divert some of the air into the place. I later spoke to him about the erection of the spiral tube itself, to dispose of the direction screen, and also to make sure that the spiral tube that went into the place did its job adequately.

MR. McNALLY: Q. That is the best you can recall of what you told Mr. Stewart?A. Yes.

HIS HONOR: Q.So what you say is Mr.Stewart would have been fully alive to the fact that there would have been danger there, at least as far as noxious gas is concerned? A.He was fully aware that noxious gas would be present behind the screen.

Q.And I suppose you are fully aware of the Act, the statutory obligation on the Deputy , that the Deputy is the one man whom the company relies upon, apart from those above him, who stands between the company and the men to see that the men are working in safety? A.Yes.

Q.He in fact is the last stop, is he not, in the change - the Deputy - and the most important man because he is on the job all the time?A.That is correct.

Q.And would you agree the Deputy is supposed to know that on him rests a grave responsibility? A.Yes.

Q.Would you agree that no self-respecting deputy, conscious of that, would merely conduct a routine check in the shunt area under these conditions? A. No, Your Honor.

MR.McNALLY: We are not suggesting that that is the case at all. I am sure Your Honor will agree that the statutory obligation is a matter which must be borne in mind, together with all of the other factors.

HIS HONOR: I am looking at the practicalities of the situation in addition to what the Statute states.

MR.McNALLY: Q.In fact, did you yourself test in the area after the 5th October, either the shunt in No.3 cut-through or the shunt in No. 2 cut-through? A.I definitely did not test in No. 2 cut-through. I don't think that I tested in No.3 cut-through.

MR.McNALLY: The point I seek to make is that in fact Mr.Stewart was testing beyond the regulations. He had already been in the shunt twice on this day and need not have gone in there.

HIS HONOR: As to his need to go in there, I do not think there is much force in the argument as to the Deputies' need to go in there because of the statutory requirement. If he has in fact made an error on some unusual danger there what you are saying is that he fulfilled the duty that was really on him because he went in there beyond the statutory requirement?

MR.McNALLY: No, there is evidence that twice within an hour or hour and a half he inspected the shunt and the inference to be drawn there is that he was doing his duty. We are facing the fact that it is an inference Your Honor can draw that this Deputy did not in fact test. He has given evidence he did and there is evidence of a shuttle car driver who saw him go into the shunt.We seek to demonstrate to Your Honor that he was in fact looking after that shunt and was not simply relying upon his Rule 4 reports but was going further than that.

HIS HONOR: You say he in fact carried out his duty as he was required to do and did not find the gas; that is your submission?

MR.McNALLY: Yes - he sat the lamp on the ground.

MR.SULLIVAN: Q.(By leave) Could you tell me when it was you discussed with your Manager, Mr.Stone, the splitting of, I will call it the pillar, lengthways? A.What day - I could not tell you what day.

Q.Was it before or after the fire? A. Before the fire.

RE-EXAMINATION:

MR. REYNOLDS: Q. I want to ask you some questions about the incidence of Illawarra bottom gas as known to you, and I think we understand from the evidence you gave that you worked in a different coal field until 1957?A. Yes.

Q. All your experience was in the Lithgow area until you came here, was it?A. Yes.

Q. Up there is this gas which is found near the floor with an inflammable component, known at all?A. No.

Q. I suppose when you came here you heard about it, did you?A. I had heard mention of Illawarra bottom gas, yes.

Q. You told my learned friend Mr. McNally that you had the personal experience of finding or detecting what you took to be this class of gas once?A. Yes.

Q. Now, what knowledge do you have as to authentic findings of this type of gas in the Bulli mine since you have been there? A. The incidents I spoke of before, and I know of holing the fault in 4 panel. An analysis there showed a mixture of CO2 and CH_4.

Q. This was an analysis done in the Central Office laboratory or the A.I. & S. laboratory, was it?A. I understand this is where it was done, yes.

Q. And apart from those two instances is that all you know of? A. Yes.

Q. I do not know whether His Honor would want this question answered, but I put it for what it is worth: Is its occurrence in this South Coast regarded as a rare phenomenon?A. To my knowledge it is not common by any means.

Q. But you would not go as far as the words I used; is that what you mean?A. It is rare in our position up there.

HIS HONOR: Q. Along the South Coast mines - in this area of the South Coast, is it rare?A. I couldn't really answer that one with surety, on the Coast. My own knowledge of Bulli -

MR. REYNOLDS: Q. You have told us what you know in nearly nine years?A. Yes.

Q. Would you try to convey to His Honor, if you can, what is the general understanding of the mining community down here about this gas? If you cannot help us, you can say so?A. It is known along the Coast mines itself, so I would assume that it has been found in some other mines. The regularity of its occurrence I could not say.

HIS HONOR: Q. I suppose there is a distinction between the regularity of its occurrence and the regularity of its discovery? A. Yes.

MR. REYNOLDS: That is so, Your Honor, and I think this is probably at the heart of the problem.

Q. Passing to another matter, you said in your evidence you had no knowledge of the finding of inflammable gas in 8 Right and you conceded to my friend Mr. Sullivan that this was not accurate because there were some Rule 4 reports which indicated its presence? A. Yes.

Q. And I think he drew your attention to four instances where it was reported on the goaf edge between 5th October and 14th October

in 8 Right ? (No answer)

MR.SULLIVAN: It was later than that - the 27th, I think.

MR.REYNOLDS: The 27th was in the miner place, if you care to check.

Q.You gave evidence and you were shown these reports which between 5th October 1965 and 14th October indicated reportings of inflammable gas on the goaf edge. I think one of them was in terms that it was a trace of inflammable gas on the goaf edge. What is your understanding of that expression, and that was on 12th October,1965? A. A trace of inflammable gas, the expression used and reported in Bulli General Rule 4 reports indicates that you may possibly get a small cavity in the coal or in the roof where you can detect CH_4 on an oil safety lamp but immediately on removing the lamp away from it, even from 4 inches to a foot out in to the air current, this is not detectable at all so it is most readily diluted, cannot be detected except in a secluded area.

Q.What was your understanding of the other three reports which said inflammable gas on the edge of goaf being diluted, inflammable gas on goaf edge being diluted, inflammable gas on goaf edge in centre heading? What was your interpretation of those three reports? A.My interpretation of those is that the CH_4 had been detected but was being most readily diluted that it never at any time caused any concern or it was never found in the main air stream or back in the working places themselves.

Q.The latest in point of date of those reports to which I have referred was 14th October. As at 14th October where was the goaf edge? A.The goaf edge was actually in along 3.

Q.Along 3 cut-through? A.Yes.

Q.Did you ever have any report of inflammable gas along a goaf edge which was in the position of No.2 cut-through? A. No. No.2 cut-through?

Q.Yes. A. That is the drive on to No.2 cut-through, no.

Q.In the goaf or along the goaf edge? A.No, none in the area.

(Witness retired)

(Luncheon adjournment)

(On resumption)

WILLIAM GEORGE CAMBOURN
Re-sworn:

HIS HONOR: Q.Would you tell me your full names again? A.William George Cambourn.

HIS HONOR: Do you want to do this, Mr.McNally?

MR.McNALLY: Perhaps if Your Honor did it - subject to Your Honor's wishes?

HIS HONOR: Q.You have already given evidence in this matter but have been asked to come back so that you could explain something about which we did not know when you were giving your evidence. There has been evidence put before this Inquiry as to the attempt to hole the goaf in the extension of No.2 cut-through. I show you a copy of Exhibit JJ. Are you familiar with this plan? A.I am.

Q.You will see the pencilled-in section - No.13. Have you that? A.Yes.

Q.This extension to No.2 cut-through has at the end of it, as it were, two drives to the right? A.Yes.

Q.That is in the direction of the goaf? A.Yes.

Q.We have been told here that this represented two attempts to hole into the goaf, the first of them, the furthest of these drives, resulted in the withdrawal of the miner to a new place to make a drive in another direction, or , as it were, in another place. We have been told that you made the decision to withdraw the miner. What do you say about that? Did you make that decision yourself? A.On the Friday night after we had finished cutting coal which was approximately ten past ten I went to the telephone and telephoned the Assistant Under-manager Mr.Don Egar and I explained to him that the place was in approximately 33 yards and I expected to hole possibly at 27 yards and there was only about 3 rolls of shuttle car cable left on the drum and I said to him I expected to hole at 27 yards and we have gone 6 yards over this, possibly we could have missed the holing. What I meant was it was possible the No.3 was not down far enough or we were sliding to the left of the place and I said to him "What will I tell dog-watch in regard to the machine"? He said "Tell them to put it back on another lift."

Q.To tell dog-watch to put the machine back on another lift? A. Dog-watch doesn't come in to Sunday night, they finish Friday morning and anything to be told to them I generally write on the side of the sheet and leave it on his sheet and when he comes in Sunday night he picks the sheet up and goes on from there.

Q.Who is the "he" on the dog-watch you are speaking of? A.Mr. Charlie Walker, the dog-watch deputy.

Q.Did you in fact leave those instructions for him? A.Yes.

Q.What sheet is this? What is the nature of it? Is it a document kept at the mine? A.No, it is just actually a piece of paper on the side of the production sheet of the work for the next shift.

Q.You in fact left him this? A.Yes.

Q.Is that the last you had to do with it? A. Yes, until the Monday afternoon when I came in to work. I was talking to Mr.Wright the Assistant Under-manager on day shift and I said to him,

"I can't understand what happened, like, on Friday night, we should have holed at 27 yards". He said "Oh no, that is a 50 yard pillar".

Q.Does that mean when you were working on the Friday night - was it? A.Yes.

Q.You did not know this was a 50 yard pillar? A.I did not know.

Q.How does that come about? A. Most of these lifts were 66 yard pillars split - split down the middle, each lift approximately 27 yards of coal to each lift, and I assumed this was 27 yards.

Q.In other words that means you must have assumed the pillar into which you were working had been split, or that it itself was a split? A.Yes, I did.

Q.Could you not tell by going along the cut-through and seeing how far that pillar extended how deep it extended? A. No, I could not. The stopping in A heading behind the shuttle car shunt - you could not get behind that.

Q.The stopping in A heading? A.Yes, behind the shuttle car shunt.

MR.REYNOLDS: The shunt

HIS HONOR: I am trying to understand it.Q.Had you been working in this development for some time? A.Yes I had.

Q.Were you working on it when what is now described at No.9, that is the deeply pencilled cut-through on JJ - ? A. No.9?

Q.You can hardly read "9", it is the one above 13? A.Yes.

Q.Were you working on that development when that was driven? A. I was.

Q.You were working there I suppose when No.13 was driven? A.Yes.

Q.Were you given no plan of development as to what was to happen? A.Was I given a plan of what was going on?

Q.Yes. A.No.

Q. Did you know what the general nature of development was? A.I was told they were going down the extension of 2 100 yards and then they were going to turn right and hole into the goaf.

Q.I suppose you were there when the coal in No.11 was lifted ? A. Yes, I was.

Q.You see the distance - the width of the last part, No.3 to No.9, that is the last pillar, that is No.11? A.Yes.

Q.The width of that pillar was how much? A.Approximately 27 yards of coal, 33 yard centres - that is the centre of each road-way.

Q.This one was how much, do you say? That is the pillar through which you were driving to hole the goaf? A.It was supposed to be a 50 yard pillar which would be approximately 46 yards of coal.

Q.Could not you tell the difference between them in any way at all? A.I did not know at the time.

867. W.G.Cambourn, recalled.

Q.Nobody told you? A.Nobody told me.

Q.You were in charge of the shift that was to make that drive down into the goaf? A.Yes.

Q.Nobody was able to tell you before you started how far you had to go; is that right? A. I never ever asked, but I was not told.

Q.You never asked and were not told. Who was the man immediately above you on this operation? A. On my shift?

Q.On your shift? A. Mr.Don Egar, Assistant Under-manager.

Q.Did he give you any instructions before you started to hole the goaf? A.No.

Q.He did not say "Look, you will have to go further in this one, it is a 50 yard pillar"? A. No.

Q.Mr.Egar told you to withdraw the miner. Did he tell you where to re-locate the miner? A. He said just put it next to the lift we were actually on, just take it back one.

Q.That brings it, as it were, when you look at the plan, to the right of your original drive? A.Yes, two lifts wide.

Q.Two lifts wide? A.Yes.

Q.It was not a question of driving off too far as it were to the left and so missing the original goaf, say, in No.9. It was not a question of this? A. This is what I assumed.

Q.But you see that does not touch the question, does it, of the width of the pillar? Isn't that the position? It doesn't remedy the fact that you have made a drive through a pillar which is too wide? Do you see what I mean? You see, your original drive is towards the goaf? A.Yes.

Q.You reported to Mr.Egar the fact that you were running out of cable and you still had not holed the goaf? A.Yes.

Q.You were then told the reason for that was the pillar was wider than you had believed? A. I did not know this till Monday.

MR.REYNOLDS: He did not say Mr. Egar told him that.

HIS HONOR: Q. Who told you? A. Mr.Wright. Mr.Wright, on the Monday when I came to work.

Q.What did Mr.Egar say? A. He didn't say nothing, he just said "Bring the machine back on another lift."

Q.Bring it back on another lift? A.Yes.

Q.What Mr.Egar has done - and it is perhaps unfair putting this to you? -

MR.REYNOLDS: Your Honor won't do it, of course.

HIS HONOR: I do it pointing out to Mr.Cambourn that for this decision I am not blaming him.

Q.What Mr.Egar has done is to say to bring the machine back on another lift - not just keep on going because the pillar is wider, but bring the machine back again and have another go. That is what it really amounts to, isn't it? A.Yes.

868. W.G.Cambourn, recalled.

Q.That would mean Mr.Egar's method of solving this was not based upon the mistake as to the depth of the pillar - you see if Mr.Egar had known the real fault was the pillar was wider he should have said "Keep on going and you will strike it"? A.Yes.

Q.That is the position, isn't it? A.Yes, that is right.

Q.That was not conveyed to you by Mr.Egar at all? A.No.

MR.LEE: Q.In fact you told Mr.Egar that you had gone in 33 yards and not holed? A.Yes.

Q.He made no comment on that at all? A.Not as far as I can remember.

Q.He did not say to you "Well, you have got another 20 odd yards to go"? A.No.

Q.But you did tell him how far you had gone? A.Yes.

Q.Not only did he not tell you or make any comment about the 33 yards and 50 yards but he simply said "Make another lift"? A. Yes.

Q.You will agree that neither you nor he at that point of time had any reason to assume making another lift would necessarily hole into the goaf? A. No.

Q.Because you thought you might be too high up? A.Too low down.

Q.You thought you may be past the end of No.9 ? A.Where we should have holed, yes.

Q.And that was the clear indication you conveyed to Mr. Egar, I suppose? A.Yes.

Q.When he said to you "Make another lift" that only meant, did it not, putting the machine to make a lift alongside where you had been lifting? A.Yes.

Q.So, what extra distance did Mr.Egar allow for, in your view, by saying "Take another lift", How far back were you going to come? A.Ten yards outby.

Q.And that is the maximum?A.Yes.

Q.As far as you knew you could have been 20 yards past the end of No.9? A.That is right.

Q.So I suppose you were somewhat surprised when Mr.Egar said this to you? A. No, not really. It had been done before.

Q.But you are not suggesting when a mistake of this nature is made you just try - the procedure is to just try and find where the goaf is rather than ascertain with some precision where it is? A. I done the best I could. My shift had finished.

Q.Your shift had finished and your responsibility was over. Is that what you tell us? A.Yes.

Q.Looking at the matter now when you decided you had made the error you thought you had made was there not a simply way for you to go about ascertaining whether you were in error or not without ringing Mr.Egar? A.I could have, there is a plan in the crib panel.

Q.A very accurate plan? A.But it has no measurements on it.

Q.But it is to scale? A. Yes.

Q. How big is it? A. Oh, 4 feet by 3 feet.

Q. After the style of the map we have here? A. It would be bigger than that.

Q. And the scale is what? Do you remember offhand? A. No.

Q. Is it a plan just of this particular panel or only of portion of it? A. No, it is a full plan of the particular panel, possibly a little bit of the returns or something to that effect.

869A. W.G. Cambourn, recalled.

Q. Would it take in very much more than is shown on the Exhibit in this Court room?A. Yes.

Q. It would take in more than that?A. Yes.

Q. But all you had to do then was to walk to that in order to decide what your position was; that is the position, is it not?A. Yes, that is right.

Q.And it was a simple matter then with a ruler or some other measuring device to say, "Well, I have not overshot the goaf"? A. Sir, this plan when it was originally put there had had A, B, and C headings. When the place was being developed, as the place retreated and these drives drove down the hill off A heading they were either just put on in pencil, or something like that.

Q. Are you suggesting the plan was not accurate?A. The part that was there was accurate.

Q. Well, did that show the extension of No. 2 cut-through and the relationship to what was then the goaf area on the righthand side?A. No.

Q. Did it show where No. 9 cut-through had gone through?A. Not to my knowledge. These were put on in pencil after the pillars had been extracted.

HIS HONOR: Q. Would not they have been put on in pencil after eleven had been extracted? Should not Number 9 have been put in after No. 11 had been extracted?A. It may have, I don't know.

MR. LEE: Q. But isn't the object of this plan to enable you to tell where you are in the drivage at any given point of time? A. It would give you a fair indication, yes.

Q. It is not to stop people getting lost, walking round the mine, is it?A. No.

Q. It is put there to enable the deputies to determine with precision where they are going?A. This is provided the surveyors' sights and distances are on it.

Q. Let me ask you directly: Would the plan in the crib room have told you that you had not passed the goaf?A. It would have.

Q. And very simply and very easily have told you that?A. Yes.

Q. And you did not think to go and look at it?A. No, I didn't look at it.

Q. We may presume on what you say that Mr. Eager did not suggest that you do so?A. No. He carries a plan with him too.

Q. What did you say?A. He also carries a plan.

Q. He carries a plan of what?A. Of the whole of the mine, actually.

Q. As far as your knowledge goes, would his plan tell him the relationship of the extension to No. 2 cut-through a s far as you had gone and the goaf area?A. I wouldn't know.

Q. You do not know that?A. No.

Q. In any event, having made the decision to take the miner back, that is what you expected to be done?A. That was done on dog-watch on the Sunday night.

Q. Then the miner went to work on the Monday morning, we know? A. Yes.

Q. Were you there on the Monday at all?A. On the Monday afternoon.

Q. Was the miner working then?A. Yes.

Q. Forming this new lift that had been created?A. Beside the other one, yes.

Q. Did it ever occur to you that having overshot the goaf, you may have altered the drivage and come back down?A. Would you say that again?

Q. You see, when you thought you had made your mistake of passing the goaf did it occur to you, "Well, if I have, I can drive downwards and pick it up"?A. It was right beside. The one lift was there and the next one was right beside.it.

Q. But of course this taking the other lift meant more time spent in this area, didn't it?A. Yes.

Q. In fact, as we know now, it meant another entire day and another entire night - in fact more than that, didn't it? It meant Sunday night it was working ?A. No, when it finishes Friday night production it starts Monday morning.

Q. It meant Monday afternoon?A. Yes and they started on the Tuesday.

Q. The first drive-out before the mistake was found, did that drive take you further out towards the goaf than the machine had gone when the fire occurred on the second lift? Do you understand my question?A. No.

Q. (Approaching witness and showing plan) On your first occasion you drove out and you thought you had made a mistake and you stopped?A. Yes.

Q. The machine was brought back?A. Yes.

Q. And it started off again to take another lift?A. Yes.

Q. Had it got out as close to the goaf as you had previously driven, before the fire took place?A. It was past that area, yes.

Q. By how much?A. Possibly three yards.

Q. How much?A. Three or four yards.

Q. You were in No. 11 area, I believe, were you not?A. That is the one before?

Q. Yes. A. Yes.

Q. You have told us that was a 27-yard pillar?A. Yes.

Q. Is it correct that that was split sideways?A. Split down the middle.

Q. Wasn't it split crossways?A. I think it was, yes.

Q. What happened in that panel was that the coal was taken from the lower end first?A. Yes, as far as I can remember.

Q. And then from the section nearest A heading?A. Down, yes.

Q. While ever the coal was being taken from what I have called the lower part, the goaf over here was discharging the gases around and through the No. 9, the area marked No. 9?A. Yes.

Q. And all that time the bleed tube was in operation down in the shunt area?A . In 3, yes.

Q. I suppose you know or you will agree that never at any time in number 11 was there a bleed tunnel system operating?A. There were vent tubes.

Q. Would you agree with this proposition, that in number 11 the bleed tube or vent tubes replaced the bleed tunnel?A. Well, actually they were in the bleed tunnel.

Q. You know that in the earlier workings the system had been to drive a bleed to the goaf - or do you?A. Yes.

Q. And use that?A. Yes.

Q. What I am putting to you is that in number 11 the bleeder from the goaf was replaced by the bleed tube. Do you agree with that as your knowledge of what was done there?A. Any gases or anything coming from the goaf area would have went up the vent tubes.

Q. And did you have roof difficulties in number 11?A. I wouldn't remember.

Q. Just do your best. A. Well, we had roof difficulties in 8 Right pretty frequently.

Q. You had had them all along, had you?A. Oh yes. We lost a machine in there at one time for possibly three or four weeks.

Q. And you cannot think of anything special about number 11?A. Not offhand, no.

HIS HONOR: Q. Would you have a look at that extension of No. 2 cut-through, that is the drive up 13 and then turn to the right. Does that fairly accurately portray the direction in which the drive was made towards the goaf?A. I couldn't say.

Q. You cannot say?A. No.

Q. If you look at that drawing you will see that after the first attempt made by the minerit straightened up and went at right angles towards number 9; the miner was withdrawn and after it was assumed by you and possibly by Mr. Eager that you had overshot the end of No. 9, the second lift was then made in the same direction as the one in which you had originally been going. In other words, you were aiming into a position where you had finished up before. Would you agree with that?A. Possibly 18 feet --

MR. MURRAY: That plan Your Honor has is not accurate, as I said some days ago, in that none of the plans agree - the one Your Honor has and the one on the wall and the one I have - all are different.

HIS HONOR: In that case the answers to the questions are fruitless and of no value at all?

MR. MURRAY: Not on the basis of the plan.

MR. McNALLY: There are no sightings or surveyings in this particular heading, it is a question of judgment.

MR. MURRAY: And there is no plan of the development until it has been done, so there is no plan at all.

HIS HONOR: Q. Do you know of any plan of these things, where the workings were going, and putting them in with any part of the work done?A. As it was done, it was marked on the plan.

Q. And what plan is that?A. The plan in the crib cabin.

Q. Where is that plan now, do you know? Where should it be, do you know? Are you sufficiently familiar?A. As far as I know it was burnt in the fire.

Q. Burnt in the fire, back in the crib cabin?A. Yes.

Q. Did the fire go to the crib cabin?A. No, it didn't, but the smoke did.

Q. And the smoke burnt the plan. A. I remember seeing that plan and I just touched it and it just crumbled to nothing.

Q. That very plan?A. That very plan.

Q. How far was it from the fire to the crib cabin?A. That was the intersection of B heading. The crib cabin was up possibly another 30 yards.

Q. And the smoke apparently destroyed the plan?A. The heat.

Q. Was the crib cabin destroyed?A. I know I had a plastic mug in my billy can and it was melted.

Q. I asked you was the crib cabin destroyed?A. No, it was smoked, not destroyed.

Q. And did all the papers in the crib cabin meet the same fate as this plan?A. They were badly singed. They were not burnt, Your Honor, but they were singed.

MR. PARKINSON: Q. This plan in the crib cabin, - who was responsible for keeping it up to date?A. Well, I don't know who was responsible, but as the place went down, when I finished the shift I would put down so much. When the day shift deputy finished his shift he would put down so much.

Q. So that each deputy filled in the plan, did he?A. I don't know whether we were supposed to or not but we did.

Q. You say the one in the crib cabin was drawn to scale?A. A, B and C headings were drawn to scale.

Q. A, B, and C headings. A. And the cut-throughs.

Q. You say the cut-throughs were drawn to scale? Well, each night after the shift completed, after your afternoon shift completed, did you mark on the plan in the crib cabin the distance you had travelled?A. Not the distance, no.

Q. Well, what did you do?A. I just marked down possibly so far - if it had gone 40 or 50 yards in the two shifts and the day shift deputy had not marked it, I would move it halfway down, something like this.

Q. You would pencil it in?A. Yes.

Q. And you still say that this crib cabin plan was scaled, filled in to scale?A. It wasn't filled in - I didn't it was filled in to scale. You asked me was the plan to scale and I said "Yes, A, B, and C headings."

Q. A, B and C headings were drawn to scale?A. Yes.

Q. And the extended cut-throughs were drawn to scale?A. No.

Q. They were not?A. No.

Q. You say you thought you had about 27 yards?A. Of coal, yes.

Q. And you worked that on the basis that it was 33-yard centres?
A. Yes.

Q. You were never ever told at any time that it was more than a 33-yard centre?A. Not till the Monday after the machine was pulled back.

Q. You say you had travelled about 33 yards?A. Yes.

Q. And I take it you stepped that out?A. I think I did, yes.

Q. Were you ever told of the necessity to hole into the goaf?
A. I was told we had to hole into the goaf, that's about all.

Q. Were you told that it was urgent that the goaf should be holed into?A. The word "urgent" was not mentioned. We just had to hole.

Q. Were you told it was most desirable the goaf should be holed into?A. I was told we had to hole into the goaf.

Q. From your own mining experience did you recognise the desirability of holing into the goaf?A. Yes.

Q. On the Friday night did you ring Mr. Eager?A. I did.

Q. Just exactly what did you say to Mr. Eager?A. I explained to Mr. Eager that we were in approximately 33 yards and I expected to hole around 27, it was quite likely we had missed out holing and there were about three rolls of cable on the shuttle car drum, what would I tell dog-watch to do.

Q. And what did Mr. Eager say?A. He said "Tell them to put it back on another lift and make the place doubly certain."

Q. There were only three rolls of shuttle car cable?A. Yes.

Q. What distance would that allow the shuttle car to travel?
A. As it was?

Q. Yes. A. Possibly another three yards.

Q. Another three yards, so if the machine had not been moved on the Friday night and it was in the same lift on the Monday morning, the machine - that is the mining machine - would have only been able to travel another three yards before the shuttle car would have not been able to have wheeled coal from the miner?A. Are you asking me or telling me?

Q. I am asking you is that the situation?A. No, it is not.

Q. Well, what would have been the situation?A. The shuttle car anchors would have had to be moved down.

Q. And is that the general policy, to move shuttle car anchors down?A. When you are running out of cable, yes. You just fill up the reels again.

Q. And isn't it the policy when you are running out of cable like that to leave whatever coal is there and withdraw the machine and put it in another place?A. I wouldn't know.

Q. You say that the machine was withdrawn in another lift?
A. Yes, that is right.

Q. Adjacent to the lift that you had been working on the Friday night?A. Yes.

Q. How far in, what distance, had that second lift travelled at the completion of your shift on the Monday night?A. Possibly 33, may be 34 yards.

Q. About 34 yards?A. Something like that.

Q. By the way, did you know - you know now of course that the machine in the first lift, at the completion of your shift on the Friday night, was on-course and would eventually have holed into the goaf?A. I know now. I didn't know.

Q. You know that now?A. Yes.

Q. And this would have taken place in approximately another ten or twelve yards?A. Yes.

Q. So that means that had the machine not been withdrawn on the Friday night and day shift had continued in that lift that you left on Friday night at the completion of your shift, the goaf would have been holed within possibly two hours work that morning?A. Yes.

Q. Did the under manager at any time discuss with you that the pillar was going to be split end-on?A. Which pillar is that?

Q. (Approaching and indicating on Exhibit "A") At any time did Mr. Puddle discuss with you, as the deputy of the district, that this pillar here that had been formed by driving No. 2 cut-through was going to be split end-on?A. No.

Q. He never ever discussed that with you at all?A. No.

Q. Did anyone discuss that with you?A. No.

Q. Did you know that it was the alleged intention of the under manager that when you holed into the goaf he was then going to have the machine removed to the appropriate point in A heading, inby side of No. 2 cut-through, to commence splitting that pillar?A. I didn't know that.

Q. You knew there was a T-piece approximately halfway down No. 2 cut-through from A heading to No. 2 intersection, did you not?A. Yes.

Q. Did you know there was also a surveyor's peg there?A. Somewhere around that area.

Q. Had you any knowledge as to why that T-piece had been inserted? A. Yes, I do.

Q. And what was the knowledge that you have?A. It was put there so that when day shift holed they could come back and complete their shift off that T-piece.

Q. And that would be in a position approximately where you would anticipate a pillar would be split across?A. I wouldn't know.

Q. But it would be customary to split a pillar across from round about that particular point, would it not, in ordinary mining practice?A. If you want to split a pillar you split it halfway.

Q. Well, that would be approximately half way?A.That is right, yes.

MR. MURRAY: Q. There were in fact no guide marks left by the surveyors in any of the area which is the extension of No. 2 cut-through?A. I think there could have been surveyors' pegs possibly round 50 yards or somewhere about that - 50 yards from the intersection of A heading.

Q. And after that it just continued going in that direction until you had reached 100 yards? A. Yes.

Q. And then pulled back?A. Yes, turned it.

Q. But is it a fact, as you heard me say a moment ago, that there was no plan available to you of what development was yet to happen in 8 Right?A. No.

Q. And all you did was on your own initiative to mark the plan in the crib room at the end of each shift?A. As we went, yes.

Q. Who told you that you had to hole into the goaf, and when? A. It would either be Mr. Fred Wright or Charlie Stewart, the deputy on day shift. I can't remember.

Q.Can you recall when it was? I will put it to you this way: Was it before you had started making the cut at A heading?A. I couldn't remember when I was told but I was told.

Q. It is a simple matter to move the shuttle car anchor point, is it now?A. Yes, a few minutes work.

Q. To move it, for instance, from the place where it was in the shunt to the corner of the intersection of A heading and No. 2 cut-through?A. Yes.

Q. And that would have given you all the cable you would have needed on the drum?A. Yes.

Q. Were you at work when the miner was turned right to go towards the goaf?A. It was turned righton day shift.

Q. Not on your shift?A. No. We followed on that day, but the start of the turn was started by day shift.

Q. But how were you to tell when you had gone 100 yards - by pacing it?A. Measured it out.

Q. Just by pacing it?A. No, we have tapes.

MR. SULLIVAN: Q. How do you keep on your mark when you go in the cut-through. How do you keep the machine on your mark? First of all you start up; there is a surveyor's peg there, is there?A. No, there was not at this particular time.

Q. Then how does a person starting, making that drive into the goaf, know where to start from?A. From the 100 yards he would come back possibly ten yards. That is about the minimum width the miner can turn in.

Q. Well, you are given a tape. Were you in charge of it when that particular - may I call it heading, was made, the one at right angles to the extension of No. 2 cut-through?A. No, I was not.

Q. The instructions would be, from your experience, to go down 100 yards and then turn right, is that right?A. Yes.

Q. How is the machine kept on the correct line?A. Actually there is no correct line there. All you can do is to look up ahead and then take a line.

Q. And make sure you have got the sights square, is that the idea?A. You haven't got any sights. You could just estimate it is 90 degrees.

Q. A bit of guesswork, is it?A. Yes.

MR. REYNOLDS: No questions.

MR. McNALLY: No questions.

HIS HONOR: Q. Would you take this lamp and show us how you test for inflammable gas - how you carried out your tests for inflammable gas?A. This is when I went into the place?

Q. Yes. A. First of all I walk into the place. Could I say the shunt?

Q. Yes, if you like, in the shunt. A. First of all I reduce the -

Q. You will find that lamp will burn. Would you light it and show us? (Witness complies.)

Q. Just show us what you do and talk as you do it so that it can go down on the record?A. I walk into the place, hold the lamp about the height of my eyes, and I reduce the yellow part of the flame to about that (demonstrating). If inflammable gas is present it causes a very light blue cap to sit on top of the flame. If there is no inflammable gas present, if the place is higher than this, I get a drum or stool and stand up and put my lamp on the roof. I turn my lamp down again and test for inflammable gas. If there is no cap there, I get down off the stool, increase the flame slightly and slowly lower the lamp down. If there is no gas detected, I keep going down until I touch the floor. If there was black damp, the lamp's flame will slowly be reduced. If that happens, bring your lamp up, let it go properly again in the fresh air, then reduce this yellow flame, slowly go down to about the height where I found the black damp to see whether there is any fire damp sitting on the black damp.

Q. What do you do then? Let us see you do just that action again, if you would. Would you do what you do when you are going down looking for black damp and what you do after that? A. I go down looking for black damp, slowly go down. If there is no black damp present I go right down till I hit the ground. If there is black damp present the flame starts to be reduced so I would stand up in the fresh air again and get the light working properly, then reduce the yellow flame. Then I slowly go down to about where I detected the black damp and just see whether there is a cap sitting on top.

Q. How long do you wait down there for your cap?A. Possibly five or six seconds.

Q. Do you know how long it takes before gas will reflect on your cap?A. No, I would not.

Q. Do you think it might be important to know that before you decide that the tests showed no gas and therefore before you removed the lamp?A. You don't just go down and up again, you give it a fair -

Q. You say you stay in that particular place you are testing and hold the lamp there for five or six seconds. I then asked you do you know how long it takes for gas to show a cap on your flame? A. I know if it is there it would show up pretty well straight away.

MR. McNALLY: Q. (By leave) Had you ever found Illawarra bottom gas on your safety lamp?A. No.

Q. Since the fire have you found Illawarra bottom gas on your safety lamp?A. Yes.

Q. On the occasions you did that, have you used the lamp in the

manner you just demonstrated then to His Honor, when you found Illawarra bottom gas?A. I have always used the lamp that way.

Q. And following the fire you found that gas in the shunt?A. Yes.

MR. SULLIVAN: Illawarra bottom gas.

MR. McNALLY: No further questions.

HIS HONOR: Q. This is a self-lighting lamp?A. That only has one burner. We have two, - you see a bigger cap.

Q. Are these lamps extinguishable this way (demonstrating)?A. Very easily.

Q. They all go out as easily as that?A. Yes.

Q. Do you ever find any trouble because of that?A. You only have to trip or step heavily and they will go out.

(Witness retired and excused)

HIS HONOR: For Mr. Cambourn's witness's expenses I have to make an order about that. He is to get everything that he ought to get.

MR. REYNOLDS: At this stage I propose to offer some evidence from a witness, Mr. Sellers, who is put forward as an expert, and I want to make these observations at the outset. This evidence is in no sense put forward in support of the case. Much that might be said by this witness will not support any case, if I may use that term, by the company which I represent, but of course my client is in this industry and intends to stay in this industry, and no matter what anyone may say it has particular interest to see that the proper causes of this occurrence are isolated and that it does not happen again. This witness is put forward as available to Your Honor. He is independent of the company, he is not an official of the Mines Department, and he may be able to assist the Court by some views on some aspects of this case. I say that because in ordinary litigation between party and party, one may ask why a certain person is called because he does not support this case or the other. I ask Your Honor to accept this evidence in that spirit.

Once again we will have it roneoed and will take the risk of any alterations that may be found, but in an attempt to expedite the proceedings and to some extent facilitate them, his statement has been reduced to writing and there will be a copy with its annexures made available to all those concerned in this Inquiry as well as to the Bench. I will call Mr. Sellers.

HIS HONOR: I am obliged to you, Mr. Reynolds. Before you do call Mr. Sellers, are there points of agreement upon the grounds on which Mr. Sellers comes or is he to give evidence mainly on matters in qualification or disagreement?

MR. REYNOLDS: He does not necessarily disagree. He deals with such things as the barometer affecting the goaf gases; he deals with mining practice, and he offers a possible theory as to what caused the sudden occurrence of these gases. That is the sort of thing with which he will deal.

GORDON SELLERS
Sworn, examined as under:

MR. REYNOLDS: Q.Is your full name Gordon Sellers? A.Yes.

Q.Where do you live? A. 632 Princes Highway, Wonona.

Q.What is your present occupation? A. Consulting engineer.

Q.Have you been associated with the coal mining industry since the year 1928? A. Yes.

Q.Did you begin duties as a survey and mining cadet? A.Yes.

Q.Where was that? A. South Bulli Colliery.

Q.What was the earliest specialised work you undertook at collieries? A.In the year 1929/30.

Q.What did you do then? A. I was detailed to look after certain conditions pertaining to the emission of gas in a mine.

Q.Was there a particular problem in that mine? A.Yes, quite a good one.

Q.Were you responsible for carrying out gas and air surveys for very many years in that mine? A.Yes, about 10 years and after that.

Q.Did you have to use all forms of gas detectors? A. Yes, quite a few forms.

MR.LEE: Gas detectors in South Bulli.

MR.REYNOLDS: Yes.

Q.Who was that owned by? A. Bellambi Coal company.

Q.Have you had any employment or association apart from this instance with the B.H.P./A.I.S group of collieries? A. No, not at any time.

Q.Did you have anything to do with the origination of the system of testing for gas in the return airway? A. Yes.

Q.What was that? A.I started the system of going round on month by month, week by week tests in some cases to the return airways and certain other places in the mine districts and systematically recording the percentage of CH_4 in the various places.

Q.Prior to that time was this not undertaken? A. They had not been undertaken anywhere else to my knowledge.

Q.Then did you subsequently have to do special work in connection with pressure surveys at the colliery? A.Yes.

Q.How long did that go on? A. Quite a number of years.

Q.What was the nature of it? A. In particular it related to the ventilating system of South Bulli colliery and in view of the very large nature of the mine and the extensive airways which were wrapped up with it the job was to determine the resistence of the various airways in a very systematic way so as to determine exactly how the ventilation of that mine could be carried out with the most efficiency.

Q.For this purpose were special instruments devised and developed? A.Yes, I devised an incline water guage and used a long length of tubing and with that particular instrument surveyed the whole of the mine.

Q.What was the difference about this incline water guage from any instrument then in use? A.As far as I knew there were no others in Australia that I knew of and I had to make it myself, calibrate it and it would read down to .001 inch of water guage without any difficulty.

Q.Was this similar to the instrument we have heard of in this Inquiry whichwas used in the Bulli Colliery by Mr.Griffiths and others? A.In principle it was similar but I suggest, much more superior.

Q.Have you found gas in practically every mine in the South Coast in the course of your career? A.I have.seen gas in most of the mines.

Q.After you had finished with that mine on the South Coast where did you go? A. I became the District Mining Engineer for the Joint Coal Board.

Q.What district was embraced in that? A. Firstly Lithgow and then, after that, Wollongong, that is, this particular district.

Q.Was that 1947 to 1954? A.Yes.

Q.At some stage did you work for and become superintendent for S. and M. Fox? A.Yes.

Q.When was that? A.1954.

Q.When you left that job? A.Yes.

Q.You were superintendent of collieries for S. & M. Fox? A.Yes.

Q.Where are their collieries? A.They have one in this district, South Clifton and another one essentially in the same district - two in the Burragorang Valley.

Q.Where were you stationed? A. Mainly at South Clifton.

Q.Were you also appointed Consultant to the State Mine Control Board at Lithgow? A.On one job,yes.

Q.For 7 years were you a lecturer on a part-time basis at the Wollongong Technical College, dealing with mine gas? A.Yes.

Q.More recently have you been appointed Chairman of Directors of the Huntley Colliery? A.Yes.

Q.Is that a Colliery which is owned and operated by the State Electridity Commission? A.Yes.

Q.Did you undertake work starting another mine for them, Newcombe Mine, is it? A. Yes, in 1948 or 1949.

Q.Is it true to say you have spent a lifetime in the Coal mining industry? A.Yes.

Q.And have had very special knowledge of ventilation and gases? A.Yes.

MR.REYNOLDS: I now propose to go to the document and I will read part of it before I ask Mr.Westcott to take over.

"Knowledge and Involvement:
(1) On the 9th November at about 9.15 a.m. an ignition of gas took place at Bulli Colliery in No.8 Right District.

(2) At about 10.50 a.m. on that day I arrived at the Colliery and stood by for about three hours after which I returned to my home on the understanding that I would be called if required."

Q. Who called you in on that day? A. Nobody, I just went.

"(3) During my time at the mine I was mostly in the Manager's office and learned of some of the action going on underground. B. Kent had come out of the mine before I left and I heard some of his version as to what had happened.

(4) On Wednesday November 24th, 1965 I saw Mr. H. Wilkinson at the Central Collieries Office, Wollongong by appointment. Mr. Wilkinson asked if I would accept his Company's nomination for the position of Assessor at the coming Inquiry if it were decided to make such a nomination. This I agreed to.

(5) On Thursday December 2nd, 1965 I attended the first sitting of the Court which was held in Sydney. I was nominated for the position as Assessor by the Company but was not appointed.

(6) On Wednesday 8th December, 1965 at the request of Mr. C. Martin I visited Bulli Colliery and again saw Mr. Wilkinson.

(7) He requested that I carry out investigations as an independent consultant on any aspect of the incident or the subject matter which might be raised and if I thought that any matter should be brought before the Inquiry to do so. It was stressed that this was to be done in a completely independent way. After some consideration I agreed to do this.

(8) Subsequently on that day I attended the court hearing and also on all other days when the court sat to the time of recess.

(9) On Thursday 9th December, 1965 I visited Bulli Colliery and inspected No. 8 Right District. Paragraphs 15 - 18 make up my report on that visit.

(10) On Thursday January 13th, 1966 I again visited No. 8 Right District with the object of confirming my previous observations. Paragraphs 19 to 22 cover the report of my visit.

(11) On Tuesday January, 18th, 1966 I again visited No. 8 Right District. On this occasion I took samples of gas from the miner place and passed them over for analysis. I also took the opportunity of again examining the relevant parts of the working area. Paragraphs 23 to 26 cover my report on the visit.

(12) On Thursday January 27th, 1966 I visited Red Panel in Bulli Colliery. The objective of this visit was to make some practical observations as to what happens when shuttle cars travel along roadways which are carrying air currents. Paragraphs 27 to 29 cover this visit.

(13) On this occasion I also visited No. 2 North Panel where gas was issuing in small quantities from the floor.

(14) I have heard or read all the evidence as given in court. Up to this time I have not seen any of the reports of Departmental Officers.

(14a) I did not see any of the evidence pertaining to the source of ignition except the exhibits tendered to the court and therefore have little knowledge of such.

Visit to Bulli Colliery 9/12/65 - No. 8 Right Section

(15) Simulated Conditions. The shunt was examined and tested for the presence of gas. On the floor, outbye of the line of the suction tube, gas was found from 2% tapering outbye to nil about 12 feet from the tube. On the safety lamp the gas appeared as a cap of lesser proportions but it was detectable to the normal 1% limit."

MR. REYNOLDS: I invite Your Honor, if there is any detail that Your Honor would like, to stop and have the witness explain as we go through.

HIS HONOR: Thank you. So far it is clear.

MR.LEE: That is methane, is it?

MR.REYNOLDS: Q. In paragraph 15 is that methane you are referring to? A.Yes, that is quite correct.

"(15a) On the floor and inbye of the vent tube in the middle of the brattice up to 3% was found. On the southern side more than 4% was found over an area of the corner of some 6 sq.feet tapering to 3' from the roof and against a rib. On the northern side and against the brattice and rib, also inbye of the vent tube, gas at about 4% persisted for a height of about 3 ft. in a tapering fashion. All the rest of the shunt was clear of gas.

(15b) The gas as found here was easy to detect on the safety lamp without any danger of extinguishing the lamp. It was obviously heavier than air and it contained a very appreciable quantity of CO2. The gas was what is known as Illawarra Bottom Gas.

(15c) Great attention was paid to the position in the shunt where the ignition is said to have taken place. This would be some 12 or more feet from the entrance of the tube. In testing from a point 6 feet from the tube to the entrance of the shunt in no case was more than 2% shown by the methanometer and this was found at less than one inch from the floor in grooves."

HIS HONOR: Would you pause while I consider that.

Q.This position in the shunt where the ignition was said to have taken place, where did you get that information from? A.I gathered from evidence the shuttle car had not taken up its normal position in the shunt and was some distance up.

Q.It had not reached the point - ? A.- Where it would normally come to, yes. I also gather the shuttle car just got inby of the shunt, just got off the line of path of the incoming shuttle car and normally would stay there.

MR.REYNOLDS: Your Honor remembers the evidence it could be seen still partly in the shunt.

"(15d). The goaf along the line of No.3 Heading was examined and Illawarra Bottom Gas was found in quantity with the top level just below the floor at B Heading."

Q."just below the floor at B Heading". Would you explain that? A.I walked along the centre heading, D heading and tested for gas and then went a little to the north or the left and found the gas on the floor just a little to the left of where the heading joins the goaf.

MR.LEE: Which is No.3?

MR.REYNOLDS: Q.This is what we have been referring to as the goaf edge? A. Yes.

"The level of the gas was subsequently found to be about 107 ft. ASL."

Q.ASL being ? A. Above sea level.

"This gas was easily detectable and in the body more than 4 per cent was present.

(15e) I went along the line of C heading in to the goaf area and tested for gas as far as could be traversed. I did not find gas here. I travelled up the lift between B and C headings and examined for gas without success. "

Q. That is the place where this party went round to get into the shuttle car during the fire?A. Yes, there is a lift which is now shown - between B and C headings. I travelled up that heading and I examined.

Q. There is a lift between B and C headings?A. Yes.

" I went in to the goaf as far as possible on B heading. I found a small amount of gas against the stone on the lowest level (less than 1 per cent) and then climbed up on to the fallen stone but here there was no sign of gas.

(15f) At my request a brattice was hung on No. 2 cut-through between B and A heading and I pulled the block screen of the shunt open allowing the air to circulate down B heading and the gas to be forced out of the goaf up A heading. I stood in the path of the gas for several seconds before retiring through the erected screen. I then proceeded to the goaf line at B heading and followed the tail end of the gas along the goaf edge and then up A heading. In less than ten minutes it was possible to get in to A heading and within 15 minutes the area was virtually clear except for the lower side of the goaf at A heading where about 2 per cent CH_4 was observed on the extreme lower side. This was being quickly diluted. About 12,000 c.f.m. of air was flowing down B heading. "

MR. REYNOLDS: It might be desirable if the witness would go and repeat that.

Q. In relation to (15f) tell us where the brattice was put up and what you did?A. (Approaches plan on floor of Court) Starting from (15f) at my request a brattice was hung at this point here (indicates).

Q. That is between - ? A. B and A headings on No. 2 cut-through. I then proceeded in here and I tore that brattice down, that was the brattice making the shunt and then I stood in the path of this gas at this point here for quite a few seconds.

Q. What you had done was to ventilate that top end of the goaf and forced air through down B along the back and into A?A. Yes.

Q. You stood there as the gas came?A. Yes. And then I proceeded up through the brattice that had been erected down here and then followed this gas out and eventually stood at this point here.

Q. You comment that within 15 minutes that air being forced down had, to put it simply, done its job and ventilated that goaf edge?
A. That the gas detectable at that time coming out of here - 2 per cent - that was being diluted by the air coming around.

Q. That is what you mean by "this was being quickly diluted. About 12,000 c.f.m. of air was flowing down B heading".
A. That is right.

"(15g) It was noted that due to the fire No. 2 cut-through had fallen between B and A headings and that A intersection had also fallen. The greatly increased areas pertaining as compared with those prevailing before the fire were noted also.

General.
(16) Inclined water gauge readings being taken in various positions were observed and noted as being so slight as not to be properly recordable. This particularly applied to the resistance in the ventilating circuit of the Continuous Miner Place.

(17) The way in which the goaf had fallen was noted.

(18) There was not a shuttle car in the shunt."

MR.REYNOLDS: That is what you say about your first visit down the mine and you proceed now to deal with a subsequent visit on 13th January in paragraph (19).

MR.LEE: Does my friend mind? We have some ventilation plans there which we might just see at this point of time to ascertain which one of them bears the closest resemblance to what Mr.Sellers describes. We have already had results of other ventilation plans. I think it is No.3 -

MR.REYNOLDS: Q.Were you in Court at the time? A. I would like to examine them.

MR.SULLIVAN: Q.Was the brattice up in C when you walked around?A.Yes.

MR.LEE: It may be, of course, that there are substantial points of difference. If Mr.Sellers could pick out the one which is most akin to this we will know.

MR.REYNOLDS: That is Exhibit N2. The witness wishes to say,I think, that Exhibit N2 is most like the experiment he carried out.

HIS HONOR: Q. Having a look at N2 at the bottom of A heading near the goaf there is drawn, or marked in there something called "prop brattice". That was not there on your experiment, I take It? A.No, I did not notice it.

HIS HONOR: Has this ever been erected?

MR.LEE: No. There was no brattice there.
HIS HONOR: There is no brattice.
MR.LEE: There wasn't any brattice in the area marked "prop brattice". That was merely the site of the original brattice in the shunt, but there was brattice over on the right at the very end of the heading.

MR.REYNOLDS: "Prop brattice" has always been on that plan.

MR.LEE: That is right.They put it up during the fire.

MR.REYNOLDS: We now come to the visit on 13th January, by Mr. Sellers.

"(19) The purpose of this visit was to confirm my previous observations and to take any measurements that would allow the assessment of that part of the workings which had been changed by the fire.

(20) Immediately against B heading in No.2 Cut through two bars and a length of roadway were found which could have corresponded to the general conditions on No.2 Cut through before the fire. The area was found to be about 132 sq.ft. and the distance rib to rib B to A along the cut through was found to be 82 feet.

(21) The whole of the relevant area of the district was examined and found to be in the same condition as on the previous visit except as in Paragraph 22.

(22) A pocket of Illawarra Bottom Gas had accumulated in the Continuous Miner place for a distance of some 25 yards from the face. The CH_4 in the gas was r adily detectable with a safety lamp. No persons were employed in the section and the brattice was partly broken near where the fan had been installed and the ventilation was ineffective to the miner place.

Visit to No. 8 Right Section 18/1/66.

(23) The purpose of this visit was to collect a sample of the gas accumulation as observed on the previous visit.

(24) At a point about half way into the mass of gas in the Continuous Miner place two samples of gas were taken from the floor one from the middle and one from the roof. These were handed over for testing at Port Kembla.

(25) The results of the tests carried out are attached. "

" Central Collieries Office.

Copy to:
E.O. Technical Services
Technical Supt.
Chief Chemist C.O.
Central Lab. File.

AUSTRALIAN IRON & STEEL PTY. LTD.
Hoskins' Kembla Works
Port Kembla.

JEL
CONFIDENTIAL

20th January 1966.

CERTIFICATE OF ANALYSIS

This is to certify that the undermentioned Samples have been analysed with the following results:-

SAMPLES TAKEN AT BULLI COLLIERY 8 RIGHT PANEL - 18. 1. 66.

		CO_2	O_2	N_2	CH_4
(a)	Bottom sample	26.9	11.9	48.2	13.0
(b)	Bottom Sample	30.5	10.8	44.5	14.2
	Middle Sample	23.8	13.0	52.4	10.8
	Top Sample	9.8	17.6	68.2	4.4

(Signed) D.R. Jephcott
Chief Chemist. "

MR. REYNOLDS: As you come up the CH_4 --

HIS HONOR: No it doesn't, you get the bottom sample of 13, so it doesn't.

MR. REYNOLDS: It is at random.

HIS HONOR: Mr. Sullivan may have something to say about it.

"(26) Hygrometer tests were taken in the gas at the point where the samples were taken. Hygrometer readings were also taken in the air immediately outbye the gas. In the gas the results were Dry bulb 76^0 web bulb 74^0. In the air Dry bulb 76^0 Wet bulb $70\frac{1}{2}$.

Visit to Bulli Colliery 27/1/66

(27) The purpose of this visit was to observe the results when shuttle cars were trammed in airways similar to No. 2 Cut through No. 8 Right and to view the small emissions of gas coming out of the floor in No. 2 North Section. Red Panel was chosen for the observation as to effects on the ventilation due to the shuttle car travel. "

MR.REYNOLDS: Q."Trammed" simply means moving in those circumstances, does it? A. Yes.

"(28) The results of the work carried out in relation to ventilation pressure are demonstrated in Paragraphs 82 to 92.

(29)The gas in No.2 North was coming through the floor by medium of floor heave cracks which were up to 1" in width and up to eight feet in length. Some of the cracks extended into the coal ribs and gas was also coming up these. In some of the corners CH_4 at about 1% was detectable on the safety lamp. In the cracks the methanometer indicated more than 5% In one crack the gas was confined and I placed my face well down into the crack. Even though three deep breaths were taken in the confined position no CO_2 was felt neither was there any inconvenience to breathing. The gas appears to be near pure CH_4 and its location near and in the floor is one of point of liberation only."

HIS HONOR: Q.Where is that exactly? Red panel? A. No, that is No. 2 North District.

MR.REYNOLDS: This was to see and consider an emination of almost pure methane from the cracks - an example of it. I think that is the only point.

Q.Is that right? A. That is correct.

MR.REYNOLDS: You then offer your views based on your experience on the question as to the influence of the subsidiary vent tube on the pressure within the shunt on A heading.

WITNESS: Yes.

"(30) All the force or power created by the twin ventilating fans located in A heading is dispersed within the fans and tubing except:-

(a) The resistance of the flow of air from A heading intersection with No. 2 cut through and the end of the tube in the shunt."

Q.That is the resistance within the tube itself, is it? A. That is right.

"(b) The resistance to the flow of air down the continuous miner place to the entrance to the duct in that place.

(c) The pressure reduction created by the velocities in the openings into the ducts in the continuous miner place and in the shunt.

(d) The pressure created by the drop in velocity at the discharge points of the fans."

Q.That is the ingoing fresh air? A. Yes.

"(31) The pressure Reduction in the shunt. This is the result of the energy taken up by the creation of velocity.

The velocity at the entrance of the duct was measured (Mines Department) and found to be about 1,000 feet per minute with a quantity of 1,600 cubic feet per minute."

Q. Was that measured in your presence or what is your data for that? A.No, that is the evidence I heard in Court.

" Pressure Reduction due to velocity at the entrance of duct one cubic foot of air taken as .07 lbs.

$$V \text{ squared} = 2g \times \frac{P}{W}$$

V = velocity feet per sec.

G = gravity = 32.2

P = pressure in lbs. per sq. ft.

W = weight of one cubic foot of air

$$P = \frac{16.66 \times 16.66 \times .07}{64.4}$$

= 0.29 lbs. per sq. foot.

Take a point some three feet away from the centre of the tube in all directions and it is found that the figure presents almost a half sphere and this figure with allowances would have an area (at 3' radius) of say 50 sq. feet. "

Q. Are we talking about the same sort of diagram as we saw drawn yesterday by Mr. Wasson?A. Yes.

Q. Where he showed - ? A. Mr. Wasson - I did not see the diagram he drew closely but he did draw a diagram which showed the air came equally in all directions to the entrance of the tube. What I am saying is if you take a point, three feet radius away from the centre of the tube and describe that as an arc in all directions you get a half sphere with the floor as the bottom of the half sphere.

HIS HONOR: Q. This is assuming the tube rests on the floor? A. Well, it does.

Q. If it were in the air you would get a complete circle?A. Yes, if it was up three or four feet you get a complete circle.

MR. REYNOLDS: Q. For that reason you did it as a half sphere? A. I have calculated the area of surface of that sphere as about 50 sq. ft., making allowances.

" It is to be noted that the brattice is about 4 feet away from the centre of the tube which is the centre of the figure with three feet radius now under consideration."

MR. LEE: What does that mean?

HIS HONOR: Perhaps Mr. Sellers could explain?

WITNESS: I am not too clear what is required in the way of explanation. Is it that reference to the brattice?

MR. LEE: Yes.

WITNESS: The centre of the tube as it rested on the floor I would assume was four feet away from the brattice. In effect it produced this radius of three feet. The brattice is outside of that radius. That is the point I am trying to make.

MR. LEE: Does that mean when he saw the tube or at the time of the fire?

MR. REYNOLDS: It is based on the evidence he heard here.

HIS HONOR: Q. You have the mouth of the tube down on the floor? A. Yes.

Q.And this is the brattice. What do you say? A. (Demonstrates with tumbler and paper). Say the brattice was there, in effect I gather the section was there in that position and the centre of this tube was about four feet away from the brattice which means that radius I have described would not touch the brattice.

MR.LEE: I wondered where the four feet came from.

MR.REYNOLDS: From the evidence.

MR.LEE: I have "six inches".

HIS HONOR: I think it varied. There was no absolute figure.

MR.REYNOLDS: Let me ask the witness.

Q.Where do you take the four feet from? A.I take the four feet from the centre of the tube which would mean if the tube was of 21 inch diameter the edge of the tube would be, of course, much closer to the brattice.

Q.But where did you get the four feet from? A. It was said the tube was between - not between the last two props - it was between the second last and the third last props.

MR.LEE: Mr.Mangles gives evidence to that effect.

MR..REYNOLDS: Q.You are relating it to the difference between props? A.Yes.

Q.If it was closer it does not necessarily invalidate what you are saying? A.No.

Q.You are, as I understand, demonstrating the proposition by these assumptions? A. Yes.

"At a point three feet away in all direction from the tube the velocity will be

$$\frac{\text{Quantity}}{\text{Area}}$$

$$= \frac{1600}{50} = 32 \text{ feet per minute}$$

or say ½ feet per second

the pressure drop due to velocity at that point will be

$$\text{P.D.} = \frac{.5 \times .5 \times .07}{64.4}$$

$$= .000\ 27 \text{ lbs. per sq. foot.}"$$

Q.You say that is the figure using the correct formula. That is at the point three feet away? A.From the centre.

Q.From the centre of the tube? A.That is so.

Q.What is another way of putting that, 27 ten thous.? A.Yes,near enough.

"(31a) It can be shown that because the brattice is still further away from the tube the Pressure Drop at the brattice at its nearest point is very much less than this figure.

(32) It can be shown by calculation that the pressure drop due to the flow of air from the intersection to the intake of the tube (apart from the loss due to that created by the velocity at that point) is of the order of less than $\frac{1}{100,000}$ part of an inch WG.

(33) The effects of the fan in creating an area of depression at the brattice can be completely ignored as they are so very small compared with other factors. "

(Further hearing adjourned until 10 a.m. on Wednesday, 9th February, 1966)

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IN THE COURT OF)
COAL MINES REGULATION)
HOLDEN AT BULLI)

No. 1 of 1965.

BEFORE HIS HONOR JUDGE GORAN.

ASSESSORS: MESSRS.MAHON and BUCK.

WEDNESDAY, 9th FEBRUARY,1966.

- - - - - -

IN THE MATTER OF AN INQUIRY IN PURSUANCE OF THE COAL MINES REGULATION ACT INTO AN ACCIDENT WHICH OCCURRED AT THE BULLI COLLIERY ON 9TH NOVEMBER 1965 AND ITS CAUSES AND CIRCUMSTANCES.

- - - - - - (PART HEARD)

GORDON SELLERS
On former oath
Examination continued:

MR.REYNOLDS: Q.We come to paragraph 34 which is on page 6 of your statement where you proceed to deal with the question of the influence of barometric pressure drop on the emission of gases from the No.8 Right goaf and you say:

"(34) The Goaf is about 600 feet long by about 500 feet wide with an area of about 5 acres. The seam as extracted would have a height of 7½ to 8 feet.

(35) The inbye end of the panel working is near a mass of volcanic sill rock which cindered and or destroyed the coal seam."

Q.Does this mean that there has been some igneous material which has got into the actual coal seam and destroyed it and taken the place of it? A.Yes.

Q.So that you come to this material which is in the line of the seam but which is not coal? A.Yes.

Q.And you sometimes call that an igneous intrusion, do you? A.Yes.

Q."Some distance ahead of the panel and in the sill rock zone there is a major normal fault which has a throw of some 300 feet in the direction of the panel". Would you describe that expression, major normal fault? A.Well, this fault is a normal tension fault with a down-throw in a south westerly direction. In other words the coal on the north eastern fault is 300 feet above the south western fault and that in effect has a plane which slopes down at an angle, possibly at about 45 degrees, and that has created a want in the coal seam of a certain distance. In other words, it is a barren zone.

Q.Then you go on:

"(36) Near the outbye end of the goaf there is a dyke system which contains the decomposed remains of thin volcanic dykes and which obviously is in a zone of tensions as there is a normal fault of about 3 feet throw in the adjacent panel associated with one of the dykes."
Where is that area you are referring to - is it north of the workings? A.The dyke systems are shown on the small plan attached.

Q.Is it the last plan? A. That is this plan here, (indicating).

Q. The one showing the contours?A. That is so.

Q. The dykes are indicated by the broken lines, one in the vicinity of No. 4 cut-through?A. Yes.

Q. And one between 3 and 4?A. That is so. If I may, these dykes as shown would be much more continuous than indicated by the plan. The dykes on the plan I would say are only shown where they have been located and put on.

Q. Would you tell us in lay language what is a dyke?A. A dyke as we know it in the Southern coalfields is an intrusion of igneous rock which comes in a more or less vertical fashion through the coal face. In other words the coal seam is lying more or less horizontal and this volcanic material fills a fissure which is most often running in a vertical fashion.

Q. "This is clearly a zone where a weakness occurs as information given by the management indicated that bad mining conditions pertained to the dyke affected area. This is a very normal feature when dykes and faults are met within the Bulli Seam.

(37) In looking at the plan of extraction it is apparent that the bad conditions extended over a very large proportion of the extracted area as many fenders and stooks have been left.

(38) Grades within the goaf are comparatively steep and much heavier than is normal in the Bulli Seam. The maximum grade is 1 in 6 (and this is persistent) in an almost true northerly direction. The contours which indicate the levels generally are shown by the plan attached. "

That is the same plan at which we have just been looking?A. Yes.

Q. You have shown contour lines there on the north-western corner, a maximum of 130 feet going down to 40 feet in the diagonally opposite corner?A. That is right.

Q. Just by way of example, they show a contour difference between the intersection of A heading and No. 2 cut-through with the miner place approximately 40 feet - 110 to 70.?A. Yes.

HIS HONOR: Q. Right at the miner place is 70 feet and the intersection we are talking about is the intersection of A heading and 2 cut-through; it is somewhere about 110 or may be 108, so there is a fall of nearly 40 feet?A. That is right.

MR. REYNOLDS: Q. In about a little over 100 yards of distance, approximately 1 in 6?A. Yes.

"(39) As on 18/1/66 by very careful measurement the goaf was making about 56 cubic feet of CH_4 per minute. "

Q. Would you tell the Court how you carried out that careful measurement?A. In A heading between No. 2 cut-through and the goaf at this time there still remained a part of the brattice screen that had been erected to form the shunt. This area of brattice screen was very close to being rectangular in shape and that was divided off near enough into six equal areas.

HIS HONOR: Q. Is that behind the brattice screen?A. No, at the brattice screen. The brattice screen was taken away and left a rectangular opening. That rectangular opening was divided approximately into six equal areas and in the middle of each area I took a methanometer test and found what the average CH_4 content in the air coming up that roadway was and then I found what the air quantity was and I simply then arrived at the figure of 56 cubic feet of CH_4.

"Taking the ratio as per Mines Department Analysis this means that 81 cubic feet of CO2 and 3 cubic feet of N2 were also being given off."

MR.REYNOLDS: Q.You were relying on the certificate the Mines Department tendered in evidence in that respect? A. Yes.

Q.That was a matter of applying your finding to that calculation? A.Yes.

"(40) On 9/12/65 the gas had accumulated in the goaf to an estimated level of 107 ASL which is just downhill from the junction of B heading and the goaf. The level as above would be the general level throughout the goaf."

Q.What you are saying is this, having found the level of the gas accumulation you would find it, like water, at the same level throughout the goaf? A. Yes.

Q.You have provided in the attached document, No.41(a) a visual representation of this, or should I say a diagramatic representation of this situation? A. It is drawn to scale.

Q.That is a section , is it, taken along the line of each heading? A.B heading.

Q.And showing the positions of the cut-throughs, the positions of the dyke fault system as shown on the plan which has been adverted to? A.Yes.

Q. You show there the level of the gas as you would see it according to your finding on 18th December 1965? A. Yes.

Q.You say that that is to scale? A. Reasonably to scale.

Q.From the Colliery maps the positions of the sill rock and cinder and the dyke and fault system are put in the appropriate places? A. Yes.

"(42) In mining owing to the numerous fenders and stooks left the roof mass would tend to come down slowly and in doing so it would crush the small pieces of coal and tend to leave then on the bottom with the immediate roof that had first fallen after the extraction of the individual lifts. As the excavation expanded the pressure of the main mass of rock would compress the parts underneath so that the bulk of the voids in the goaf would be at comparatively high levels. This feature is shown by the section attached."

Q.You are saying having ascertained, according to your view, the level of this mass of gas in the goaf the void would be above it? A.That is so, the bulk of it.

Q.That is why you have drawn the figure in the section in the shape you have in 41(a)? A.That is so.

(43) In addition to the pressure closing up the lower parts of the goaf, water which is used in the various mining processes in very large quantities would seep down and it can be anticipated that there is quite a quantity in the voids of the lower levels of the goaf. This would reduce the gas quantities available for expansion."

Q. What is your knowledge about the retention and accumulation of water in goaves like this?A. When you get water going into the goaf it usually stays there unless purposely drained and in mining coal it is essential to apply quite a large amount of water in the suppression of dust and naturally the overflow or the part that is not caught in the coal itself will drain away and go to the lowest part of the colliery.

HIS HONOR: Q. CO2 is a soluble gas?A. Yes, somewhat.

MR. REYNOLDS: Soluble in water.

HIS HONOR: In water.

Q. So that part of the CO2 would be retained in the solution? A. Yes, but it is not a great quantity.

Q. What about CH_4?A. No, CH_4 is not soluble.

Q. Is not soluble in water?A. No.

Q. Assume you have a mixture, an inter-mixture of the two, as in bottom gas. This may be entirely academic, of course. Assume the gas is passed through water, does the water separate off the CO2 somewhat by dissolving it?A. Yes.

Q. And release CH_4 from the mixture?A. It would tend to but the action would be very very little.

Q. Very little?A. Yes.

Q. You feel I can ignore this?A. Yes.

"(44) It is certain that the large part of the goaf which is above the gas level as found by me would contain air and not gas. My inspection (15e) would bear this out also. "

MR. REYNOLDS: Q. May we go back to para. (15e). That was your finding when you climbed up on the rock and found it was clear of gas?A. Yes, went around in C heading right into the goaf area and found no gas in that position.

"(45) Diffusion, whether gas diffuses into air or vice versa would result in a heavier than air gas which would find its level below the normal top gas level. "

Q. Would you explain that?A. In the process of diffusion you have two things happening: in one case the gas is diffusing into the air and in the other case the air is diffusing into the gas and this all takes place on the top level where the gas meets the air and, of course, in some measure lower down where the air is mixing with the gas but essentially at that point, at the top level of the gas and as soon as a particle of gas reaches up to take in a particle of air to diffuse with it those two particles together become heavier than air and they would drop down and tend to take a position below the top level of the gas.

" The action of air falling into the gas as the result of diffusion would cause a circulation however slight of air over the top of the goaf and in this case from either B or C headings".

Q. Do you mean this diffusion process creates its own sort of circulation?A. Yes.

Q. But it is very slight?A. Very slight.

"The gas would travel outbye A heading (in part) due to this circulation. The diffusion would also account in some measure, for the air in the gas at the junction of A heading and the goaf.

(46) At the junction of A, B and C headings with the goaf the following situation applied as on the 9/12/65. At A heading the gases as analysed were 20% CH_4, 29% CO_2, 1% N_2 together with air. At B heading the gas was nearly pure air and the same applied at C heading. In the event of the goaf gases expanding then it would come out equally in each of the three available paths."

Q.To summarise you are saying the levels of these gases in the goaf were such that they were some measurement above the floor line at A heading but at B and C headings they were not so, there was no gas there because the pond of this gas did not reach to these points? A.That is so.

Q.And this explains why you find gas at A heading but pure air at B and C heading? A. Yes.

MR.REYNOLDS: There is a sort of ponding effect having regard to the contour .

Q.You go on to deal with the fall in the barometer.

MR.SULLIVAN: Just one thing - the "three available paths". What are they?

MR.REYNOLDS: A, B and C.

MR.SULLIVAN: Q.Is that right? A.That is right.

MR.LEE: I thought he said they did not come out in B and C?

MR.REYNOLDS: Whatever was in the goaf at that point would come out.

HIS HONOR: The witness said if the goaf gases expand they come out equally. There was pure air in B and C and gas at A because of the fact that they had not expanded and they were merely there because of the level of gas as contrasted with what one might call the fall or the contour at 4.

Q.Is that the position? A.Yes.

MR.LEE: If they expanded sufficiently to move up C heading they might all come out equally. If they did not I cannot imagine how they can come up B heading.

MR.REYNOLDS: Q.Do you mean the content of the goaf or only that part of the goaf which is gas? A. In this case I would treat air as being a gas.

Q.If you treat air as part of the gas whatever is in the goaf and expands will come out equally I think that is what you say?A.Yes.

"The fall in the Barometer.
(47) The following figures taken from the Bulli Colliery Barograph which is located at about .21" of Mercury or 186 feet above normal sea level show the fall in the barometer in the period 11 p.m. on 8/11/65 to 11 p.m. on 9/11/65."

MR. REYNOLDS: I think there is a mis-typing in the "fall". The fourth figure is .00 and it should be .06. The next one should be .00. They have become transposed. It is a total fall of 0.46.

HIS HONOR: And that is from 2200 hours on 8th November.

MR. REYNOLDS: 12 hours - 11 o'clock to 11 plm.

HIS HONOR: 11 p.m. on 8th November to 11 p.m. on 9th November - 24 hours.

MR. SULLIVAN: 2200 hours, it is 10 p.m., isn't it?

HIS HONOR: Q. What do you say about that. "2200 hours", it says. It is 10 o'clock, isn't it? A. Yes, I beg your pardon, that should be 10 o'clock.

HIS HONOR: There is a fall in that period of 24 hours of 0.46.

MR. REYNOLDS: Q. You comment that the fall in the two hours which is before, and after the fire, is .08? A. Yes.

" (48) The total amount of coal removed by mining from the goaf has been given as 51,000 tons and its specific gravity as 1.57. This includes the stone which accounts for the high specific gravity. In the solid each ton of coal stone mixture would occupy about 24 cu. ft. This means that the space available assuming no water fill would become 1,220,000 cubic feet. "

MR. REYNOLDS: As I recollect it it is approximately the same as the calculation done by two of Mr. Lee's witnesses.

" (49) In the twenty four hour period as indicated by (47) the barometer fell .46 inches with an average barometer reading of 29.54 inches. The expansion over the twenty four hour period would be - $\frac{46}{2954}$ x 1,220,000 = about 19,000 cubic feet.

(50) The volume of each of A, B and C headings between Nos. 2 and 3 cut-throughs is approximately 19,000 cubic feet. It is interesting to note that the volume of the Bulli Court room is about 20,000 cubic feet. "

MR. REYNOLDS: That gives us some idea of the amount of air in each of those cut-throughs inby of No. 2.

" (51) In the two hours which include the time of ignition the barometer fell by .08 inches (47) and as a result the expansion of the air and gas in the goaf together would be -

$$\frac{8}{2958} \times 1{,}220{,}000 = 3{,}310 \text{ feet.}$$

This is equivalent to 27.6 cubic feet per minute. Of this total 9.2 cubic feet per minute would come out of each of A, B and C heading. B and C would yield air and A would yield gas having the following composition -

CH_4	20%
CO_2	29%
N_2	1%
Air	50%

This means that the actual quantity rate per minute of CH_4 coming out on average in the two hour period would be one fifth of the mixture coming out of A heading only 1.84 cubic feet.

MR.REYNOLDS: He has worked out what would be the total amount of goaf content which has come out in those three headings and said if you take the analysis we have of the nature of the goaf gas which was coming out in A then that included not only CH_4 but he has taken it down to methane. That is the last paragraph - how much of the goaf gas actually came out in the hour would be at the rate of 1.84 cubic feet of pure methane which is 20% of that and that is why he takes the fifth.

"(52) It is to be noted that on careful measurement on the 18/1/66 the natural make of gas was 56 cubic feet per minute and it is shown by Paragraphs 91 and 92 that the make during the time of ignition could have been higher than that figure. In these circumstances the quantity yielded by the fall of barometer would be completely insignificant."

Q.That is your conclusion about it? A.Yes.

Q.That if you yield only 1.84 cubic feet having regard to the general yield that addition would not be significant? A. That is so.

Q.As affecting a dangerous accumulation in the shunt. If it was going to be there it would have been there independently of any barometer fall? A. That is so.

MR.REYNOLDS: That follows, I take it, from what you say. Further to what I said yesterday it would suit my client company to say this sudden fall of the barometer - -

MR.SULLIVAN: Leave that for your address.

HIS HONOR: I will hear Mr.Reynolds.

MR.REYNOLDS: This is the view of this expert and on that basis it is put before Your Honor tnd those at the Bar table can seek to destroy it if they wish but I just point out the significance of what has been said. It would be comfortable and convenient to me - -

HIS HONOR: If I accept it as true I would be entitled, I would think, to disregard so much of the evidence as relates to the company not attaching significance to the fall in the barometer.

MR.REYNOLDS: That is so, Your Honor. That is the only part that gives me any comfort.

Q.Now you deal with the gas CH_4 given off in 8 Right District.

"(53) The following table gives the percentages of CH_4 also rate of make CH_4 and the return air quantity during the year 1965.

Month	Air Quantity	% CH_4	CH_4 cfm.
January	-	-	-
February	19,000	.1	19
March	20,000	.1	20
April	22,000	.1	22
May	20,000	.1	20
June	25,000	.1	25
July	45,000	.1	45 "

A.Yes.

MR.REYNOLDS: Your Honor already had this evidence in another form and it is put here merely for the sake of completeness.

"Month	Air Quantity	%CH_4	CH_4cfm
August	34,000	.1	34
September	26,700	.2	53
October	26,400	.1	26.4
November	28,600	.2	57
December	27,600	.3	83."

"(54) The significant dates in the above table are June when No. 2 Cut through was being driven. September, October, and November, which are prior to the fire and December which was after the fire."

MR..REYNOLDS: Your Honor will remember from yesterday I intervened at the Bar table to agree with somebody that in December of last year it was .3.

"(55) In June when all the places were in solids and when No.2 Cut through was driven as a cut through between A, B and C headings it would be my experience that the bulk of the gas being given off would come from the solid place being worked with only a small part coming from the idle places. It is my opinion that of the 25 cubic feet of gas per minute being liberated some 20 cubic feet per minute would come from the working place. It would be logical to assume that at least this quantity of gas would be liberated per minute in the miner place at the time of the fire as the miner was in this same area."

MR.REYNOLDS: If Your Honor follows this reasoning, this is only to try to get what content would come from the miner place as against the goaf.

Q.Is that what you are seeking to get some index as to? A.Yes.

"(56) In October the emission rate dropped sharply. This could have been due to the following factors.

(a) The solid place emission (if it was operating) dropped sharply. This is very unlikely.

(b) The emission rate from the goaf dropped sharply, this is most likely."

MR. REYNOLDS: Q. Would you care to comment on why you say one is unlikely and the other likely? A. Well, in working coal when you break it out from the solid mass you find that the rate of liberation of gas is usually quite uniform or reasonably uniform. If you stop a place sharply you will find that within a very short time the amount of gas will tail off and then virtually drop down to nothing. Then, as soon as you start to operate the place again, it would come in the usual fashion as it was before. I would say it was somewhat unlikely that in working coal in a solid place you would get a sudden reduction in the amount of gas being liberated, but in the goaf in my experience you get most of your gas coming up from the floor. If your progression of floor heaving failed to take place, then the gas would begin to tail off in its emission. In my opinion that would be by far the most likely thing to happen.

Q.You say what you have just said in your report -

"(57) The gases liberated from the goaf in the Bulli Seam usually come from the floor. The seam is at the top of the Permian rocks and all the coal seams rest below while the rocks above are almost completely devoid of carbonaceous materials. Each time the floor heaves, as it frequently does, gas comes up and it could be expected that it would come out according to the severity of the floor breaks. It is to be noted that at about this time owing to the

very bad nature of the working donditions the extraction rate was not good and that the area of working was close to the Dyke system and as may be seen on the colliery plans. "

Would you be good enough to just expound that for us?A. Yes. I have here a plan, Exhibit "JJ", and this plan is not perhaps complete in some ways inasmuch as it does not show the new lifts that are actually being driven or had been driven. In other words when the surveyor goes into the mine all he can do is to mark out the coal that has been extracted and he does not in effect show each of the lifts, but when you go into here and examine here as far as we could what has taken place, as I did - I went in here as far as I could, in fact I believe I got to the junction of No. 4 cut-through - you find there is quite a lot of coal left. These dykes - you can see one here just past No. 3 cut-through - of course indicate that that would mean this was rather badly broken up and that the rate of extraction as a result could be very much less than you could expect to have in normal operation.

Q. Then we were dealing with the floor heaving?A. Yes, well, with regard to the floor heave, again if you are going to leave a number of stooks and fenders in the goaf, then naturally these stooks are between the roof and the floor and they do provide quite a resistance to the heave of the floor. In other words, their very presence prevents the floor from heaving up as it would if they had been taken out completely. This is a very well known feature in mining. Perhaps to now just get a little ahead of it, at some time after these had been standing, the pressure from the roof above would become so great that these stooks and fenders would start to break and not only does the roof tend to come down but at that stage the floor would tend to go up.

HIS HONOR: Q. And that is when there are emissions of gas, with the heaving of the floor?A.Yes.

MR. REYNOLDS: Q. You comment that you do not get carbonaceous materials above and this means that you do not get CO2 coming from above?A. Yes.

"(58) In November work in the bad area below was completed and the area immediately below No. 2 heading was in prospect for extraction. In early November before the fire the rate of emission is shown to have come up to the September level and immediately after the fire in December it is up by a further 50% to 83 cubic feet per minute. "

MR. REYNOLDS: Your Honor will see there is one additional matter in the table at the top of p.9. The witness has converted the .1, .2 and .3 to a rate of CH_4 cubic feet per minute.

HIS HONOR: Yes.

Q. I am not quite sure about one thing I ought to be perfectly clear about. When you speak about the rate in November as compared with December, those figures are taken from the percentages in the return airway, are they? You did not measure as in November, did you?A. No, I did not. All these figures are taken from the colliery records.

Q. And the records are those of amounts of CH_4 in the return airway? A. Yes, that is right. You will notice I do attempt to compare that rate in December with what might have been - I think that comes a little later.

Q. What might have been in November?A. Yes, it is explained a little further on.

MR.REYNOLDS:Q.You have already told us about the testing you did on18th January, to find 56 cubic feet per minute being given off at the goaf.You say that to check on this figure which you took from the Colliery records you did your own check on 18th January,1966? A.Yes.

Q.You carefully measured it and you found 56 cubic feet per minute being given off from the goaf in the way you have already described to us? A. Yes.

"(59) As a check on this figure on the 18/1/66 I carefully measured the gas being given off from the goaf and the miner heading and found the rates to be -

From the goaf	56 cubic feet per minute
From the miner face	4.2 cubic feet per minute."

Q.You also sought to find out what was then coming off from the miner place? A.Yes.

Q.And how did you do that? A.In this case I found an area behind the brattice in which the air was coming out from the miner heading and I divided that into three and took three readings - the top, middle and floor - and then found the air quantity and I found that when you made certain calculations there you found it was 4.2 cubic feet per minute of CH_4 in the air coming out from the miner place.

Q.You said you found that to be 4.2 cubic feet per minute? A.Yes.

"If the miner place had been working it would be expected that the face would yield about 20 cubic feet per minute so if you add this figure to the gas coming from the goaf the total district yield would be 76 cubic feet per minute."

Q.You have already told us how you arrived at your computation of that 20 - you told us that in paragraph 55? A.That is so.

"(60) From the information above there is no doubt that there was a sharp increase in the emission of CH_4 from the goaf about the time of the gas ignition. As the measurement of CH_4 made by me was done more than two months after the ignition and the district had been standing all that time I would expect that the rate of flow just prior to the stoppage of the district would be very much higher than 76 cubic feet per minute.

(61) In view of the evidence as outlined above it is not hard to believe that there could have been a very sudden heave of the floor just prior to the shuttle car entering the shunt at about 9.20 a.m. on 9.11.65."

Q.Would you now deal with paragraph 60 and tell us again why you reasoned that there would be a sharp increase in the emission of CH_4 from the goaf about the time of the gas ignition?A. Well, I have already said that during the time when this district was set up to simulate the conditions at the time of the ignition, I went into the shunt or into the goaf and I tested with a safety lamp. I found that these gases were very very easy to find and I wouldn't think anybody with any knowledge of testing for gas with a safety lamp could have failed to have found the gas, and that is one of the most particular reasons why I consider that there must be a sharp increase to allow it to be detected.

HIS HONOR: Q.There is the alternative,would you not agree,Mr. Sellers - there is the alternative that no test was made or the other is that the testing was not done properly? A.I would agree that that is a possibility but I would think that is extremely unlikely.

Q. I am afraid it is my job to say that. I have had the advantage of hearing witnesses and comparing their evidence. Your argument is, is it not, that you start off by saying "I accept the fact that these persons who tested not only did test but tested properly, and if I start off with that since no gas was detected at the time it must have come after they tested." That is your argument, is it not?A. Well, that is one of the arguments.

Q. And it must have come between the time they last tested, which was half an hour before the fire, and the time it started to enter the shunt; there must have been a sudden upheaval of gas into the shunt - is that what you say?A. I think we are just a little ahead of the story, if I may say so. Perhaps if Your Honor waits a little while longer you may draw your conclusions then, but in addition to that answer I have already given I would point out there has been this increase registered in December in CH_4 -

MR. REYNOLDS: I am afraid I cannot hear the witness.

WITNESS: I will try to speak a little louder. I would point out, sir, that I have already put this table in front of you which shows a sharp increase as read by the colliery officials of CH_4 content in the month of December. I have also shown that my figures confirm that it could have been in the order of 83 cubic feet of CH_4 per minute. Those two factors appear at this moment but I think if you go on a little further you will find I have made another point which would make a contribution towards this.

HIS HONOR: Q. Before you go on, when the fire occurred the percentage of emission for November of CH_4 was .2 and you estimated that as a rate of 57 cubic feet per minute. That is at the time the fire occurred, so you cannot argue back from the increase in December and say, "This sudden emission occurred in November at the time of the fire," because that was your figure then, 57? A. Yes. Perhaps I could point out to Your Honor that this reading as I have found it was taken on the afternoon before the fire, the 8th. I would also perhaps like to point out that this instrument, the M.S.A. Recorder, the normal thing is to go to .1 and .2. You find with all these readings no .15 or no .15 or .16. You will appreciate there is a weakness in that, and these figures would embody that weakness. After all if it was .14 in October they would say it was .1, and if in November it was .16 they would say it was .1 too, whereas in fact it was not .01, it was .02 difference in the readings. There is quite a weakness in the readings and I think we should all acknowledge that.

MR. REYNOLDS: Then you go on to deal with some comments on the change in the character of gas:

" <u>Change in the Character of Gas</u>.

(62) It has been shown that the gases as collected and analysed by the Department of Mines showed in their concentrated state about 58% CO_2, 40% CH_4, 2% N_2. This means that the ratio of CO_2 to CH_4 would be 1.45 to 1.

(63) On 18/1/66 I took a sample of a large body of gas and the resultant analysis certificates attached revealed a CO_2 to CH_4 ration of 2.2 to 1. This sample was taken from the continuous miner place which can be considered as being outbye of the goaf area. The earlier analysis taken by the Department of Mines was confirmed by samples taken at or about the same time by A.I.S. "

We did our testing at the same time as the Department did and there was no disagreement.

"(64) During my visit to No.2 North on 27/1/66 I had occasion to examine CH_4 coming from the floor (29) and found it to be probably near pure methane."

your Honor recollects the evidence yesterday of how he tested it and got into a crack and could not detect anything.

"(65) It could be highly significant that Deputy C.Stewart as extracted from the records,makes a specific finding of CH_4 at the dyke.

(66) It has been my experience in a neighbouring Colliery to find gases close to a cinder and sill rock zone where the amount of CH_4 if any could not be detected with a safety lamp.In cases of lack of ventilation where the areas were sealed off I have seen roadways fill up with such gas.

(67) I have noted one case where the Bulli Seam has been formed into pillars for at least ten years when a shaft was extended down some twenty one feet to the No.2 Seam below a large volume of gas was released from this lower seam. This is an indication as to the impervious nature of the coal measure strata and suggests what may happen when the floor heaves in an area of pillar extraction operating in the Bulli Seam.

(68) I have seen a pillar district operating for several months with no measurable gas content in the return air and then found overnight a large volume of gas suddenly released.

(69) It appears that the presence of massive sill rocks near and under the Bulli Seam play an important part in the reason for the presence of CO_2 mixed in with the normal CH_4 gas of the seam.

(70) In attaining a higher rank,coal is required to give up more hydrogen than carbon thus increasing the fixed carbon content. This hydrogen is given off in the form of CH_4. Normally in a coal seam the process has been going on ever since the bed of vegetable matter was laid down. Over millions of years the excess gas slowly excapes to the surface. Usually that which remains in the natural reservoir of the seam itself is considerable while sometimes the adjoining rocks also hold quantities of the gas.

(71) Massive sill rocks occur near all the collieries working the Bulli seam on the coastal strip and to find out some of the zones as known for many years reference may be made to the Survey of the Southern Coalfield as carried out for the Minister for Mines by the Government Geologist (L.F.Harper in 1915).

(72) In the Bulli Colliery Holding there are many examples of massive sill penetration of the coal measures. The latest bore Cataract No.1 which has been drilled to a considerable depth shows numberous sills. The location of this bore is about 1½ miles S.E. of No.8 Right. The Bulli Seam itself has been burnt over several square miles and its substance replaced to a very large degree by sill rock. The inbye boundary of No.8 Right panel is near sill rock.

(73).It appears that the CO_2 originates from the Carbonates in the sill rock and Harper in his survey mentions the presence of up to 27% of carbonates as a total in one sample taken from a point not far from No.8 Right District. Evidence of carbonates in sill rocks generally is widespread according to Harper.
In No.15 bore the coal when analysed showed 3% lime.

(74) Evidence that the sill rocks are generally confined to that part of the Bulli Seam near its outcrops is widespread and this is reflected by the greater CH_4 content of the Bulli Seam gases as the working of the mines progress westward."

MR.REYNOLDS: Q. Pausing there for a moment, does this mean that the nearer this coal seam is to the escarpment the more likely you are to find Illawarra Bottom gas? A.Yes.

Q.And the further you work these workings in towards the west, the more unlikely its occurrence? A.Yes.

Q.What is your knowledge as to first of all, theoretically, the occurrence of this gas in the Illawarra mines and secondly your knowledge as to its detection? A.Well, this gas occurs over a very wide area, particularly as I have said near the seams' outcrops or near the eastern boudaries of the seam. The result is that in the years gone by it was quite common to find Illawarra bottom gas.

Q.What do you mean by the years gone by? A.Well, I am speaking of up to the year 1930 - there was quite a lot of it around then - and say if you take .3 miles from the outcrop generally you can say that in that zone is where you would expect to find Illawarra bottom gas and there has been some working in the last 30 years of a considerable amount in that particular zone, but now the zone of working is extending westward beyond that point. In the times gone by, as I said, you would quite commonly find small quantities of Illawarra bottom gas. It did not normally occur in large quantities. For instance -

Q.Stopping there, could you give His Honor an illustration of a typical circumstance in which it was found in those days?A. Yes, well, in these days the pick and shovel were the order of the day and if you do not already know, Your Honor, in the Bulli Seam we have numerous stone intrusions in the floor. These occur in a pattern running in a certain direction, almost systematic, but they are there and they have been of a great nuisance in operating the coal seam. These more particularly have occurred near the outcrop of the seam and the resultant was that in the pick and shovel days instead of taking up the stone as much as they might have the tendency was to go over these rolls and then they would go down into the coal past the roll and then into the next one, and so on. Where this Illawarra bottom gas was occurring and particularly where the ventilation was sluggish, as sometimes it often was in those days, you would perhaps get 9 inches of this gas accumulating in the sill caused by the deviation of the rolls, and this was quite apparent. You could feel the gas as you walked through it, the physical warmth of the saturated gas.

HIS HONOR: Q.I suppose you would not be feeling the CH_4 as much as the CO_2? A.No, you would feel both.

Q.What is the feeling of CH_4, or is there a peculiar feeling in bottom gas? A.No, it is simply a feeling of the saturated gas. In other words, you may notice in here I did note that I took a hygrometer reading of the gas in the miner place, and from memory I found there that the saturation was 92%. It is not mentioned here - I have simply given the figures, but in the air just immediately outby the humidity was 76 or 72%. There was quite a remarkable difference. This difference in my experience has led to the fact that when you walk into this gas, as you often did, you had the immediate feeling of warmth simply because the sweat on your legs was not being evaporated by it being near.

Q.We are talking about bottom gas, CH_4 being omitted; where does the CO_2 come from? A.Well, it comes from the carbonates in the sill rocks. You see, you have a situation here where what I would term the natural gas of coal, CH_4, is being generated all the time in coal seams. It is being made, manufactured, by the molecules of hydrogen combining with a certain number of molecules of carbon, taking away an excess amount of hydrogen to increase the carbon

content of the seam itself. You have that and that is the natural thing - it would be in most coal seams and would be in every coal seam unless something happened to liberate it, such as the proximity to the surface where it gets away freely. In addition to that, you know there are in this Illawarra or part of the Illawarra coal fields, the sill rocks which are throwing off carbon dioxide and these gases are competing with the natural gases of the coal seam for the space. And in doing so they come together and become a diffused mass of different chemical mixture.

Q. That is Illawarra bottom gas, but you see we have evidence that there is quite an amount of what the miners call black damp, CO_2, existing on its own?A. Yes, well, that is formed in a somewhat different way.

Q. How is that formed?A. Well, this gas usually forms in goaves and you could take it this way: the air goes into the goaf which is virtually a still place when it is sealed off and in that goaf almost invariably you will find timber, and in the olden days of course horse dung, and this material combines with the oxygen in the air and throws out carbon dioxide, and finally it will almost completely absorb all the oxygen.

Q. Strictly speaking it is not coming from the coal at all?A. Very rarely. It is not a natural gas in the coal seam. It has some other source.

Q. There is evidence here that over a period rather large quantities of CO_2 - there is some evidence in a hearsay form that one of the men who died here came home in the week before the fire and not only smelt of gas, apparently CO_2, but also was sickened by it and could not eat his meals, and so on. That is part of the evidence here, so if I accept that evidence, that could be pure CO_2, or it could be that bottom gas, or Illawarra bottom gas, in these quantities in that period had remained undetected as such by deputies ?A. Yes, well, perhaps if I tell you the second part of Mr. Reynolds' question, I may be able to throw a little more light on that for you.

Q. Yes. A. I have had a lot of experience in varying quantities of CH_4, CO_2, and it does vary. I mean, the closer you get to the sill rock areas the richer these gases are in CO_2. Now, there comes a point when this mixture is not detectable on the safety lamp. You can still have CH_4 but you still can't detect it. For instance, I have found with the type of light I was using that when the oxygen content dropped to about 18 per cent your light would go out very very readily so that you had that limit in which to test for gas. So you will appreciate that with the carbon dioxide in particular taking up the place of oxygen, even though there was a small percentage of CH_4 there, it was completely impossible to detect it because your light would go out before you were able to see it on the flame.

Q. What do you say as to the ratios of CO_2 and CH_4?A. Well, I can quite easily detect CH_4 in a ratio of 4 parts of CO_2 and one part of CH_4. You could detect that up to a certain limit only. You could calculate that out and you will find it is round about two per cent. You will get two per cent cap and treat that as inflammable gas even though I would know, although I don't think a deputy would know, that it was harmless. To go a little further, when you get a gas down near the 40 per cent CH_4 and 58 per cent CO_2, that is very easy to detect. I mean, you can just lower down your light like that and leave it there for about 8 seconds and you would find your cap come, but you would not want to lower it down too far or lose the light.

Q.Have you seen deputies testing with this light?A.Yes.

Q.Could you assist us in this: Where a deputy is testing, perhaps for Illawarra bottom gas or CH_4, in the presence of CO_2, we had an example yesterday of Mr.Cambourn showing us the way he did it? A.Yes.

Q.One thing the deputy fears at any time is that he will lose his life; do you agree with this proposition? A.Yes.

Q.And in fact as he goes down into the CH_4 and his flame diminishes somewhere, in doing that of course he would miss what has been described as thin air where he discovered CH_4, if in fact he does pull out fairly rapidly? A.Yes, well, he would not pull out rapidly, in that sense. He would lift it up slowly.

Q.If his flame is going out?A.He would lift it up slowly or he would lose it completely, if he attempted to.

Q.I see what you mean, If he pulled it up too quickly to discover the CH_4? A. I wouldn't think that would be right,no.

Q.It has been put to me by Mr.Cambourn that what he did was to go out of it, when he sees CO_2 putting out his flame, and having come out of it he deliberately lowers his flame and lowers it to what he thinks is the fringe area. Up to that stage he has not detected CH_4? A. I can assure you, Sir, I saw the demonstration put on yesterday and if Mr.Cambourn had done that in the gas that was in the shunt, as I saw it in the simulated conditions, he could not have failed to detect CH_4.

MR.McNALLY: I think the evidence is he in fact found it on 8th December, after the fire.

HIS HONOR: Q.You say he would have found it? A.Most certainly would have found it.

Q.At what point would he have found it? A.Would you just explain the meaning of "point" there?

Q.At what point in his test would he have found it? A.As he was slowly going down he would,yes, On his description he would have found it before he hit bottom.

Q.So if he had done that, or if Deputy Stewart had done that, and if the gas had been there - that is a qualification - the deputies must have found gas? A.In my opinion they would have found it.If I may again, I had noticed some reference to trace of gas. Well, it would be possible, in anyone lowering down their light in a mass of very rich, a rich CO_2 mixture with a little bit of CH_4 and even say a ratio of 85 to 15 , getting up well into the range of extinctive gas, he would just momentarily, probably, see a cap on that light.

Q.Isn't this the position, that it assumes a deputy is in fact, since he is looking for methane, CH_4,down on a fringe area, testing for Illawarra bottom gas or that he is aware of Illawarra bottom gas at the time he is making the test. Isn't that the fact? A. No Sir. Any deputy in a mine is charged with a responsibility of testing any gas regardless of what the gas might be, and even though he does not think of it in terms of being Illawarra bottom gas he still would think of it in terms that he has to try to find inflammable gas if he can.

Q.At or just above the level of a layer of CO_2? A.Well, in this case I have heard two people deliberately say that they did test for inflammable gas.

Q. You have heard the deputies say that?A. I heard Mr. Cambourn say that and I think I heard Mr. Puddle. He gave a description of how he did it.

Q. I am not quite sure when Mr. Puddle tested -

MR. LEE: In No. 3.

HIS HONOR: Q. Mr. Puddle tells us though that he has been aware of Illawarra bottom gas. The bulk of the evidence here - and this has emanated from company sources, this has been put to me - is that the instance of Illawarra bottom gas is a very rare thing and in fact it has been put, I think, that one deputy had never heard of it before. If he had never heard of it - that is assuming a deputy had never heard of it - there would be nothing but CO_2 that would attract his attention there as CH_4 tests would be made where CH_4 exists in its free state, and that is higher up; is not that the position?A. No, I would not agree with that because in our mining practice we must consider all gases inflammable until proved otherwise.

Q. This is very nice as to what the code is which is laid down, but I am looking at what actually happens down in the pit and what the deputies, who are not scientists, not experts in the sense perhaps that you are - and I say that with great respect - themselves do. Their qualifications are far different from the qualifications of a Mines Inspector, to start with?A. Yes.

Q. Now we are faced with this situation, that everybody apparently - and Mr. Puddle agreed with this - down at the mine does not know very much about Illawarra bottom gas. They know a lot about CO_2; they apparently know a lot about CH_4, but the mixture of the two is something that they are not expecting. They know a lot about CO_2 and know it exists down near floor level, mainly. You say you must treat all gases as inflammable. Well, I am far from convinced that despite the code, in accordance with the code every deputy in finding a lamp starting to go out in CO_2 thinks "this is inflammable gas" and treats it as such. He treats it as CO_2. The next step for a deputy is that he is looking for inflammable gas; is he looking for inflammable gas in the region where his lamp has gone out or is he looking for inflammable gas when he is not being aware or not being very worried by the presence of Illawarra bottom gas because it is so rare? Is he looking for CH_4 down there or is he looking for CH_4 where it normally occurs, along the ribs and so on? That is my problem. You say the deputies as you know them conscientiously go through these tests?A. Well, sir, it has been my privilege to have been tutored by some of those deputies in the detection of gases. In fact, my first lesson in detecting gas, Illawarra bottom gas, was given to me by a deputy.

Q. I suppose you have read a lot about it since?A. I have read a lot and I have taken dozens of samples and analysed them. It is quite possible for a man of experience to put his light into a mass and say "it is bottom gas" and find the point at which your light goes out in terms of a known amount and then calculate, if you wish to, the percentage of CO_2 in it.

Q. I realise that is a possibility, butit is hardly likely that all deputies have been trained that way and take that attitude. But Mr. Puddle is under manager in this mine and has made it quite clear to me that in fact they were concerned mainly with CO_2. A. I am sure that is true.

Q. You agree with that evidence?A. I am sure that is quite correct. They were concerned mainly with CO_2.

Q. Do you, as a practical man with experience of mine, say that in your experience a deputy with that in mind goes round and