SCOTTISH HOSPITALS INQUIRY

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Hearings Commencing
19 August 2024

Day 40
Friday, 1 November 2024
Mr Allan Bennett (Part 2 of 2)

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10:03

THE CHAIR: Good morning. Mr Connal, we're resuming Mr Bennett.

MR CONNAL: Yes, my Lord.

Mr Allan Bennett, Continued

THE WITNESS: Good morning.

THE CHAIR: Good morning, Mr Bennett. Mr Connal.

Questioned by Mr Connal KC

MR CONNAL: Right, my Lord. Mr Bennett, I have no further questions to ask you about your general ventilation report that we discussed yesterday. That being so, I'd like to move on to the much shorter report that you produced reviewing the Cryptococcus case investigations. We find that at Bundle 21, Volume 1 at page 738.

Now, what I'm going to do, just so you have an idea where we're going, is that I will work my way through the report with you, if I may, and I'm going to pick up, in the course of doing that, first of all, any questions that arise but also the additional questions that you were asked, which you then included in what we're calling the Direction 5 report which, for ease of technological recovery, is Bundle 21, Volume 6 at 154. We don't need it just at the moment, but we will need to move back and forward between the two as we go.

Now, in your report, obviously you repeat material about your experience and qualifications and the limitations to your expertise, which I needn't trouble you with because we dealt with these in the course of yesterday. I suppose the biggest issue with your report as an exercise to do was that you were being asked, essentially, to review someone else's work some considerable time after the actual events had taken place.

A That's correct, yes.

Q So, if we go then to page 743, that essentially sets out the background, where there were two cases, and at least an issue over possible connection between those cases of Cryptococcus neoformans – abbreviated to "CN" in your report – and pigeons, pigeon guano, whatever we want to call it. Am I right, therefore, in thinking that there was at least a recognised connection between pigeons and this particular infective pathogen?

A There was very limited Information about this pathogen but there are papers that link it to pigeons and pigeon droppings.

Q Okay. If you just remember

not to let your voice fall away at the end of your answers----

A Okay.

A -- so his Lordship can hear the whole answer, that will get it off to a good start. Thank you for that. You point out that a specialist subgroup was set up, at least at that time, with a view to reporting back to an IMT that had been in operation. Is that right?

A As I understand it, the subgroup was presented with a number of hypotheses, and were asked to investigate the likelihood of these hypotheses.

Q Now, the next section of your report deals with the diagnosis of Cryptococcus, and you say in 5.2:

"[It] can be detected using simple lateral flow assays called Cryptococcus antigen tests."

So, again, just so we're understanding what you're telling us here, what's a lateral flow assay?

A Okay. Basically, a lateral flow assay-- I think most people are familiar of them with COVID. It's a device in which you put a drop of sample into one end of the device and then, through chromatography and the use of antibodies, you produce a coloured line as a control, and a coloured line indicating that that antigen is present in the sample.

Q Then you go on to say that culturing the species is regarded, as you put it, as a "gold standard." Is that right?

A Well, that is taken from some publications, yeah. I need to stress I do not claim to be an expert in detection of Cryptococcal infection. Here, I'm just sort of giving some general sort of background, and maybe-- I'm assuming assuming certain things but just the idea that they can be detected through an antigen test and through culture.

Q You set out in paragraph 5.3 on page 744 some further information about how Cryptococcus can be identified by different techniques.

A Yes, I do.

Q Now, you were asked an additional question about these tests and how they worked. So, if we could go to your Direction 5 report – so that's the Bundle 21, Volume 6 – and go to page 155, just to see what the question was and what your response was to it. The question was:

"To what extent is the [that's the lateral flow test] adequate evidence of the organism even without culture positivity? [Whether you'd] considered that [the] lack of culture positivity does not exclude the [possible] diagnosis?"

Then you make the point, in the start of your answer, that you're not an expert, but you then go on to discuss one

of the issues that you're familiar with, dealing with other microorganisms. Is that right?

A That's right. I mean, what I'm trying to get across is that the Cryptococcus antigen test measures the presence of a component of the cell. Now, that component may be part of a living cell, but it could be part of a dead cell or it could be extraneous material.

Q You say there it's possible that if samples are taken post-antifungal therapy, as initiated, CRAG tests will be positive and culture tests negative.

A That is possible, yes.

Q You also say it's possible that culture may not be effective. Why not?

A I mean, it could be technical issues, it could be a problem with the overgrowth, you could use the wrong media. The levels of the organism in the sample could be----

Q The levels of?

A Of the organism----

Q Of the organism.

A -- in the sample could be wrong.

Q Thank you. Then you say in the remainder of your answer that you're not aware of any studies that measure effectiveness of lateral flow test against culture.

A No.

Q Thank you. If we go back to your witness statement. If we go now to same page, next heading, "Cryptococcus Epidemiology and Incidents in the UK." You say it's an "opportunistic fungal pathogen."

A Yes.

Q You say it's derived from environmental sources, so not just pigeons.

A I think it's also been related to soil and rotting wood and other potential sources.

Q You point out that it can cause serious infection mainly in immunocompromised hosts but much of that has been, I think, discovered during the HIV treatments. Is that right?

A That's correct. It was a major concern when HIV treatments weren't as advanced. It was an important pathogen of patients immunosuppressed due to HIV infection.

Q You cite some research by Lamagni. Am I pronouncing that correctly?

A I think that's correct, yes.

Q In paragraph 5.5, you say that it's:

"One of the four highest priority fungal agents on the WHO fungal priority pathogens list."

Why is that important?

A I think it's-- it remains an important pathogen of HIV infected

people in countries in which the treatment isn't as available as it is in our country.

Q That's why it's on that list, is it?

A That's correct.

Q Then you make some comments about frequency of occurrence being dependent on precisely how it's reported and so on.

A That's correct. So, we have systems in which diseases have to be reported in the UK, called notifiable diseases, and therefore those figures are probably quite accurate but in the case of Cryptococcus, there is no mandatory reporting of this disease.

Q So, does that mean there's no sort of official structure by which it has to be done?

A Yes.

Q So, you say in 5.7 that the Lamagni study reported UK data on Cryptococcal infections which were reported to the PHLS. What's that?

A The Public Health Laboratory Service, which is a predecessor of Public Health England, which is a predecessor of UK NHSE.

Q Yes. Thank you. This reported from 1990 to 1999, and found only 15 to 41 annual cases, mainly HIV, associated with the highest incidence in London.

A Yes.

Q So, if we look on to 745 of your report, you touch on what that shows, percentages per million, and the author suggests that Cryptococcal infections were underreported. Do you know why? Why is it thought they were underreported?

A Because there's no official reporting mechanism.

Q And then you say in another review there were fewer than 100 cases of Cryptococcal meningitis per annum based on information from the PHE Mycology Reference Laboratory in Bristol.

A Yes.

Q Can I just ask about that at the moment? One of the questions that you were asked in your additional questions-- Could we turn back to that, please, and go to 158. What you've been describing, obviously, is the reporting material that you had in the Lamagni study and then in the further study in 2017 from particular sources, and the question you're asked is:

"[Well], there's a mycology reference centre in Manchester. Is it possible that further laboratories may have been used?"

So, in other words, the figures that are there are not necessarily all of the figures, if that's right. Could the data be an underestimate? How does it affect your conclusions? Can you just take us

through your response in 12.1 there? You've made the point there's no official reporting, and you used the number of isolates reported to the UKHSA Mycology Reference Laboratory indicator of incidents. Do you know anything about what was done with Manchester?

A I mean, I think there's a mycology reference centre. It's not strictly a reference laboratory, which the UKHSA Laboratory is. I would suggest that it'd be more likely for samples to go to the UKHSA centre, but I cannot rule out people working with the mycology reference centre in Manchester.

Q Did you have any information on Manchester when you prepared your report?

A No.

Q Thank you. So, going back to your report at 745, I think you're trying to make the point there that the information you have is not directly comparable because one is numbers of tests and the other one is numbers of isolates. Is that right?

A Yes. I mean, the data I could come across is a mixture of-- The best data is from the Lamagni study, but it doesn't reflect the current situation because her cases were mainly in HIV patients. The data I have from the UKHSA Mycology Reference Centre is the best that I could get from them. It's not perfect data. It is difficult to understand the absolute incidence of Cryptococcus in the UK, and that would probably require some sort of research project to get some accurate data. So I've had to deal with what is potentially not the greatest information.

Q What you say at the start of paragraph 5.8 is that the UKHSA reference laboratory data shows a similar picture, and that's a similar picture to the 2017 report, I think. Is it between 28 and 38 in the period between 2016 and 2023?

A I mean, it seems reasonably consistent. One thing I would say is that it took quite a long time to get the information from UKHSA, and I was under a deadline to write the report. It possibly would have been better if there had been a bit more discussion with the reference laboratory just to understand the data a little bit better, but that wasn't possible due to time constraints.

Q Am I right in understanding that the point you make in the next two subparagraphs are that that's what you've got from the reference laboratory, but not everything may have got to the reference laboratory?

A Indeed. I do know that-- I think the Queen Elizabeth University Hospital people were working quite closely with the reference laboratory and seemed to have a good relationship. It

may be other people didn't have that relationship and wouldn't send the samples to them.

Q The only other point you make there is that the antigen test is highly suggestive of an infection but can't distinguish between different strains of cryptococcus. Is that right?

A As far as I'm aware, it cannot.

Q So your conclusion in 5.9 is that the number of isolates reported may be an underestimate, presumably of the total number of cases happening anywhere in the UK. Is that right?

A Yes. Saying that, it has to be said that sometimes you can get more than one isolate from one patient.

Q Right. But for some reason, they might have two from Patient X.

A Yes.

Q Thank you. If we move on, you've explained the difficulty you have getting helpful figures. We'll leave aside what you say about Dr Kennedy's report. Can we go to 746, where you are making an attempt to have a look at how the NHSGGC numbers compare to the material, such as it is, that you manage to obtain? What you've said there is that you're using this figure of 28 to 38 isolates per annum, which might be an underestimate; and then what you do is you try to look at where that stands against the UK population and then look at NHS GGC's surrounding population.

Can I just ask-- I'll take you to an additional question that you were asked just for completeness before we move further into that. Can we go to your Direction 5 questions, page 155? You're asked a question, number 2 there. "Were you aware that Cryptococcus isolates are grown in the Queen Elizabeth Hospital lab, identified locally and sent to Bristol only for secondary testing?" Does that matter to anything that you've said here?

A I think it does to some extent. I mean, I still don't know whether they sent all patient samples to the Bristol laboratory or not.

Q Okay. What you're doing in section 5, 11, 12, 13 and 14 is trying for the material that you have, both for NHSGGC figures-- If we can go back to your witness statement just for a moment. We're now going on to 747. You're trying to make an attempt to see whether the numbers here in the NHSGGC case are odd or different or higher. Is that right?

A Yes, that's what I'm intending to do.

Q Did you reach a conclusion as to whether they were different?

A On the basis of the calculations and on the data I had, it appeared that the number of cases, if the report of five per year would be-- And I think 2018 exceeded the expected levels

from the data I procured.

Q Yes. So if you were getting, what is it, between 28 and 38 in the UK as a whole, five in this area seemed to you to be high. Is that right?

A That's correct, with the provisos already stated about the data.

Q You set out in paragraph 5.14 that you're not in the position to know exactly why that is.

A No.

Q You postulate a number of possibilities: random variation; numbers sent to the reference lab; patients more susceptible; something at the hospital that caused a higher rate than elsewhere. These are possibilities.

A Yes. I mean, I think there are probably more possibilities than that, but yes, that's giving an indication of different reasons for that.

Q Did you do any kind of statistical epidemiological type analysis on this?

A No, I didn't. I'm not a statistician, and I'm not an epidemiologist. I do know of ex-colleagues of mine who do a lot of work looking at whether rates of infections are statistically significant. Because of course you can have five positives one year and zero the next year, and then there is natural variation.

Q Yes. So your point is that statistically you understand that you could have five cases one year and none the next, which might be just due to natural variation or it could be----

A Or it could be due to something-- You know, it's----

Q It could be another reason.

A Yes.

Q Are you able to tell us which it is?

A No.

Q So, if we can go back to your Direction 5 questions, just to deal with this. You're asked a question, number 3. I think it's suggested to you that randomness changing the figures that much is unlikely. There are various other points made, and you deal with that in your response on page 156, and you make the point there that you haven't carried out any statistical analysis.

A No.

Q I think you mentioned a minute ago a colleague. Is that the André Charlett colleague who's interested in this field?

A Yes. I mean, it's one thing-- To some extent, I'm a little bit surprised that this sort of analysis wasn't undertaken as part of the investigation at the time. I think Dr Kennedy produced a report giving numbers of cases, but I don't think there was-- I would possibly expect there to be some sort of statistical analysis or some epidemiological

analysis of what this all meant, but it was just really a presentation of numbers.

Q Thank you. Well, let's move from statistics for the moment back to your report, and what you're essentially doing is dealing with introductory matters before you turn to the actual investigation and your comments on it. Is that right?

A Yes.

Q The next point you pick up is the incubation period, and what you're quoting here is from the Centre for Disease Control again, which you told us was well regarded in the course of your evidence yesterday. Unfortunately, it doesn't seem that they're able to be very definitive about this in terms of incubation period. Is that right?

A I think they're stating from the scientific evidence that the incubation period for Cryptococcus is highly variable.

Q So from the material you've got, it can presumably incubate in a relatively short period over a very-- being reactivated after a very long period. Is that right?

A That's correct, although "weeks" is from the CDC website. They're not talking days.

Q Right.

A I'm not 100 per cent sure in the literature where they get that, but that's what they state.

Q The point about someone having what's been described as latency, in other words, Cryptococcus which is causing no problems but is then reawakened later on, if I'm getting that correct.

A That has been shown to happen.

Q Yes, and you quote a very recent paper – this year – at the top of page 748.

A Yes.

Q So, if we can then move to the incident management subgroup. Your first section essentially deals with narrating what it was: originally, to provide evidence to the IMT, which you set out on page 748. The role and remit you set out. Then on page 749 – I just want to make sure I'm getting this point correct – you say in the middle of paragraph 6.3:

"The terms of remit did not include carrying out an epidemiological investigation [but] only [identifying] the source of Cryptococci in air samples."

And you say:

"This led to a focus on [doing that] and trying to identify mitigations not on investigating if the patients were exposed ...during their hospital stay. "

As you know-- I'm just pausing, as it were, for a second just to note that you're aware that we're taking considerable steps to avoid patient

identification in the material which appears publicly during the Inquiry, and I'd be obliged if you'd bear that in mind as we go through today.

A Yes.

Q But in any event, what's the point you're trying to make? That instead of----?

A I think the point I'm making is that they-- It was almost as if they were looking forward and not looking back. They were not tasked with identifying a common source or an event that happened during the patients' stay in the hospital. They were investigating hypotheses, but they weren't-- I don't think there was any attempt to look at what happened in the past. They were looking at whether-- I suppose, whether whatever happened could happen again. I don't know. The-- I mean-- Well, we can-- We'll go on to talk about the membership of the group.

Q Well, I'm keen to understand your evidence on this because, you're quite right, the next section of your report lists the membership of the group, including Dr Seaton who we know came to one meeting and then didn't come back. Was there a point you wanted to make about the membership of the group?

A I think the membership of the group were people who were largely from Estates and were largely taken on board for their expertise in understanding how the ventilation system of the building operated. So, I mean, therefore, you know, it wasn't an epidemiological investigation. There's no epidemiologists or statisticians, and the one clinician who was on board-- after the first meeting thought his expertise wasn't relevant to what the subgroup were doing.

Q You also make the point in the middle of paragraph 6.6 on page 750 that there were no fungal infection experts. Did you find that surprising or not?

A Not for what they were asked to do. They were asked to invent a-- Well, if you look at the minutes of the meeting, you will understand why Dr Seaton felt that, you know, they weren't-- you know, that it wasn't his area of expertise and he-- he had nothing to take part in.

Q So, for the objective that they had set themselves, the absence of these other experts is not surprising?

A I don't think so, no. I mean, I think the subgroup was-- You know, I think it's quite plain what the subgroup was set up to do.

Q I'll just take another Direction 5 question at this stage for want of a better place to ask it. Can we just go back to your Direction 5 responses, page 156, Question 4, and that's a reference to

evidence given by a member of the Estates team, Mr Conner, which broadly was talking about cleaning up pigeon mess with sprays and men in protective gear, and so on, at least at some point of the exercise. The question you're asked is: could such spraying, combined with other issues, have any impact on risk of increase in ingress into the air handling units, and onwards, no doubt, to the patients?

Now, just help us understand what your answer there is? You're making the point about input of energy, first of all.

A Yes, I mean, if you have got a high-pressure spray hitting a solid material on the surface, there is potential for that to create an aerosol of any microorganisms or materials in that guano, or whatever it was, and to aerosolise that.

Q So, that would create, if you like, Step 1, which is the presence of potentially small particles. Presumably, there would have to be a Step 2 for this to make any difference – which is some means of this getting into the air handling system?

A That's correct, yes.

Q Thank you. If we go back to the report, your next section deals with meetings and minutes, and you will be pleased to know I'm not going to read you through files of minutes. So, we can move past that. Let's go to 751, and I think you make the point there that the original aim was to report back to the IMT, but by this time the IMT had been closed. You've had a look at the report, and you make some comments in it. Can I just take these in turn?

You make a comment about the large amount of patient information that's contained in the report. Obviously, we're not going to discuss that in detail, but why did that lead you to conclude what the audience was – the inclusion of that material?

A I-- I honestly-- The one thing I found about the report was I was unsure of the audience of the report. I was never given a circulation list of who the report went to or who asked for it or who it was for.

Q You make an assumption, I think, in this paragraph, 7.2, that it was written for consideration by hospital senior management?

A Well, I mean-- I think I say, due to the large amount of patient information, it obviously wasn't meant for a wide circulation. And, well-- I mean, it wasn't for the IMT because the IMT had been closed, so I would guess somebody must have asked for it, and I would assume that would be people-- I don't know-- I mean, I make those assumptions. I mean, I can't be

absolutely sure about them.

Q In the next section, you make some what one might describe as editorial comments about the way it's laid out and set out, and so on, and you say, "There is an unnecessary amount of PII." Is that patient identifying information?

A Correct.

Q You describe it as "not an easy read." Is that your summary?

A I don't want to be harsh in this, because I don't understand-- I don't know the circumstances of this report. I really don't know the pressure the author was under. I don't know the time scale. I don't know what his instructions were.

Q In any event, you'd been made aware, I think, of the fact that NSS, who were participants – in their various names – at various stages of this exercise, have expressed some criticisms of the report. Is that right?

A Yes.

Q You simply say that you agree with what you've seen of their criticisms. Is that correct?

A I-- You know, I think, yeah-- What-- I mean, what they stated seems to be accurate, yes.

Q And ultimately – and I think this is probably consistent – you say at the foot of page 752 that whatever the original intention was, it ends up as an internal NHSGGC document.

A Yes, yes.

Q Right. Let's move on, then, if we may, to the hypotheses and how we get to these. On page 753, you start to touch on a couple of things: one is "Patient journey", which we'll come to in a moment, and the other one is "Air sampling results". You've set out some information, subject to the constraints that we have about identification and jigsaw identification of patients, and so on, in your section on "Patient journey". You do mention the incubation period in 8.3. You describe it as "stated as weeks to months," with a possible reactivation, but you've been assuming a minimum period of seven days. Was there a particular reason for selecting seven days?

A I think that was the absolute worst-case scenario. So, you know, that's-- So, I-- I forget how many days-- So, I mean, this is, again-- I forget how many-- One of the patients was in the hospital for a matter of months, but the other patient, I think, was in the hospital for a matter of weeks. So----

Q You touch on that in paragraph 8.4, where you say that:

"The potential period of infection of Patient A ... is only 9 days in 2018 while Patient B could have been infected over a [different] period, [we'll just say]."

A Yes.

Q Then you raise the question:

"If there was a common source ... it was associated with a maximum 9-day period. "

I want to come back to that with you just in a moment. Was there some activity during this period which could have increased the risks to the patients apart from, what you say at the foot, "being on Wards without positive pressure and HEPA filtration and [lower exchange rates]." Now, can I pause just at that for a moment? I'm going to ask you one or two questions about these numbers. You say at the very top of page 754:

"This period does not appear to have been investigated thoroughly by the expert group."

Can you help us understand what your point there is?

A If you do an epidemiological investigation, especially when you're looking at a number of cases that may have a common source, what you try and look at is the window, the potential window, where that infection could have occurred, and you do that by knowing-- you know, having a window of infection, which is based on the incubation period for the infection.

Q Is that not something that you noted had been examined in that way?

A They weren't asked to examine it, but I feel that a proper investigate-- you know, if you want to investigate the potential of a common source for those two cases, then you would want to identify what was going on during that window.

Q Can I just ask you one or two questions, if I may, that have been suggested I should take up with you about this section of your report, particularly 8.4? As I understand it, Cryptococcus or Cryptococcosis – doesn't matter which for present purposes – is not transmitted person to person, but is generally an airborne spore, is that right?

A Correct. It's not transmitted person to person. Well, there are no cases I am aware of which is transmitted person to person.

Q So when we're looking at the two cases here, is it possible that there was a common source, in other words, a source for generating Cryptococcus that was present over a longer period in the hospital, and therefore these patients could have picked them up at different times, not necessarily in the same overlap period?

A That is possible, yes.

Q Without going into the precise date, how did you work out what you described as the "overlap period"?

A I worked out that period from the incubation for the length of stay of--

where the stays of the two patients overlapped and allowed a week's incubation period for the patient with the shorter stay.

Q Right. Okay, so you take the period during which their stays overlap and you then deduct your notional seven days, is that what you did?

A Yes, that's correct.

Q Why did you deduct the seven days to get to your nine?

A Okay. If the incubation is the seven days, then the patient needs to be seven days in the hospital before it's possible that that infection would be a hospital-acquired infection. So, if they're in the hospital for two days and they are found to be infected with Cryptococcus, that event happened before they came into hospital.

Q But could they have been exposed to a source of Cryptococcus throughout this period, without taking off the seven-day period?

A It takes seven days for the organism to be detected in a person's samples. So, therefore, there's a seven-days----

Q Yes.

A At least seven, at least seven days.

Q But during that seven days, could both patients still have been exposed to the potential infective material? It may not have shown up.

A Yes, it wouldn't show up, no.

Q But could they still have been exposed?

A They could be exposed, but-- Okay, for example, this is 1 November. I could be exposed today, but nobody will know till 8 November.

Q So, if you worked out a period of overlap, does that tell us very much as to when the actual exposure took place? It may tell you about one, but it doesn't necessarily tell you about the other. Is that right?

A I mean, I think if you look at it, you could have a number of scenarios in the fact is that people are continually being exposed to Cryptococcus in the hospital and those patients were exposed to this continuous source that was occurring all over that period of time. Or else you could postulate there was some event that happened on one day that infected both patients, and that's where you come into that sort of short nine-day window.

THE CHAIR: Does the window assume an event as opposed to a chronic state of affairs?

A Yes. So, you know, both things could be a thing.

MR CONNAL: Thank you. The next topic you're dealing with is air sampling. Now, we did have some

discussion with you in the course of yesterday, in the course of your general evidence, about air sampling and some of the challenges of air sampling, but we'll just deal with this section just now, because you say:

"The report contains a great deal of information about extensive air sampling undertaken after the CN cases were identified."

A Yes.

Q Now, in 8.6, you say that:

"It's clear from the reports that ... something was amiss on the 21st of December."

Now, just explain to us why you think there's something notable at that point.

A Well, there was a very high percentage recovery of Cryptococcus from the air samples compared to sampling undertaken later on in the year. So in 21 December, Cryptococcus was found in 50 per cent of samples that weren't overgrown. If a sample-- If an agar plate is overgrown, you can't necessarily say that something isn't there because it could be hidden underneath something else.

Also the fact that the Cryptococci were isolated on wards. For example, in Ward 4C, two out of six samples were positive for a Cryptococcus, and in Ward 6A, three out of six samples were positive for Cryptococcus, which is far higher than found in samples taken later in the year, because there was a lot of air samples taken.

Q Now, these were all, I think, the strain Cryptococcus diffluens, not neoformans?

A Neoformans. In all their samples taken, Cryptococcus neoformans was never identified.

Q Was never identified. We might touch on that a little later, but for the purpose of the point you're making here, you said there was something amiss because there were lots of samples both in the wards and in the plant rooms showing the same Cryptococcus type?

A Well, they are not just the one Cryptococcus type-- I am sort of in the table, I am highlighting the diffluens strain on the grounds that it was found in plant rooms and also in the ward supplied by that plant rooms.

Q Are you able to tell us what it was that was amiss to give rise to these results, or not?

A I can come up with hypotheses, but I can't say for sure. That sampling-- I need to-- I think-- I think I may say later is-- There were pigeon eradication and cleanup activities going on around the same time. Now, it may be that due to this happening, this increased

the levels of Cryptococcus in the air, but that's a hypothesis, not a statement of fact.

Q Do you know if this situation, which you describe as "something obviously amiss," was investigated and an answer acquired by the investigations of the expert group?

A I can't remember. I don't think so, but I think because of those results they carried out sampling on a regular basis, I think until August or September of the next year. So they carried out sampling, I assume, to show that Cryptococcus levels had been reduced and general air-- microbial air concentrations had been reduced.

Q But if we go on to 755, we see there in paragraph 8.8, you're saying:

"Were they due to eradication activities or were they a blip or indicative of what was happening…"

You don't know the answer to that. Is that right?

A I don't know the answer to that. However, there are-- I managed to obtain some air sampling results-- routine air sampling results from Ward 4B taken during this period of time, and there doesn't appear to be any elevated levels of airborne microorganisms from that limited set of data.

Q Now, I want to ask you about that-- you've identified this issue that you're not quite sure what caused it. You go on in 8.9 to say that:

"CN was never detected [you told me that a moment ago] in any of the 3,000 air samples wherever they were taken."

You say that the report indicates that CN is "difficult to detect." So, question whether its absence means it's not there or simply difficult to detect? Do we know the answer to that?

A I think we don't. I think that comes from the UKHSA reference laboratory, but it is just a comment from somebody. I find it difficult to believe that-- I don't understand what the mechanism would make Cryptococcus neoformans harder to detect than Cryptococcus diffluens. There may be a reason for it. I'm not aware of it. I've never seen it in the scientific literature. But I do think not finding an isolate in 3,000 air samples taken is indicative that during the sampling period of time there at least wasn't a lot of it about.

Q Yes, well, you were asked questions about this reference to the 3,000 samples, so we should probably go there. Can we go to the Direction 5 questions? Page 156. You're asked that point:

"Why is the failure to identify CN in 3,000 air samples significant?"

Then you're asked a question about

the environment for aerialised Cryptococcus. Your answer is that, well, it's not been identified:

"It suggests it wasn't there in detectable concentrations."

A Yes.

Q But you then say:

"Information on the behavior of Cryptococci in the air and the effectiveness of air sampling methods is lacking…"

That's the point you were just making a minute or two ago. You don't know why CN is difficult to detect according to the UKHSA.

A I can't see any reason it should be difficult to detect, but it's not a microorganism we know a great deal about, and its behaviour in the air.

Q Yes. Then you respond to the other question by saying that impact of various factors on Cryptococci is another thing that's not known about this particular organism. So I won't trouble you with that.

There was another question, probably along the same lines, was asked if we can go to page 158, Question 14. Again, you're asked, "What's the significance of this?"

You reply to that by responding with a comment on the challenges of air sampling, I think. Is that right?

A I think I make the point that because the air sampling-- and they couldn't do it. The air sampling has to be carried out post the event or the window of infection I've talked about. We don't know what was in the air in the November. We just know what was in the air in December and the subsequent months.

Q I think you go on to make the point that whatever is the issue, it was a large amount of air sample to get those 3,000 samples.

A Yeah. I mean, if I, you know-- they were sampling I think 500-- I think it was 500 litres of air. So there's, you know-- a considerable amount of air has been sampled.

THE CHAIR: Sorry, could you give me that again? They were sampling----

A Each sample was, I think, 500 litres of air.

THE CHAIR: 500 litres?

A Yes.

MR CONNAL: If we just go on to the next page of that, I think you say, if I remember correctly, 500 litres of air was sampled each time----

A Yes.

Q -- at the top of page 159. Is that the point you've just explained to His Lordship?

A Yes. I mean-- So, that's the equivalent of sampling 1,500 cubic meters of air, which is a very large

volume.

THE CHAIR: Thank you. Where were these samples taken? Do we know?

A They were taken in various parts of the hospital. Some of them were taken in wards. Some of them were taken in plant rooms. I think one or two may have been taken in the outside air. I think that (inaudible). So that's where the samples were taken.

THE CHAIR: Thank you.

MR CONNAL: We'll go back to your report. You touch on the topic of pigeon infestation, and you give some extracts from reports on this. I just want to pick up a point you make on page 756. Having commented on the fact that you're not a pigeon expert, you say that:

"The provision of adequate filtration for immunosuppressed patients would have prevented the potential for exposure to supply air contaminated with pigeon - derived material."

That assumes, of course, it was so contaminated.

A Yes.

Q What's the point you're making here? Why are you making that point?

A My point is, if the patients had positive pressure housing and were supplied with HEPA filtered air, in all likelihood, the HEPA filtered air would take out any particulate that would be in the service floor, or at least reduce it quite considerably.

Q So, even Cryptococcus?

A Yes.

Q Thank you. Now, can we move on, then, to touch at least briefly on the individual hypotheses? What you've done in relation to each of these is to record the report's view and then your own view. The first one – and probably the most controversial of the potential issues that are being discussed – is the notion that the Cryptococcus came from the plant room into the air handling units, and thereby to the patient areas.

Now, you say it's assumed in the reports review that there's only one way of Cryptococci entering the supply airstream, and that's when the units are opened and filters are removed. You make the point that's the only time when the as not being pumped into the patient areas, and you identify a possible route. Is that right?

A Yes. I mean, this is, to some extent, surmised but based on some knowledge. Basically, most of a supply air system will be at positive pressure to the outside environment. This means that if there is a leak in the duct, material from the supply duct will come out of the supply duct into the surrounding area. So, there's no chance of infiltration of material in most of the supply air system.

However, there may be-- and I haven't looked at the system in such a way, but there may be the potential for ingress of air into the system before the fan and before the F-- I think F7 or F9 filter. Now, the magnitude of this leakage, I cannot really make a comment on. I'm not saying "probable." I'm saying "possible", but there is a possibility for ingress, in my opinion, of air before the fan unit.

Q Now, I think it will be suggested – or it is suggested – that during the investigation, no one was able to find an actual leaky seal of anything or any actual point at which it be identified that there was a route for the air to infiltrate. Does that alter your comment here or not?

A I've not seen any reports or data that is looking at this. There is, I think, one statement that smoke tests had been carried out but there's no real indication about how widely this was carried out, where it was carried out, and there's no note of the results.

Q Yes. I think it's fair to say you thought smoke tests had not been carried out, but they could have been, and you've subsequently been advised, I think, that some smoke tests were done----

A Yes.

Q -- which you didn't know.

A I didn't know, but I don't know-- there doesn't appear to be any written report on the results of the smoke tests.

Q Yes, and you also mentioned in your report a hole for an actuator spigot. You've subsequently been advised, following further investigation for the Board, that that hole doesn't enter the airstream, as it were, and thus allow ingress.

A Okay. Well, then I have to take that on board.

Q So, I'll come back to your conclusion just in a moment. You say the magnitude of this leakage will be difficult to quantify, but you don't think possibility can be ruled out. Then you say:

"Especially with the matched C. diffluens isolates found on 21 December in air samples from plant rooms and wards they supply air to."

So, you think that's particularly significant? Is that right? We're on page 757 in the middle of paragraph 816.

A Yes. I mean, I do think the matched isolates on the wards and the plant room, to me, warrant some form of identification of whether they could have come from the same source.

Q The next point that you make about panels being removed to prevent cutouts by low temperature, you were subsequently advise that there was no evidence that this had actually been done. Are you aware of that, that you were asked to----

A Yes. I mean, I think people are not always aware of everything that goes on in plant rooms, and they are not areas that are very often-- people don't enter them on a very regular basis. So, I think-- I mean, I'm not-- I'm just saying I don't believe this route is completely ruled out. It might be able to be completely ruled out.

Q Well, what I was going to say was that you gave it a rating, if we're going to use these words, of "possible." In light of any of the other information you've been given, do you still stick with "possible" or do you depart from that?

A I think "possible" warrants further information.

Q Now, if we can move on to the other hypotheses, some we can deal with relatively quickly. Outside air source, so this is not plant room pigeon. It's coming from somewhere else. Report says, "Feasible." You thought that was feasible as well?

A Yeah, I'd agree.

Q Then:

“Hypothesis 3 - Lack of protective isolation. [The report says] possible, particularly in case B, less likely for A.”

Your opinion-- Firmer than that, you say "probable," particularly in case B, less likely for case A. Now, just help us understand that. You set it out----

A I think-- I mean, I say, "Probable contributory" ----

Q Sorry, yes.

A -- which is a different emphasis. I mean, it is my belief that if these patients were in protective isolation, we wouldn't be having this discussion we're having today. That's-- Yeah.

THE CHAIR: Just so I'm following that, the probable contributory-- because we're looking at, I suppose, two different points in the hypothetical supply route.

A Yes.

THE CHAIR: You've put, "If we assume a source"-- I mean, just for the purpose, "If we assume the source is the plant room, and the conduit is the duct, " the reason that we get contributory at that point in your report is that, well, even assuming that was the case, if you had protective isolation, that would have prevented contact between the spores and the patient. So, it's really just a question of where along the pathway we are concerned with.

A If Cryptococcus is in outside air or in the plant room, and there is a route from the plant room into the patient room, which I think-- if that is, then if there was a HEPA filter in the room, there'd be 200 times minimum less numbers of the Cryptococcus in the patient room.

MR CONNAL: You were asked to

explain the way you calculated that. So, can we look at page 159 of your correction 5 responses, where you're asked:

"Please explain your calculations at 8.19. Is it necessary to use a baseline value?"

So, just walk us through your answer there so we're all understanding how you did the calculations.

A Okay. Let's see. How did I do it? So, yes-- So, what I did to compare-- I think they were asked to have a baseline figure, yeah. So, I assumed that 10,000 infection particles are in the air stream going through the different filters. If those particles go through an F9-- sorry, an F7 with a 90 per cent efficiency, which is assuming it's operating correctly, then 1,000 particles will penetrate through the filter.

If a HEPA is used with a 99.95, then less than five particles would enter the supply air. So, that's where you get this 200 times less concentration. Of course, if there's no Cryptococcus in the air supplying the patient rooms, then there is no difference but if there is Cryptococcus there, then that would reduce the patient exposure.

Q Thank you. Can I come back to your paragraph 8.19 in your report, just so we clear up a couple of things. You say, "Why is it"-- the question is, "Why is it probable for both patients, A and B, as a contributory factor but less likely for Patient A?

A Just because of the length of time.

THE CHAIR: Sorry, just because----?

A The length of time they spent in the hospital.

MR CONNAL: Are you aware whether there are any other factors that could arise in addition to simple duration of stay, such as level of immunosuppression or steroid treatment or any of these issues?

A I have no clinical expertise in the impact of those.

Q Yes. Thank you. So if we move on then, on page 758:

"Hypothesis 4: Cylinder Room in the Pediatric Intensive Care Unit. View of report – is possible but unlikely for B and inexplicable for A."

Your view is:

"Very unlikely for B and [likewise] inexplicable for A."

You explain why that is. So there's no real difference apart from you use different words.

A Not really, no.

Q We then come to the helipad. So, this is this issue about downwash from the helicopters, which the report rejected, but you thought was possible.

Is that right?

A Yes.

Q Now, I think you explain why you say that on page 759. Having set out the scenarios that the report considered, you say that the weather conditions were far more variable than those scenarios, including things such as temperature and stratification effects. So, just so we're not getting lost here, the stratification effect that you mention there is what?

A Sometimes air stays in-- I mean, I probably shouldn't have really used it; I'm not the (inaudible). But sometimes air sort of stays at the same height due to differences in temperature. The point I'm sort of making is that weather conditions are very, very variable, and the modellers were only asked to consider a limited number of weather conditions.

Q So is that the basis why you say you can't conclusively rule it out?

A Yes. I'm not saying-- I forget, what do I say at the top? I mean, possible, you know. I don't think it has been ruled out by the work that's been carried out by the company.

Q You asked a question about this. So, if we go to your Direction 5 questions at page 156, right at the foot, you say:

"Has consideration been given to any data on the weather conditions in late November 2018?"

You answer that at the top of the page, having also been asked about helicopter landings, and you say, well:

“There is detailed weather data from Glasgow Airport. [And you say that] during the nine-day window, wind speeds and directions fluctuate.”

Does that mean you say you can't really reach a conclusion?

A I'm not a CFD modeller. I'm not a meteorologist. I mean, I'm mainly saying I don't think the study completely rules out the potential flow of air from the helipad into the intakes. I'm not saying it does; I'm just saying I don't think the information I have received totally rules it out.

Q So are you then comfortable with sticking with that? That's your position: it's still possible, not ruled out.

A I think "not ruled out" is maybe the way I would see it.

Q Well, let's go back to your report and rattle past the next hypothesis, which is these hydraulic sample transmission systems. The report says, "Unlikely," you think very unlikely, so we'll move past that.

Then we have essentially the revival of the latent infection issue, where the report says:

"Very possible for both cases, but likely to be difficult to prove.”

You say:

"Very possible for A, possible for B. Very difficult to prove or disprove."

A Yes. You know, because we know that Cryptococcus can remain latent in the human respiratory tract for periods of over 10 years, and because we know that development of immunosuppression due to disease or due to treatment of disease can end the dormancy and cause reactivation, then I think this cannot be ruled out for either patient, and I think it's very possible.

I mean, as I say, I am coming from a non-clinical background, but I think it is very possible, yes; and I see I wrote "Very possible" and "Possible for Case B." I mean, this is-- I was just differentiating the fact that Case B was younger and Case B was in the hospital for longer, which makes it more possible that the hospital source hypothesis is just by periods of time, but I think it's, as I say, possible for both cases.

Q Well, I was going to ask you about the two elements there. We're talking here about someone who has, as it were, contracted Cryptococcus, but it's having no impact when they're healthy, I think, and then the suggestion is that when the immune system is low, it activates or reactivates, caused by the underlying conditions. So why is the period in hospital relevant as to any distinction between these two patients?

A You might be right. Maybe I should have just not made that distinction.

Q What about age, which you also mentioned? Why is that relevant to this reactivation hypothesis?

A I mean, I think the longer you live, the more likely you are to be exposed to agents like Cryptococcus, I would imagine. However, it has to be said that the study in New York quoted by May and Williamson found significant positivity for Cryptococcus in non-symptomatic children, so it is possible that people can be exposed at a very young age.

Q I wanted to ask you one other question. We've got all these hypotheses, and you've commented on them, and the report has commented on them. When you're describing the hypotheses we've just discussed, would you expect any of them to have phrases attached such as "conclusively ruled out"? Is that the kind of language you would expect to see?

A I mean, I'd say some of them probably are conclusively ruled out. I don't think-- The specimen transport system one doesn't really seem feasible at all.

Q Now, what you go on to do is to touch on some further instances of

Cryptococcus which have been drawn to your attention, and I don't think I need to ask you particularly about that, but I just want to come back to the approach you've taken to what we'll call for the moment the statistical (inaudible) and how many we've got here and how many we've got in the UK as a whole, because there are a couple of questions I want to just come back to.

First of all, if we can go to your Direction 5 answers at page 157, I think what you had done was you'd taken a rough estimate of the sort of greater Glasgow area population to give you something to work with. Is that right?

A Yes.

Q When you were doing these figures. The question that you're asked in Question 7 is:

"What account was taken of the hospital being a tertiary referral centre and did this impact on your report?"

You're asked another question about acquisition outwith the hospital, but we've dealt with that. So just focusing on this tertiary centre point, you say, well, not quite sure what that means. Your figures assume that the hospital is the most likely location for patients with vulnerabilities in the greater Glasgow area. If all child patients with high levels of neutropenia in a wider area are treated, then you accept the figures that you'd quoted would come down.

A Yes, and I think an in-depth epidemiological investigation would take on board some of this information about how systems work and what patients are referred to the hospital. That would be taken into account.

Q Yes. Well, can we move, then, back to your report for a moment? I just want to come to a couple of things. We're going to page 762, where you set out a summary – I'm not going to ask you about whether the cases are remarkable because in a sense that's the point we've just touched on – and then you say again if the patient had been housed in HEPA-filtered, positive pressure rooms, the connection between the hospital environment and the patient could have been rapidly and quickly investigated and ruled out. So, in other words, if the patient had been in a room of that kind, there's no real possibility of it coming through the ventilation system?

A I think that would be correct. Basically, if that had happened, what the investigation would have done would have looked at the records showing that the HEPA filter had been tested and was operating correctly and looked at the positive-pressure monitoring of the room and checked that that was operating correctly. And if those records were obtained, then I think most, if not all,

people would have ruled out any air source either external to the building or from the plant roof.

Q Thank you. Then in your next page, 763, you go to methodology, and I think you've already explained the issue that you have with that, and you make a suggestion in 9.6. Can you just touch on that for us, explain what you're suggesting?

A I'm just suggesting that an investigate-- You know, the problem with the subgroup is the subgroup were given a task. The task was not investigating what had happened. It was investigating hypotheses and maybe investigating in ways of making the hospital environment better. However, if you want to investigate whether there was a common source of this infection, you have to be looking at what happened during the potential infection window**,** and you need to have people who understand epidemiology and understand the disease to just carry out a rapid investigation.

Q Well, I just want to ask you one question about that, that it's been suggested I should put to you. You say that this would be an investigation into possible common factors, and I'm going to ask you what common factors might be. It's been suggested that one is lack of isolation in a HEPA environment; two, the possibility of a prophylaxis which doesn't work against Cryptococcus; and three is just the epidemiological link: you know, time, place, pigeon infestation. Can you think of any other factors that might have helpfully been investigated?

A I mean, there could-- I don't know-- There could be other breaches of infection control that are outwith that area.

Q So, just so we've got that answer. So, you suggest there might be other features of infection control outwith the ones I've mentioned, but are these within your expertise to tell us about?

A Well, I'm talking about being-- investigation. So, I mean-- I think, if you have a patient who is infected with an agent and you believe it occurred in the hospital, then you'll be looking at a lot of different lines and ruling out a lot of different hypotheses. The hypotheses that the subgroup were asked to rule out were entirely environmental-- pretty well entirely environmental. In fact, I think the reactivation hypothesis was raised at a very late date. They were-- The hypotheses they were tasked to look at were, you know, entirely environmental.

Q My Lord, I have no further questions for this witness.

THE CHAIR: Right. Just for my note, Mr Connal, your three possibilities were, again?

MR CONNAL: Sorry, my Lord. I'll

just find it. Lack of isolation in a HEPA environment; prophylaxis ineffective against Cryptococcus; and then you add to that: epidemiological link in time, place, person, pigeon infestation.

THE CHAIR: Right, and – entirely my fault – the purpose of putting that list?

MR CONNAL: The witness had suggested in the report that a different group should have investigated this with a view to looking into possible common factors----

THE CHAIR: Mm-hmm.

MR CONNAL: -- and these factors are suggested as possible common factors, and the question was, "Are there any others you can suggest?"

THE CHAIR: Right. Well, we need to just finally check if there are further questions for Mr Bennett, I take it, Mr Connal? What we'll do, Mr Bennett, is we'll take our coffee break, and if I can ask you to be to be back for, let's say, five to twelve.

THE WITNESS: Okay.

THE CHAIR: You can have coffee in the interim, but Mr Connal can also check with the room as to whether they've got other questions. So, I'm going to ask you to return to the witness room, please, and I think you'll get a cup of coffee.

THE WITNESS: Thank you very much.

(Short break)

THE CHAIR: Mr Connal?

MR CONNAL: I've now been provided with a number of additional questions, my Lord.

THE CHAIR: Mr Bennett, I understand we have some questions.

THE WITNES: Okay.

THE CHAIR: Mr Connal?

MR CONNAL: Thank you, my Lord. Well, first of the questions, Mr Bennett: at one stage of your report, you were relating material that you'd obtained from sources such as the CDC in America over the incubation period for Cryptococcus generally.

A Yes.

Q Subsequently, for the purpose of trying to do your exercise, you adopted a period of seven days.

A Yes.

Q Now, do you have any clinical knowledge which allows you to say that there is a seven-day period for an immunosuppressed individual as an incubation period?

A I don't. I mean, saying that, since Cryptococcus is generally a disease of the immunocompromised, then those figures for seven days-- sorry, for weeks to years would be in general referring to that sort of population.

THE CHAIR: Sorry, my fault, I didn't hear that. Could you just repeat that answer, Mr Bennett?

A So CDC states on their website, which is the clinical information, that the incubation period is from weeks to years. Since Cryptococcus is almost entirely, in America, a disease of the immunocompromised, that period covered immunocompromised people. So I don't-- I mean, as I say, I'm not a clinician. Is the person getting an idea of the incubation period would be shorter for an immunocompromised person? I don't think that's the case.

MR CONNAL: My question was simply whether you had any particular knowledge which allowed you to fix that seven-day period?

A No.

Q The next question is a slightly different one. If-- Sorry, let me start again. The Inquiry's heard quite a lot of evidence about cleaning up of the pigeon deposits from various witnesses. If one assumes for the present purposes, certainly the purposes of this question, that the pigeon guano is the source or a source of Cryptococcus, does sampling after the plant rooms have been cleaned up really tell you anything?

A I don't quite understand the question really?

Q Well, there's some discussion of the number of air samples that were taken at various places.

A Yes.

Q I'll come back to the timing of that in a moment. But if you're trying to find Cryptococcus, for instance, you made the point that there's a large number of samples and there's not much sign of Cryptococcus neoformans, for instance. If these samples are taken after the identified possible source, i.e. the guano in the plant rooms have all been cleaned up, do the samples tell you anything useful at all?

A Well, theoretically, if you take a sample and there's no pigeon material or anything like that, then you may be getting the background level that is in the natural environment from sources unknown.

Q But it wouldn't otherwise tell you anything about the significance of the pigeon deposits, because they've been cleaned? That's really my question.

A Yes.

Q What one of the points you've been very keen to emphasise, and I just want to follow up on that if I can is the-- remember when you answered one of the additional questions you say, "Well, I always tell people when I'm asked about sampling the really important thing is not the kit or the sampler, but actually, when it's taken."

A Yes.

Q And that's one of your main points you make, isn't it?

A Yes. I mean, we don't know what was going on in November. I mean, as I remember, there are very good logs of the work carried out by the clean-up organisation during December. But I don't know whether-- I don't have any information about anything from November.

Q Yes, I suppose the question is: if you don't have air sampling during the periods of possible infection, and possibly before that in the wards that we're concerned with, in all of them, does that not mean that it's difficult to reach a view?

A Well, yes, I mean, yes. I mean, it's all surmised. We know that in December something happened which elevated microbial levels and subsequent to that those levels seemed to be decreasing during the rest of the year. However, we don't have the point on the graph from November. So you can assume that something happened in December that caused a massive peak, or you could say that this was a normal situation for the last six months, but you can't make a conclusion because you just don't have the data.

Q In terms of the detection of Cryptococcus neoformans, did you have information about, for instance, the nature of the agar plates that were used and the incubation conditions and so on that were adopted in an attempt to find that pathogen?

A Yes, and I assume that-- I have seen no scientific evidence that you need different media for Cryptococcus neoformans as against other Cryptococci.

Q Right. So let me just make sure I'm getting this correctly. Did you have, in the course of your investigation, any details of the agar medium and the incubation arrangements for these sampling tests?

A I think I did. I cannot 100 per cent remember. There's quite a large amount of minutes and detail, but I think I did.

Q All you know at the moment, and I just want to be clear, so please let's get this absolutely right. You are not aware of any literature identifying a particular requirement for any particular media or particular incubation conditions – anything different in the search for Cryptococcus neoformans?

A No, I'm not. I mean, I'm pretty sure that the same agar is used for Cryptococci strains and Cryptococcus neoformans.

Q I think you told us earlier – am I right? – that you don't know why it is said to be that CN is difficult to find in air sampling?

A I don't know where that information comes from. I don't know what that opinion is based on.

THE CHAIR: That's a reference in the sub-group's report.

A Yes, they state that the head of the reference laboratory made that comment. But I don't know what information she was basing that on.

MR CONNAL: Now, the only other question I have is this: you described, I think, how HEPA filters were tested, which in effect is creating a collection of particles and then seeing how many of them escaped the grasp of the filter?

A Yes.

Q In the information that you were provided about the Cryptococcus investigation, were you aware of whether there was any testing in the sense of, for instance, creating aerosols in the plant room and following whether any of the aerosols then appeared in patient rooms, anything of that kind? We've heard a little bit about smoke-testing, but you've no information about that. I just wondered if you were aware of anything else done?

A No, no. I mean, there are ways of using tracer particulate or tracer gas that can show the air is moving from one area to another area, that can be done.

THE CHAIR: Again, could you just give me that detail? Again, there are techniques----?

A Yes, you can introduce tracer gases or particulates into an area to see-- and then measure their concentration-- to see whether they go from one area to another area.

MR CONNAL: Are you aware of that having been done in this case?

A No.

Q Thank you, my Lord. I have nothing further.

THE CHAIR: I understand that last answer is on the information available to you, other than the smoke-test on one occasion, it would appear that there was no testing of whether or not air from within the plant room could make its way anywhere else. Is that right? It's really just to understand (inaudible).

A Yes, that's all the information I have.

THE CHAIR: Yes. Well, Mr Bennett, that's the questions we have for you, and you're free to go, but before you do, can I thank you for your evidence yesterday and this morning, and for your reports. Thank you.

THE WITNESS: Thank you.

THE CHAIR: You're now free to go. Thank you very much.

THE WITNESS: Thank you very much.

(<u>The witness withdrew</u>)

THE CHAIR: Mr Connal, my understanding is that our next witness scheduled for Tuesday morning is Mr Mookerjee?

MR CONNAL: That is correct, my Lord, and Mr Mackintosh will be returning.

THE CHAIR: Right. Well, can I wish everyone a pleasant afternoon, a good weekend and, all being well, we'll see each other on Tuesday morning.

(Sessions ends)

12:15