

1 THE INQUIRY RESUMED ON MONDAY, 5TH OCTOBER 2026 AS
2 FOLLOWS:

3
4 CHAIRMAN: Good morning, Mr. Greaney.

5 MR. GREANEY: Sir, good morning.

10:05

6
7 INTRODUCTORY REMARKS BY MR. GREANEY:

8
9 MR. GREANEY: On a number of occasions, PSNI has raised
10 an issue about the scope of the Inquiry, so that is to
11 say, PSNI has raised the issue of whether the
12 questioning, both by Counsel to the Inquiry, and by
13 Core Participants have passed outside the Terms of
14 Reference. That issue has principally been raised by
15 PSNI through inquiry's Rule 10 Evidence Outline
16 Process. I'll have something to say, Sir, about that
17 in due course.

10:05

10:05

18
19 But by Thursday, the position had been reached at which
20 the Inquiry Legal Team considered that PSNI ought to
21 put its submissions into writing, so that all Core
22 Participants could understand their position, make
23 submissions on it so that you, Sir, could make a
24 decision, if a decision is necessary.

10:05

25
26 Sir, at the moment we are unsure whether a decision by
27 you will be necessary, but no doubt that's something
28 that Mr. Henry will address and we would invite him to
29 make his submissions on this topic now.

10:06

1 CHAIRMAN: Just before we do, can I ask for some
2 assistance with my transcript. I'm not entirely sure
3 what I've got on the screen at the moment.

4 MR. GREANEY: Mine is working. [Short pause]. Is your
5 transcript now working, Sir? 10:07

6 CHAIRMAN: Yes, thank you. Mr. Henry, good morning.
7

8 SUBMISSION BY MR. HENRY:
9

10 MR. HENRY: Good morning, my Lord. Thank you very much 10:07
11 for hearing us on this issue. Hopefully your Lordship
12 will have seen the note that we produced on Friday?

13 CHAIRMAN: Yes.

14 MR. HENRY: And it, I hope, succinctly sets out for you
15 the nature of our concern. If I could just come 10:07
16 straight to the crux of the issue. The concern is
17 about the questioning becoming solely about the
18 adequacy of the original police investigation, first by
19 the RUC and then by the PSNI. And in making that
20 observation, we're mindful that we have explicit 10:07
21 references previously to that not being the purpose of
22 the Inquiry, and I pause for a moment to recognise the
23 validity of the point that there's a difference between
24 the purpose of the Inquiry on the one hand and the
25 potential questions which may be asked on the other. 10:08
26

27 And Mr. Greaney raised a point just at the end of his
28 introduction this morning about whether or not this
29 requires a determination by you. And I'm not sure that

1 that is possible, my Lord, because you'll see from the
2 note that we accept that there is proper scope for the
3 evidence to explore issues such as, in a limited way,
4 scene-setting but also, perhaps more importantly,
5 identifying suspects and also then, thirdly, what I've 10:08
6 referred to as systemic issues which may have had an
7 impact on previous investigations and, therefore, speak
8 to the issue of preventability.

9
10 Now, there's a few caveats after that last 10:09
11 observations, there will be differences between the
12 Omagh investigation and those previous investigations.
13 And, also, the previous investigations are only
14 relevant if the Inquiry ultimately makes a
15 determination in some shape or form that there's a link 10:09
16 between them, albeit you have to explore those previous
17 incidents in order to establish such a link.

18
19 So, I'm not sure, my Lord, that you will be able to
20 make a clinical decision, as it were. This really 10:09
21 comes down to the type and the tone of the questioning
22 which is asked, and we simply ask that the Inquiry bear
23 in mind at all times, the principal question, the
24 principal issue is one of preventability and that
25 should inform all of the evidence which is adduced 10:10
26 during the course of this Inquiry.

27
28 In making this observation as well, my Lord, we're
29 mindful of the natural tendency - and we don't make any

1 criticism of the lawyers in this regard, including
2 myself as well, there is a tendency to slip into
3 critique of adequacy during the course of examination
4 of evidence and our fear is that that will happen, to
5 some extent, during the course of the Inquiry evidence, 10:10
6 losing sight of the ultimate goal of addressing the
7 question of preventability and focusing unduly on that
8 simple question of adequacy.

9
10 So, I hope, my Lord, that that is of some assistance to 10:10
11 you in terms of setting out the PSNI's position as
12 concisely and as fairly as we can.

13 CHAIRMAN: So, if I've understood you correctly,
14 Mr. Henry, what you wish to highlight is a concern
15 rather than state an objection to lines of questioning 10:11
16 or admissibility of evidence?

17 MR. HENRY: That's correct, my Lord. I don't think
18 it's possible for to you draw a bright line and issue a
19 determination, if you like, to say this question is
20 permissible and this question is not permissible in 10:11
21 advance. So, what we're doing is raising the concern
22 at this stage so that that informs how the evidence
23 develops.

24 CHAIRMAN: I suppose it's understandable that any
25 concern which arises in your mind or in the mind of 10:12
26 your Core Participants will be one which is focused on
27 or influenced by your own interests in the proceedings
28 and you're own concerns about them. What you've
29 articulated at the moment is a concern about allowing

1 the questioning becoming solely about the adequacy of
2 the original investigation. I don't think there's any
3 possibility of that at all. The issues which we're
4 exploring are far broader than that and if there's any
5 analysis of the adequacy of the original investigation, 10:13
6 its purpose is only to cast light back on the
7 underlying question of preventability.

8
9 I don't think, for myself, that anyone so far has
10 demonstrated an interest which is solely focused on the 10:13
11 adequacy of the original investigation.

12
13 So, what I can do is to bear in mind the concern which
14 you've expressed and to keep in mind the importance of
15 focusing on the underlying question of preventability. 10:13
16 But in doing so, I would have to recognise, as you have
17 yourself, that there is some relevance in analysing
18 issues concerning how the Omagh bomb investigation
19 unfolded.

20 MR. HENRY: well, those words do provide some 10:14
21 reassurance and are very welcome, my Lord, so thank
22 you.

23 CHAIRMAN: Thank you very much Mr. Henry.

24
25 INTRODUCTORY REMARKS BY MR. HENRY: 10:14
26

27 MR. GREANEY: Sir, I should have said at the outset
28 that you have received written submissions as follows:
29 You received the submissions of PSNI on 2nd October, so

1 last Friday. We, the Inquiry Legal Team, responded
2 yesterday, 4th October, and later on yesterday into the
3 evening submissions were received from the Fox Law Core
4 Participants. And I'm going to ask Mr. Southey this
5 question, namely, whether in light of the fact that no 10:14
6 ruling is sought, he feels it necessary to make his
7 submissions. Of course, if he does, you will hear
8 them.

9 MR. SOUTHEY: I don't think it's necessary to make
10 submissions. All I would ask is that -- well, firstly, 10:15
11 I hope the submissions were of value, but, secondly, in
12 particular, I draw attention to what we said about the
13 remarks of the English Divisional Court in the Cabinet
14 Office judicial review, recognising, effectively, the
15 Inquiry can act as a funnel, so it takes a wide 10:15
16 approach to questioning, to funnel in on the issues.
17 And that's the one thing we particularly wish to
18 highlight, but I don't think there's any point saying
19 anything more.

20 CHAIRMAN: I think that's a well-made point, 10:15
21 Mr. Southey.

22 MR. GREANEY: Sir, notwithstanding that a ruling is not
23 sought, could we be excused setting out the position of
24 the Inquiry Legal Team just in a small number of
25 sentences. 10:15

26 CHAIRMAN: Yes.

27 MR. GREANEY: Sir, our position is that it is not the
28 function or objective of the Inquiry to consider the
29 adequacy of the investigation by the police. But, if

1 the investigation of the Terms of Reference requires
2 the Inquiry to explore issues that do bring into the
3 adequacy of the investigation indirectly or
4 collaterally, that doesn't mean that we are stepping
5 outside the Terms of Reference. Indeed, on the 10:16
6 contrary, Sir, if you were simply to ignore any aspect
7 of the investigation, because it brings in the adequacy
8 of the PSNI investigation and we know from what
9 Mr. Henry has said that (inaudible) the invitation, but
10 if you were to ignore any aspect of the investigation 10:16
11 on that basis you would not be discharging your
12 responsibilities which, Sir, we know is the opposite,
13 the very opposite of what you intend.

14
15 There are a number of aspects of legitimate 10:16
16 investigation by the Inquiry that fall into the
17 category of lines of investigation that may bring in
18 the adequacy of the police investigation. And, Sir,
19 we've set out what those are, or at any rate what they
20 seem to us to be both in correspondence in and our 10:16
21 opening statement of 21st September and we don't intend
22 to repeat them now.

23
24 Sir, it is well established that an investigation such
25 as yours should be seen as a funnel, wide at the top 10:17
26 and narrow at the bottom and, in our view, what
27 happened during the evidence last week and that which
28 will continue to happen this week, is within scope as
29 understood in those terms. But, of course, Sir, you

1 should keep the questioning under review so as to
2 ensure that the focus of the questioning does not
3 become exclusive upon or principally upon the adequacy
4 of the police investigation.

5
6 So, while we're dealing with this we need to make a
7 point about the Rule 10 Evidence Outline Process and
8 what we're about to say should not be understood as a
9 criticism, instead we would like it to be regarded as
10 guidance.

11
12 The purpose of the Rule 10 Evidence Outline Process is
13 to apply a sensible and efficient structure to Core
14 Participant applications to ask questions of witnesses.
15 Its purpose is not to comment on topics the Inquiry
16 Legal Team propose questions should be asked about, and
17 still less is it a vehicle for submissions about the
18 scope of the Inquiry or its conduct.

19
20 Sir, where Core Participants have submissions to make
21 about issues such as scope or conduct, in no way do we
22 seek to discourage them from raising them before you.
23 However, in our view, such issues must be ventilated in
24 a way that affords all Core Participants the
25 opportunity to comment and which enables you, Sir, to
26 rule in open if a ruling is needed.

27
28 Sir, that's all we propose to say at this stage.
29

1 we're going to turn now to Part 7 of Chapter 3, as we
2 all know, that deals with the police investigation and
3 other subsequent processes. The first witness will be
4 Prof. Angela Gallop who is within the hearing room, who
5 I'll invite to return to the witness box and who
6 remains sworn. Prof. Gallop, would you return to the
7 witness box please.

10:19

8 CHAIRMAN: Good morning, Professor.

9 MR. GREANEY: Sir, I'm presuming that where a witness,
10 such as Prof. Gallop and Colonel MacMullen returns to
11 the witness box, they do not need to be resworn.

10:19

12 CHAIRMAN: I think that's right.

13
14 PROF. ANGELA GALLOP (ALREADY SWORN) WAS QUESTIONED BY
15 MR. GREANEY AS FOLLOWS:

10:19

16
17 1 Q. MR. GREANEY: Professor, would you begin, please, just
18 by giving us your name for the purposes of the
19 recording?

20 A. Angela Mary Cecilia Gallop.

10:19

21 2 Q. Professor, you gave evidence last week, of course, in
22 relation to a first report prepared by you and a team
23 of forensic scientists working to you?

24 A. Yes, I did.

25 3 Q. which we had called it Report 1?

10:19

26 A. Yes.

27 4 Q. Did you and your team prepare a second report?

28 A. Yes, we did.

29 5 Q. And in its most recent iteration is that second report

1 dated August of this year?

2 A. Yes, that's right.

3 6 Q. Within your team and indeed within the Inquiry Legal
4 Team have we been calling that report, Report 2A?

5 A. Yes. 10:20

6 7 Q. And what was the purpose of Report 2A?

7 A. It was to deal with the forensic investigation of the
8 Omagh bombing.

9 8 Q. So, Report 2A moved us away from the general?

10 A. The general. 10:20

11 9 Q. Or the theoretical?

12 A. Yes.

13 10 Q. Into the reality of the works of scientific
14 investigation conducted as part of the police
15 investigation into the Omagh bombing? 10:20

16 A. Yes, that's correct and in relation to two time periods
17 in particular; one was in the investigation in the
18 immediate aftermath of the bombing and the other one
19 was following publication of the Police Ombudsman's
20 report. 10:21

21 11 Q. So, the period from 15th August 1998 until the report
22 of the Ombudsman in December 2001?

23 A. Yes.

24 12 Q. And then the period after the publication of the
25 Ombudsman's report? 10:21

26 A. Yes.

27 13 Q. But I think it would be right to say that you were in
28 that second phase not considering the period from
29 December 2001 up until the current time, you were

1 considering the period December 2001 and the period
2 immediately thereafter?

3 A. Yes, that's correct.

4 14 Q. And was the division in the period of time identified
5 because it was thought at one stage that the work of 10:21
6 the Ombudsman had been the trigger for additional
7 investigations of a forensic science nature?

8 A. I believe it was, but it was your instructions to deal
9 with those two periods of time.

10 15 Q. But, in the result it turned out that the 10:22
11 reinvigoration - if that's the right way of putting it
12 - of the work of the forensic scientists had not been
13 triggered by the report of the Ombudsman but had
14 started at some earlier stage?

15 A. Yes, that's correct, that's what we all felt. 10:22

16 16 Q. Now, in your evidence today I'm going to ask you to
17 help us in two stages. First of all, within Report 2A
18 there is an Executive Summary which runs from page 5 to
19 page 9 --

20 A. Yes. 10:22

21 17 Q. -- I should say for the purposes of the transcript.
22 I'm going to pause for one moment because there is, and
23 was when you were speaking and when Mr. Henry was
24 speaking, an echo today, I don't know if you can hear
25 it. That's better, I think. We'll carry on and see. 10:22
26 Certainly, I personally was finding it a little
27 distracting, so if that can be solved, please can it
28 be.
29

1 I was saying, we're going to take your evidence in two
2 connected stages, Professor, first of all, within your
3 report, which is INQ 048905 we will deal with your
4 Executive Summary between pages 5 and 9, and that will
5 be stage 1. And stage 2 will take us to a presentation 10:23
6 that you have prepared for the purposes of this second
7 day of your evidence, is that correct?

8 A. Yes, that's correct.

9 18 Q. That presentation being INQ 049716, it runs to 18
10 slides and I will just invite you to talk us through 10:23
11 each of those slides?

12 A. Yeah.

13 19 Q. I think the echo has been solved now, thank you for
14 dealing with that so quickly.

15 10:23

16 we don't need that on the screen, thank you very much.
17

18 At the risk of stating the obvious, is the history of
19 the scientific investigation of the Omagh bombing
20 extremely complex? 10:24

21 A. Yes, it is.

22 20 Q. And is that entirely unsurprising given the nature and
23 severity of the attack in Omagh?

24 A. Yes, that's correct, it's what you'd expect.

25 21 Q. And the consequence extent of the efforts to identify 10:24
26 those responsible and the timescale over which those
27 efforts were made?

28 A. Yes.

29 22 Q. And who was the bulk of the scientific work carried out

1 by?

2 A. The Forensic Science Agency Northern Ireland, so the

3 forensic lab in Belfast.

4 23 Q. Sometimes known as FSANI?

5 A. FSANI, yes. 10:24

6 24 Q. Was that laboratory well known as of 1998 for its

7 expertise in explosives?

8 A. Yes, it was.

9 25 Q. Simply because of the number of such incidents that it

10 had had to deal with over the course of decades? 10:25

11 A. Yes, that's correct.

12 26 Q. And later on, however, and specifically in relation to

13 DNA analysis, was some work also conducted in

14 laboratories of the Forensic Science Service in England

15 and Wales? 10:25

16 A. Yes.

17 27 Q. Now, one issue that we are going to be touching upon as

18 we go through your evidence is the issue of linked

19 incidents or previous incidents?

20 A. Yes. 10:25

21 28 Q. And by that I mean there is a belief that those

22 terrorists who carried out the Omagh attack were also

23 responsible for a series of other attacks or attempted

24 attacks in the period before the Omagh bombing?

25 A. Yes. 10:25

26 29 Q. I think you wish to be clear that although it will be

27 necessary for you to touch upon a small number of those

28 earlier incidents, the focus of Report 2A most

29 certainly was not on those previous incidents?

1 A. Yes, that's right. We did not investigate any other
2 incidents, it was just the Omagh bombing at this stage.

3 30 Q. And just as the Inquiry is going to explore the
4 previous incidents in subsequent chapters, Chapters 4
5 and 6, of its work, equally you and your team are going 10:26
6 to consider previous incidents in a separate report,
7 namely Report 2B?

8 A. Yes, that's right.

9 31 Q. Now, first of all, I want to deal with the issue of
10 resourcing, and the Omagh bombing occurred as part of 10:26
11 increased in terrorist activity following the breakdown
12 in the 1994 ceasefire of the Provisional IRA, is that
13 correct?

14 A. Yes.

15 32 Q. And in the period after the ceasefire in 1994, was 10:26
16 there an impact upon the resources of the laboratory in
17 Northern Ireland or at any rate in the deployment of
18 those resources?

19 A. Yes. FSANI had scaled back resources for investigating
20 explosions while the ceasefire was in force with some 10:27
21 staff reassigned to different sections in the
22 laboratory.

23 33 Q. And was that something that you regarded as being
24 surprising in the circumstances?

25 A. No, I think, you know, if the cases were not coming in 10:27
26 and they were very valuable members of staff, you'd
27 expect them to be redeployed into other areas where
28 they could use their skills usefully.

29 34 Q. So, in circumstances in which there were fewer

1 explosions for those forensic scientists to
2 investigate, it was understandable and totally
3 unsurprising that resources should be deployed
4 elsewhere?

5 A. Yes, that's right. 10:28

6 35 Q. But on the breakdown of the ceasefire and more
7 particularly during 1997 and 1998 as attacks by violent
8 dissident republicans increased, were you able to
9 detect any rearrangements of the deployment of
10 resources within FSANI? 10:28

11 A. Well, I think we really went by what was available at
12 the time of the Omagh bombing and there was only one
13 on-call scientist for explosions at that time in the
14 laboratory, the rest were redeployed and it didn't seem
15 to have changed. Because over the previous two years 10:28
16 the number of cases had been rising and there had been
17 a lot in 1997, I think 60-something, and so you might
18 have expected there to have been some redistribution of
19 staff again.

20 36 Q. So, I just want to make sure that I've understood this. 10:28
21 Within the report, you provide the figures for the
22 number of cases, cases involving explosives that had
23 come to the laboratory over the period '96 to '98 and
24 the figures you give were 1996, nine cases?

25 A. Yes, that's right. 10:29

26 37 Q. 1997, a very large jump to 65 cases?

27 A. 65, yes, that's right.

28 38 Q. And then a further jump in 1998 to 76 cases?

29 A. That's right.

1 39 Q. And what you had seen after the understandable
2 redeployment --
3 A. Yes.
4 40 Q. -- between '94 and '96, was not mirrored by a
5 scaling-back, so far as you could tell in the period 10:29
6 after the ceasefire?
7 A. Yes, it didn't appear to have been.
8 41 Q. So, as you've told us, as of 15th August 1998, there
9 was only one on-call explosive scientist at the
10 laboratory? 10:30
11 A. Yes, that's what they said.
12 42 Q. And in fact he was away?
13 A. Yes.
14 43 Q. And so other scientists had to step into his place?
15 A. Yes, that's right. 10:30
16 44 Q. And, in particular, Dennis McAuley had to step in to
17 his place?
18 A. Yes, yes, that's right.
19 45 Q. And we heard evidence about Dennis McAuley last week
20 and, in particular, we heard from Hazel Hutson of FEL 10:30
21 and she described him as having very significant
22 forensic explosives experience?
23 A. Yes.
24 46 Q. Perhaps unparalleled globally?
25 A. Yes. I don't know about globally but certainly 10:30
26 definitely in the UK.
27 47 Q. Now, we're going to learn from you when we start to
28 look at your slides something about the concept of an
29 investigation strategy and a forensic strategy?

1 A. Yes.

2 48 Q. Could you just explain in a sentence or two what a
3 forensic strategy is, please?

4 A. Well, a forensic strategy is a plan for examination and
5 testing in the laboratory, well, I suppose, it begins 10:31
6 at the scene as well, what you do at the scene but then
7 very much what you do in the laboratory and it's really
8 important to have a plan so that you make sure that you
9 do the right things at the right time, and so on.

10 49 Q. And as you explained when you gave evidence on the 10:31
11 first occasion, the forensic strategy forms part of an
12 overall investigative strategy --

13 A. Yes.

14 50 Q. -- which is set by the senior investigating officer?

15 A. Yes, that's right. 10:31

16 51 Q. So, these are things that are in place to ensure there
17 is a proper structure for the investigation?

18 A. Yes.

19 52 Q. And to ensure that nothing is missed?

20 A. That's right. 10:31

21 53 Q. Were you able to find anything to indicate that
22 Mr. McAuley worked to a formal investigation strategy?

23 A. No. We didn't. It appeared to be an informal approach
24 he took.

25 54 Q. And did it seem to you, from what you read, that he had 10:32
26 relied on his training, knowledge and his extensive
27 experience to guide him as to what to do, when do it,
28 and whether to liaise with others and so on?

29 A. Yes, that's right.

1 55 Q. And judged by the standards of today, that would be a
2 surprising approach, would it not?
3 A. It would by today's standards, yes.
4 56 Q. But we need to take care not to judge what happened
5 1998 by today's standards? 10:32
6 A. Absolutely.
7 57 Q. Judged by the standards of 1998, how would you regard
8 the approach as adopted?
9 A. I would regard it as very, a very, very common sort of
10 approach at even a complex scene. 10:33
11 58 Q. Were formal strategies in use at all in investigations
12 in 1998?
13 A. No, they were beginning to develop and I think I have a
14 slide about that to explain why they developed in the
15 way that they did and maybe they developed in different 10:33
16 parts of the country at different times and for
17 specific reasons, obviously.
18 59 Q. So, you were starting to see them in some places in
19 relation to complex investigations?
20 A. Yes, I think they were starting but they were embryonic 10:33
21 in those days.
22 60 Q. And so you find it unsurprising --
23 A. Yeah.
24 61 Q. -- that Dennis McAuley wasn't working to such a
25 strategy? 10:33
26 A. Yes, absolutely.
27 62 Q. And, certainly, that is not something that you would
28 level a criticism in respect of?
29 A. No.

1 63 Q. Now, against that background, did Dennis McAuley
2 undertake a narrow or wide range of roles in the
3 scientific investigation?
4 A. He took a very wide range of roles, or what would be
5 regarded these days as a wide range of roles. 10:34
6 64 Q. And what did his roles encompass?
7 A. Well, he was leading the forensic examination at the
8 scene and the selection and collection of items of
9 potential interest for investigation that needed closer
10 attention. He was acting as the main point of liaison 10:34
11 with the police, the police investigation team. He was
12 leading the subsequent laboratory work involving a team
13 of scientists in several different disciplines, and he
14 was also involved in doing some of the laboratory work
15 himself within his own section. 10:34
16 65 Q. So, judged by the standards of today that would be
17 regarded as an extremely wide ranging --
18 A. Yes, yes.
19 66 Q. -- range of roles?
20 A. Yes. 10:35
21 67 Q. And judged by the standards of today, would there be a
22 sense that a person with all of those roles was being
23 spread rather too thin?
24 A. Yes.
25 68 Q. But judged by the standards of 1998, how would you 10:35
26 regard the range of roles that Mr. McAuley had
27 undertaken?
28 A. Not uncommon.
29 69 Q. So, this really reflects what you told us about

1 forensic science on the first occasion that just as
2 with all types of science it has moved, long developed
3 and one would hope improved?

4 A. Yes, yes.

5 70 Q. So that what was happening in 1998, if it were to 10:35
6 happen now, would be unacceptable but was certainly
7 within a range of reasonable responses judged by the
8 standards of that day?

9 A. Yes, definitely.

10 71 Q. At page 6 of your report you say: 10:35
11
12 "In the late 1990s, and with all these
13 responsibilities, it is disappointing but not
14 particularly surprising that there was apparently no
15 formal written strategy and associated paperwork for 10:36
16 the early scientific investigation."
17

18 A. Yes, that's correct.

19 72 Q. And in what way would you regard it "as disappointing
20 but not particularly surprising?" 10:36

21 A. Well, not particularly surprising because that was the
22 approach that was very commonly taken in those days.
23 Disappointing because obviously if you're coming along
24 afterwards and trying to discover what happened, you
25 know, you have to piece it together so it's more 10:36
26 complex. And I imagine at the time it was, you know, I
27 imagine that Dennis McAuley felt that he had so many
28 balls in the air that it was quite difficult keeping on
29 top of them all.

1 73 Q. In your report you emphasise that Dennis McAuley and
2 police officers he worked with made good progress in
3 the first few days of the investigation?
4 A. Yes, they did.

5 74 Q. They identified, amongst the large amounts of 10:37
6 post-blast debris, component parts of the explosive
7 device?
8 A. Yes.

9 75 Q. Parts of the vehicle in which the bomb had been
10 conveyed to the scene? 10:37
11 A. Yes.

12 76 Q. And they identified, for example, handsets from the
13 telephone boxes from which the warning calls had been
14 made?
15 A. Yes. well, I imagine that the police investigation 10:37
16 showed, you know, what handsets were relevant, but yes.

17 77 Q. But really within quite a short period of time --
18 A. Yes.

19 78 Q. -- a large amount of material that was relevant for
20 scientific investigation was ingathered -- 10:37
21 A. Yes, that's right.

22 79 Q. -- so that the work of analysis could be carried out?
23 A. That's right.

24 80 Q. Was it apparent to you that Dennis McAuley had liaised
25 with and coordinated a team of other scientists? 10:38
26 A. Yes, that's what he described having done and yes,
27 that's what it would have looked like.

28 81 Q. And was that a sensible step for him to have taken?
29 A. Yes, it was.

1 82 Q. who was part of that team of other scientists, not in
2 terms of identity but in terms of specialism?
3 A. well, the biologists were involved, looking at blood
4 grouping and DNA, the early DNA that was being used at
5 the time. There were textile fibre experts. There 10:38
6 were forensic chemists looking at marks and chemical
7 traces. There were -- there was handwriting experts
8 available, I'm not saying they were all working right
9 from the very beginning but he had a number of people
10 in his team. 10:39
11 83 Q. And Dennis McAuley liaised with those other members of
12 the team and as you look at the materials that are
13 available, did it seem to you that he did so, so
14 liaised, informally or formally with them?
15 A. I would think it's informally, it was difficult because 10:39
16 there wasn't the record, the documentary record of
17 meetings and actions decided upon and so on, as you
18 might expect today. So, it's important to wade through
19 some of the paperwork and try pull out what one can
20 from that. And it seemed, certainly, that there was 10:39
21 some informal discussions taking place in the
22 laboratory and Dennis McAuley had described how he had
23 this team of scientists working and how he was
24 coordinating what they did.
25 84 Q. And no doubt liaison between forensic scientists of 10:40
26 different disciplines is important for a number of
27 reasons?
28 A. Yes.
29 85 Q. And those reasons might involve prioritisation of

1 particular investigations --

2 A. Yes.

3 86 Q. -- where a number of investigations of different types
4 might be possible in relation to a single exhibit
5 deciding which investigation to carry out? 10:40

6 A. Yes, the order.

7 87 Q. The order in which to carry them out?

8 A. Yes, absolutely.

9 88 Q. And it would also be important for the forensic
10 scientist to have an understanding of where their 10:40
11 particular investigation fitted into an overall
12 picture?

13 A. Yes.

14 89 Q. And the extent to which their findings were consistent
15 or inconsistent with other findings? 10:40

16 A. Yes, that's right, yes.

17 90 Q. So, bearing in mind that forensic scientists have a
18 critical role in the investigation, liaison of all of
19 those types would be important?

20 A. Yes. 10:41

21 91 Q. And have I correctly understood that judged by the
22 standards of today that the kind of informal liaison
23 that you were seeing would be surprising?

24 A. No, it would be the standard way of doing it in those
25 days. 10:41

26 92 Q. Judged by the standards of today would it be
27 surprising?

28 A. Yes. Well, I don't think we can be surprised when, you
29 know, it was different in those days but if that case

1 had happened today, yes, then it would be surprising.

2 93 Q. But judged by the standards of 1998 what you were

3 seeing was --

4 A. Not surprising.

5 94 Q. -- not surprising? 10:41

6 A. Yeah.

7 95 Q. So, that was the position prior to the Ombudsman's

8 report, obviously --

9 A. Yes.

10 96 Q. -- with the different experts in your team we're going 10:41

11 to do this in more detail --

12 A. Yeah.

13 97 Q. -- but Dennis McAuley had a substantial burden of

14 responsibility?

15 A. Yes. 10:42

16 98 Q. But he appears to have discharged that and liaised with

17 other scientists, albeit on an informal basis?

18 A. Yes.

19 99 Q. And you were also able to see that the team of forensic

20 scientists, including Mr. McAuley, attended regular 10:42

21 case conferences with the police investigators?

22 A. Yes, I think particularly when the scene examination

23 was under way because that took several days. But then

24 I imagine after that there were fairly regular, well

25 certainly contact with the police and fairly regular 10:42

26 meetings, I would have thought, over quite a time.

27 100 Q. So that it appeared, as was appropriate, the findings

28 of the forensic scientists were being fed into the

29 broader investigation?

1 A. Yes, yes.

2 101 Q. Now, let's move on and we'll start a little before the
3 Ombudsman's report in December 2001. Was it apparent
4 to you that there developed some concerns about the
5 police investigation overall? 10:43

6 A. Yes, the police, I think, were concerned about their
7 own investigation and instigated an internal review in
8 2000.

9 102 Q. So I'm now at the top of page 7 of your report for
10 those who are following it. 10:43

11 A. Yes.

12 103 Q. In March of 2000, the RUC conducted an internal review
13 of the investigation to date?

14 A. Yes.

15 104 Q. So, bearing in mind that the Ombudsman's report didn't 10:43
16 come in until more than 18 months later, self-evidently
17 that was not the result of the Ombudsman's report?

18 A. Yes, no, no.

19 105 Q. But would appear to be something coming internally out
20 of the RUC? 10:43

21 A. Yes.

22 106 Q. And as part of that internal review known overall as
23 the McVicker Review, was the work undertaken by the
24 forensic scientists considered?

25 A. Yes, it was. 10:44

26 107 Q. And was the appointment of a specialist adviser
27 something that occurred?

28 A. Yes.

29 108 Q. And who was that person?

1 A. John Davidson was appointed to review the work of the
2 forensic scientists at FSANI, and he began his work
3 during 2000.

4 109 Q. Although a little later, I think in October 2000?
5 A. Well, I think he began his work in the summer and then 10:44
6 reported in October.

7 110 Q. I see. And where was John Davidson from?
8 A. From the Forensic Science Service.

9 111 Q. So, he was from a different organisation from FSANI?
10 A. Yes, England and Wales, so Forensic Science Service was 10:44
11 responsible for --

12 112 Q. And was he senior and experienced forensic scientist?
13 A. Yes, he was.

14 113 Q. And, therefore, a suitable person to be given that
15 specialist adviser role? 10:45
16 A. Yes.

17 114 Q. In October 2000, when, as you pointed out to me, John
18 Davidson produced his report, did it contain
19 recommendations?
20 A. Yes, it did. 10:45

21 115 Q. And at a high level, what did those recommendations
22 reality to?
23 A. Well, ten of the recommendations related to general
24 improvements that he thought might be able to be made,
25 and 25 of them related to specific technical 10:45
26 suggestions that he had.

27 116 Q. Was one of the general recommendations made by
28 John Davidson that there should be appointed a
29 scientist having no other specific involvement in the

1 case, to liaise closely with the investigation team and
2 to coordinate the work of the various specialists
3 throughout the Inquiry?

4 A. Yes, that's correct.

5 117 Q. So, as we know, Dennis McAuley had had responsibilities 10:46
6 which really started at the ground?

7 A. Yes.

8 118 Q. And went up to supervising other scientists and
9 liaising with them?

10 A. Yes. Or coordinating their work and liaising with 10:46
11 them, I'm not exactly sure whether you'd, you know --
12 the terminology "supervised," I'm not sure.

13 119 Q. Supervising, that was my word --

14 A. Yeah.

15 120 Q. -- and that might not be right? 10:46

16 A. Yeah.

17 121 Q. But liaising and coordinating?

18 A. Yes, absolutely.

19 122 Q. So, not just doing the work on the ground?

20 A. No. 10:46

21 123 Q. But doing something that was broader and important?

22 A. Yes, yes.

23 124 Q. The recommendation of John Davidson was that someone
24 with no other involvement in the case should be brought
25 in to liaise with the police investigators and to 10:46
26 coordinate the work of the various specialists?

27 A. Yes, that's correct.

28 125 Q. And do you regard that as having been a sensible
29 recommendation for him to make?

1 fibre expert?

2 A. Yes, she was well known as textile fibre expert.

3 134 Q. And she was appointed lead scientist for the case?

4 A. Yes.

5 135 Q. In the period after John Davidson of the Forensic 10:48
6 Science Service and Ruth Griffin were appointed to
7 those roles, what happened?

8 A. They ensured that the technical recommendations that
9 had been made in this 2000 report were followed and
10 they produced a progress reports every now and again. 10:48
11 I remember one in March is it, and one in April,
12 throughout the year they produced progress reports and
13 then in December 2001 they produced another large
14 report because a lot of the results had come through by
15 then of the various investigations and examinations 10:49
16 that had been suggested. So, you could see that there
17 was a lot of progress being made during that year.

18 136 Q. The way in which you put it is there then followed -
19 followed after the appointments of those two persons -
20 a period of intense activity with a more formal 10:49
21 strategy and as the technical recommendations from
22 Davidson's report were acted upon and developed
23 documented through more formal progress reports.

24 A. Yes, that's correct.

25 137 Q. So, a number of things had happened. So, the burden 10:49
26 had been taken off Dennis McAuley to an extent that was
27 significant?

28 A. Yes.

29 138 Q. That there was oversight by someone who was independent

1 of the actual work of investigation that was taking
2 place?

3 A. Yes.

4 139 Q. People were working to a more formal strategy?

5 A. Yes. 10:50

6 140 Q. And what was being done by them was documented through
7 more formal progress reports?

8 A. Yes, that's correct.

9 141 Q. You've been very careful to be clear that what was
10 happening in 1998 and following, was commonplace by the 10:50
11 standards of today?

12 A. Yes.

13 142 Q. Not something you criticise, but would it be fair to
14 say that what was implemented after the report of
15 John Davidson in October 2000 represented improvements 10:50
16 on what had gone before?

17 A. Yes, yes.

18 143 Q. And is it your judgment that those were improvements
19 that were a consequence of the fact that a number of
20 years had moved on now and forensic science had 10:51
21 developed over that period, or is it your view that
22 these were improvements that could have been in place
23 at the time but simply weren't in place at the time
24 because a different approach was adopted?

25 A. I don't think that it could have been in place at the 10:51
26 time. The Forensic Science Service had just started
27 appointing experienced scientists as scientific
28 specialist advisers and so I think the Omagh bombing
29 happened probably just around the time that that was

happening. And these advisers, their role was to bring, you know, fresh ideas and fresh light and more structure to cases. So, John Davidson was doing exactly what he should be doing as a scientific adviser, I don't think it's surprising the sort of things he was thinking about hadn't been thought about before.

10:51

144 Q. So, in part, these improvements were the consequences
of an evolution in thinking --

A. Exactly.

10:52

145 Q. -- in forensic science?

A. Exactly.

146 Q. And also where someone is brought in to conduct a
review, one would expect them to be very focused on how
can things be made better?

10:52

A. Yes, that's right.

147 Q. So, I believe that where we've reached is that notwithstanding that these were improvements post-October 2000, the fact that it could improve what had been in place before should not be regarded as a criticism of what was in place?

10:52

A. Yes, that's right.

148 Q. In December of 2001, did John Davidson and Ruth Griffin
produce a joint report?

A. Yes, they did.

10:52

149 Q. what did that describe?

A. well, using their own words but it was certainly backed up by what the contents of the report, but they described the exhaustive attempts made by the

1 scientific team to identify any links with suspects for
2 the Omagh bombing and also to see if there were any
3 links with any of three other incidents in 1998 prior
4 to Omagh.

5 150 Q. So, they were looking at three other incidents prior to 10:53
6 the Omagh attack?

7 A. Yes.

8 151 Q. And those were bombs in Lisburn on 30th April '98?

9 A. Yes.

10 152 Q. Newry on 13th July '98? 10:53

11 A. Yes.

12 153 Q. And Banbridge on 1st August 1998?

13 A. Yes, that's right.

14 154 Q. And there was a focus on those three because the same
15 sort of explosive device had been used? 10:53

16 A. Yes, that's right.

17 155 Q. And, as you say in the report, some mobile phone links
18 had also been established?

19 A. Yes.

20 156 Q. So, this is an example of where you are touching upon 10:54
21 some of the other incidents, a small number of them,
22 but we're not going to delve into the comparisons
23 between those incidents and Omagh?

24 A. Mmm.

25 157 Q. what I will ask you - and in asking it I recognise you 10:54
26 may not be able to answer definitively there in the
27 witness box - from what you saw, was December 2001 the
28 first time that attempts were being made to link Omagh
29 to earlier attacks, or had such thinking started at an

1 earlier point in time?

2 A. I think I'd have to go away and look that up, I'm not
3 sure. I imagine that they were reporting on something
4 which could have been running for a few months, I'm not
5 sure but I can always look that up. 10:54

6 158 Q. Obviously, you're going to have to come back and give
7 evidence again?

8 A. Yes.

9 159 Q. Possibly tomorrow and certainly in subsequent chapters,
10 this is probably something that we can allow you some 10:54
11 time to research and for you to give evidence about in
12 due course.

13 A. Okay, yes, thank you.

14 160 Q. But in all events, December 2001, that thinking was
15 under way: Can we link the Omagh bombing to earlier 10:55
16 attacks?

17 A. Yes.

18 161 Q. In December 2001, where did John Davidson and
19 Ruth Griffin consider the main forensic opportunities
20 to lay? 10:55

21 A. They considered that they lay with the new DNA
22 profiling technique, the low copy number technique, and
23 with fingerprints, obviously, as well.

24 162 Q. So, two particular opportunities; fingerprints which
25 obviously was a technique that had been in use for 10:55
26 generations?

27 A. Yes.

28 163 Q. But the new DNA profiling technique known as LCN or low
29 copy number?

1 A. Yes.

2 164 Q. I just need to understand a little bit about that. Was
3 DNA testing and profiling of any type in existence in
4 1998?

5 A. Yes. 10:56

6 165 Q. And what was the name that was given to the type of
7 profiling that was then available?

8 A. SGM, that's what it was called, second generation
9 multiplex I think it stood for.

10 166 Q. So, DNA profiling of one sort or another had been in 10:56
11 existence, I think you told us last time, for more than
12 a decade?

13 A. Yes, about a decade.

14 167 Q. But here in 1998 the technique that was being used was
15 SGM? 10:56

16 A. Yes.

17 168 Q. I don't want to descend into the detail of it, one of
18 your colleagues is going to give evidence about DNA?

19 A. Absolutely, yes.

20 169 Q. He can no doubt deal with the technicalities, if that's 10:56
21 necessary.

22 A. Yes.

23 170 Q. But in 1998 was the LCN technique available?

24 A. It was only -- no, it wasn't available in 1998, it
25 became available shortly afterwards. 10:56

26 171 Q. So, this was not something that was available in August
27 1998 --

28 A. No.

29 172 Q. -- as the work of the scientific investigation started?

1 A. No.

2 173 Q. But it was introduced by Forensic Science Service in
3 England and Wales in 1999?

4 A. Yes, yes.

5 174 Q. But was that only for use within their own 10:57
6 laboratories?

7 A. Yes, although they would do work from other
8 laboratories if it was sent to them.

9 175 Q. By 2001, when John Davidson and Ruth Griffin reported,
10 was the LCN technique becoming more widely known about 10:57
11 and more widely available?

12 A. Yes.

13 176 Q. At that stage would the technique have been available
14 here in Northern Ireland at FSANI or would it still
15 only have been available through FSS? 10:57

16 A. I'm not sure when FSANI started to use the technique
17 but I imagine it would be later than that, quite a time
18 to introduce it.

19 177 Q. At the time in 1998 that the technique was SGM, did
20 people realise that there was going to be a major 10:58
21 development just around the corner?

22 A. I think you'd have to ask Dr. Avenell that.

23 178 Q. What was the major innovation that LCN brought?

24 A. It was much more sensitive than, you know, SGM, the
25 traditional techniques or the techniques in use and so 10:58
26 that meant that you could get DNA profiles from much
27 smaller amounts of material, and so for the first time
28 it meant that it was potentially possible to get a DNA
29 profile from a surface that someone had just touched

1 rather than leaving some of their body fluid on it.
2 179 Q. So, a really significant development?
3 A. Yes.
4 180 Q. Whereas SGM required a natural deposit of blood or
5 another bodily fluid? 10:59
6 A. Yes.
7 181 Q. Here just a mere act of touching something could be
8 tested for DNA?
9 A. Yes.
10 182 Q. As LCN became more well known as a technique, did that 10:59
11 reveal a problem that had occurred with SGM testing -
12 it's a very inelegant question but do you understand
13 what I'm driving at?
14 A. Yes. It became obvious that you had to be incredibly
15 careful about what you applied it to and make 10:59
16 absolutely certain that as far as you could that no
17 contamination could have occurred. Because you were
18 looking for such tiny amounts of DNA, there was a risk,
19 you know, even within the laboratory unless you dressed
20 up in the much more elaborate way and cleaned the 10:59
21 surfaces in a much more thorough way than was necessary
22 previously, then you might get some crossover of DNA.
23 And, of course, it produced many more mixtures of DNA
24 which were difficult to deconvolute, sometimes
25 impossible to deconvolute into separate sources. 11:00
26 183 Q. Yes.
27 A. So, it did present forensic scientists with additional
28 problems, and they became clearer the more that the
29 technique was used.

1 184 Q. Again, that wouldn't be a criticism of anyone, it was
2 just the fact that they didn't know what they didn't
3 know at the time of the SGM testing?
4 A. Yes, exactly.

5 185 Q. So, within forensic science generally did forensic 11:00
6 scientists have any experience of getting an exhibit
7 that had been the subject of SGM testing --
8 A. Yes.

9 186 Q. -- and then that not being suitable for LCN testing
10 because the protocols that later became appropriate had 11:00
11 not been applied to the SGM testing?
12 A. That's exactly right.

13 187 Q. And was that something that you saw in the course of
14 the investigation into the Omagh bombing that followed
15 on from the work of John Davidson and Ruth Griffin? 11:01
16 A. Well, in the decisions that were made not to test some
17 things because they had been examined in the laboratory
18 before the rigorous cleanliness conditions had been
19 applied. And so, yes, it definitely affected some of
20 the items in this case. 11:01

21 188 Q. So, all of this work has come from the appointment of
22 John Davidson and his and Ruth Griffin's report in
23 October 2000 and then in December 2001, all of that is
24 something which is generated internally from within the
25 policing Northern Ireland and has nothing do with the 11:01
26 report of the Police Ombudsman in December 2001?
27 A. That's correct.

28 189 Q. Did John Davidson produce a later report in 2004?
29 A. Yes, he did.

1 190 Q. And what did he report at that stage?
2 A. He described how he'd assessed the extent of quality
3 assurance in place at FSANI and had found, for example,
4 that the examinations and tests performed are the most
5 appropriate to serve the needs of justice in this case. 11:02
6 As far as possible, all of the examinations and tests
7 carried out were appropriate and no items that should
8 have been examined have been overlooked. And all the
9 work that has been carried out -- all the work has been
10 carried out to current established best practice using 11:02
11 the necessary reference and control samples.
12 191 Q. And that was John Davidson's view?
13 A. Yes.
14 192 Q. What view did you and your team come to about whether
15 he was right or wrong? 11:02
16 A. We felt that the general quality of the case notes and
17 wide range of written quality management procedures
18 reflected in the documents on the Inquiry database that
19 we've been given access to would tend to confirm this,
20 although we are also very happy to accept his judgment 11:03
21 because he did this -- he was able to do this in-depth
22 review of the original case files and he also discussed
23 everything with the scientists themselves.
24 193 Q. Let's just come again to that background to some of you
25 your team's conclusions at a high level. 11:03
26
27 Presumably, there are always more examinations and
28 there is always further testing that can be carried
29 out?

1 A. Yes, that's right.

2 194 Q. And what do you say in the report:

3

4 "Sometimes they illustrate the law of diminishing

5 returns." 11:03

6

7 A. Yes.

8 195 Q. But sometimes they can be critical to unlocking

9 important evidence?

10 A. Yes. 11:03

11 196 Q. But that said, what does the documentary evidence

12 available to your team suggest in relation to the

13 quality of the scientific work that was undertaken as

14 part of the Omagh bombing investigation?

15 A. The scientific work was at a high standard for the 11:04

16 time.

17 197 Q. And what did you conclude about the absence of a formal

18 strategy?

19 A. Despite the fact that there was no formal strategy at

20 the outset, scene examination appears to have been 11:04

21 dealt with efficiently until uncovered critical

22 evidence with the explosive device identified at a

23 relatively early stage in what where, by any standards,

24 very difficult circumstances.

25 198 Q. Did you conclude that team structural issues, perhaps 11:04

26 laboratory staffing levels, may well have meant that

27 some laboratory work was less well coordinated and

28 documented than might otherwise have been the case?

29 A. Yes, I think it's true.

1 199 Q. And was it your view that that could conceivably have
2 led to some missed evidential opportunities?
3 A. It could have done.

4 200 Q. But that many of those would have been made up for by
5 the renewed impetus provided by support from the FSS 11:05
6 scientific adviser and the appointment of a lead
7 scientist within FSANI?
8 A. Yes, that's correct.

9 201 Q. So namely when John Davidson and Ruth Griffin were
10 appointed? 11:05
11 A. Yes, yes.

12 202 Q. Was there one area that contained potentially the most
13 significant missed opportunities at that time?
14 A. Yes, we felt that there was.

15 203 Q. And what was that area? 11:05
16 A. Fingerprints.

17 204 Q. And did you have in mind in expressing that concern,
18 the limited range of reference samples taken from
19 individual suspects?
20 A. Yes. 11:06

21 205 Q. The apparently narrow scope of fingerprint database
22 interrogation?
23 A. Yes.

24 206 Q. And the, as you put it, apparent and unusual lack of
25 support from the New Scotland Yard Fingerprint Bureau 11:06
26 who kept most active files on terrorist suspects
27 operating in the United Kingdom?
28 A. Yes, that's correct.

29 207 Q. And you covered this just a few moments ago, but what

1 conclusion did you come to in relation to the DNA work
2 that was undertaken over time?

3 A. well, the highly sensitive LCN technique had been under
4 development at the Forensic Science Service but hadn't
5 been released for casework use at the time of the Omagh 11:06
6 incident. And when it was, from 1999 onwards, it was
7 only available as a service through the Forensic
8 Science Service. It was then that the extreme risks of
9 contamination associated with use of the technique
10 started to become evident and measures put in place to 11:07
11 avoid them. This was around the time 2000/2001 that
12 use of the technique was suggested for Omagh when many
13 of the examinations of suitable items had already been
14 carried out. In other words, when it was too late for
15 these risks to be mitigated in relation to these items. 11:07

16 208 Q. So, as everyone in this room knows, DNA profiling has
17 become an extremely powerful technical tool for
18 investigators?

19 A. Yes.

20 209 Q. And many, many prosecutions depend upon DNA evidence? 11:07

21 A. Yes.

22 210 Q. But, its power as a tool didn't become a reality until
23 the early 2000s?

24 A. Yes.

25 211 Q. In 1998, as you observe, fingerprints and intelligence 11:08
26 were the two principal means by which suspects in
27 criminal investigations were initially identified?

28 A. Yes.

29 212 Q. which meant that the early identification of suspects

1 was critical for effective forensic science?

2 A. Yes.

3 213 Q. And why was that?

4 A. Because potentially significant physical marks and
5 traces on, for example, suspects' clothing, in their 11:08
6 vehicles and items from addresses associated with them
7 can be lost or become changed over time. To this
8 extent, anything which affects initial identifications
9 and the speed with which these can be acted upon can
10 have a significant impact on a forensic investigation. 11:08

11 214 Q. Thank you very much, Professor. And what we're going
12 do next is to turn to the presentation that you have
13 prepared for this phase in your evidence. And so I
14 will ask, at this stage, that we put the presentation
15 on the screen - INQ 049716. And we may be able to get 11:09
16 to the end of this before we need to take a break but
17 if a break is needed sooner than I'm indicating one
18 please just do let me know.

19

20 Here we see this is your presentation for your 11:09
21 Report 2A in August of 2026. Just as when you gave
22 evidence on the first occasion, I'm going to let you do
23 the talking to these slides but I may ask you to pause
24 from time to time to provide further information. So,
25 page 2, please. 11:09

26

27 [Presentation played]. This presentation sees us
28 moving, as you told us, from the general to the
29 specific --

1 A. Yes.

2 215 Q. -- with the Omagh bombing itself. And you tell us,
3 "using scanned documents," explain that to us please?

4 A. Yes, the Inquiry has set up this database of documents
5 including all of the forensic science case files and 11:10
6 related documents such as witness statements and so on,
7 as well as a lot of other background material and we
8 have access to this and this is the main source of
9 information that we've relied upon.

10 216 Q. And you used that material to explore the forensic 11:10
11 science strategies?

12 A. Yes, that's right.

13 217 Q. Preparedness in the immediate aftermath and, as you
14 were instructed to do, following the publication of
15 Ombudsman's report in December 2001? 11:10

16 A. Yes, that's correct.

17 218 Q. Against that background, what were you instructed to
18 consider?

19 A. In these key areas, fingerprints, DNA, textile fibres,
20 marks, chemical traces and questioned documents, we 11:11
21 were asked specific questions. And these are the
22 report and this presentation, therefore, refers to our
23 responses to these particular questions. So, in which
24 case was, you know, which items were recovered from the
25 scene and elsewhere and submitted to FSANI in each of 11:11
26 these areas. What forensic testing was carried out on
27 them and what results were obtained from it? And then
28 what are the past and current views of the reliability
29 of the testing. And then what evidence, if any, was

1 uncovered during the relevant time periods that we were
2 considering in the immediate aftermath and after the
3 Ombudsman's report? And to what extent was this
4 capable of identifying specific individuals?

5 219 Q. It would be fair, I think, to say that you didn't find 11:12
6 answering those questions straightforward for a number
7 of reasons which you have listed at the bottom of that
8 page?

9 A. Yes, that's correct.

10 220 Q. So, different exhibit numbering systems had been used? 11:12

11 A. Yes.

12 221 Q. And there were multiple methods employed for recording
13 and reporting results?

14 A. Yes, exactly. The laboratories, two different
15 laboratories used different numbering systems and the 11:12
16 police used another numbering system, so there was lots
17 of scope for difficulty there. And then when samples
18 were taken from items, so sub-sampling, that created --
19 that was done in different ways in different places, so
20 that, again was another level of complexity so it was 11:12
21 difficult. And difficult anyway to use a document
22 database, it's much better to go back to the original
23 case files where you can flip through them and get an
24 idea of, you know, the progression of a case rather
25 than having to work it out from individual documents. 11:13

26 222 Q. And there were, within all of that, difficulties
27 because sometimes you would see the same exhibit
28 reference but it would relate to different items from
29 different investigations?

1 A. Yes, yes.

2 223 Q. And different scientific teams were working on the
3 investigation and each had, it seemed, their own
4 individual way of recording things?

5 A. That's right. 11:13

6 224 Q. So, there was a task for you in other words?

7 A. Yes.

8 225 Q. Could we go to Slide 3 please. So, this takes us back
9 to something you have told us about already?

10 A. Yes. 11:13

11 226 Q. From '94 there was a scaling-back or redeployment of
12 staff within the explosion and fire sections?

13 A. Yes.

14 227 Q. Post-1996 and particularly in '97 and '98 there was an
15 increase in attacks and attempted attacks employing 11:14
16 explosives but there did not seem to have been a
17 redeployment back to the pre-ceasefire levels --

18 A. No.

19 228 Q. -- by August '98?

20 A. No. 11:14

21 229 Q. Page 4, please. [Presentation played]. And I said
22 that would you tell us more about forensic strategies
23 and I believe this is the slide that will enable you to
24 do so?

25 A. Yes, that's right. Explaining how strategies developed 11:14
26 I explained what they were, that they're plans for
27 deploying tests. And they were historical,
28 historically informal, relying on the experience of the
29 lead scientist, which is what we see in this case with

1 Dennis McAuley. And they were based on police requests
2 and submission forms accompanying items to the
3 laboratory, findings at the crime scene, case
4 conferences, you know, lots of different ways in which
5 information could be provided, which would result in an 11:15
6 aspect of strategy.

7
8 But then, in the 1980s there was a move away, because
9 of the amount of casework that was coming in, there was
10 a move away from reporting scientists or lead 11:15
11 scientists having their own dedicated assistants to
12 having assistant pools and this meant that there wasn't
13 that close connection that there had been hitherto
14 between assistant and reporting scientist. And there
15 were also special analytical teams set up as 11:15
16 instruments became larger and more complex. It was
17 found that scientists couldn't just drop their
18 examinations at the bench and go off and run a few
19 samples on this machine, but you needed a proper team
20 to keep it working. And so, again that distanced the 11:16
21 reporting scientist from the technical activity in the
22 laboratory.

23
24 And this all led to more formal instructions. You
25 know, they had to say I want this done on that and so 11:16
26 on, and so that they got what they needed in their
27 particular case. So, more formal examination and
28 testing instructions.

1 Then layered on top of that, certainly in England and
2 Wales, was the privatisation of forensic science when
3 the Forensic Science Service became a private
4 organisation, and the police were very keen to
5 understand whether they were getting value for money 11:16
6 and compare one supplier with another. And you also
7 got improved quality assurance requirements, and all
8 this led to a sort of, what I've called a finer focus
9 on the activities that were going on within the
10 laboratory. 11:17

11 230 Q. Did that process drive an improvement in standards
12 would you say?

13 A. I think it did and I think competition also helped with
14 that. So, it's a complex picture. But, yes, things
15 were improving all the time and in all laboratories, 11:17
16 but in England and Wales it was slightly different
17 because of this, you know, privatisation and comparing
18 one organisation with another.

19 231 Q. Yes.

20 A. Now, FSANI at this time was centrally funded and so it 11:17
21 may not have been affected to the same extent as the
22 laboratories in England and Wales, it's difficult to
23 know. But strategies, we're talking about the late
24 1990s and strategies were still, as I said earlier, in
25 their relevant infancy in the late 1990s, they're much 11:17
26 more complex now. You would have a strategy for a case
27 and you'd have a strategy for each item that you
28 examine these days.
29

1 And, for example, it wasn't until the 2000s that the
2 model for case interpretation and assessment that I
3 talked about last time was introduced. So, you would
4 see that's an important aspect of strategy.

5 232 Q. Yes. 11:18

6 A. But that wasn't introduced until the 2000s.

7 233 Q. And we saw the diagram on the screen when you last gave
8 evidence in relation to the CAI model which introduced
9 a degree of independence into the scientific --

10 A. Yes, exactly. Exactly. 11:18

11 234 Q. That hadn't been there to the same extent as they were
12 previously?

13 A. Yes.

14 235 Q. So, page 5 please. So, this deals with the forensic
15 strategies, first of all in the immediate aftermath, 11:18
16 which we dealt with extensively in your evidence a
17 little earlier. We then have the review starting in
18 March of 2000 and the use of FSS and NCF advisers, the
19 NCF advisers being?

20 A. David Barclay, and he did a report primarily on 11:18
21 fingerprints but it also mentioned other aspects too.

22 236 Q. So, the new forensic strategies May 2000, Locksley, who
23 was Locksley?

24 A. He was David Locksley who was the first scientific
25 adviser appointed to the RUC but unfortunately he 11:19
26 became seriously ill and that's why he was replaced
27 over the summer by John Davidson.

28 237 Q. Who brought Ruth Griffin in as a lead scientist?

29 A. Yes.

1 238 Q. So, they come in in the summer, in October they prepare
2 the first report that we've been through?
3 A. Yes.

4 239 Q. And then there's a name you've told us about in
5 December 2001, Barclay, so was there a review of the 11:19
6 fingerprint work at that point in time?
7 A. Yes.

8 240 Q. Which no doubt we'll be told about tomorrow. And then
9 as for the Police Ombudsman's report in December 2001,
10 it's clear that that was not, as you said, the trigger 11:20
11 for the review but the view formed is that it may have
12 added some impetus to the work or review that was
13 already under way?
14 A. Yes. Yes, I think it might have done. I think the
15 real trigger for a lot more activity was that 2000 11:20
16 report of John Davidson, I think that's where it
17 started.

18 241 Q. Yes.
19 A. That's October 2000, and then the RUC, obviously, used
20 that as part of their own report of their internal 11:20
21 review in their report of November 2000.

22 242 Q. So, it's, in other words, the work review of
23 John Davidson, the role that he had identified that he
24 then filled yielded benefits in terms of the
25 investigation that was then undertaken? 11:20
26 A. Yes, yes.

27 243 Q. Six please. So, this is headed "forensic testing
28 reflecting strategy." What is this telling us?
29 A. Well, this is how, you know we've heard about the

1 strategy and how that developed, but this is what
2 actually happened on the laboratory bench, as it were.
3 well, first of all, obviously, the improvised device
4 from debris for components and the organisation
5 responsible and also links for other incidents, so it 11:21
6 was really important, the work that Dennis McAuley did
7 in identifying those critical bits of evidence from the
8 scene.

9
10 And then, there was emphasis on the key items from the 11:21
11 scene, the bomb carry remains and the warning call
12 phone boxes and looking for personal traces from the
13 bomb maker or his associates including things like
14 fingerprints, hair, and DNA.

15 11:21
16 And then moving past personal traces, moving to
17 environmental marks and traces from the equipment that
18 the bomb maker was using and from his environment, the
19 environment in which he assembled the bomb. So there
20 were textile fibres, tool and manufacturing marks and 11:22
21 chemical analysis of things like glue --

22 244 Q. Yes.

23 A. -- that are critical there. And then later on the
24 scope was extended to other kinds of expertise,
25 handwriting and inks, and the new technology because 11:22
26 that was now beginning to come in, the LCN DNA
27 technique but, obviously, never for getting the
28 importance of recognising contamination risks. And
29 then really looking at other incidents and looking at

1 them not just for the type of device and the details of
2 the device but also other aspects of evidence that
3 might link incidents, so it could be DNA or it could be
4 textile fibres or things like that. But, all of the
5 detail, I think, of that will be provided by individual 11:23
6 scientists who you're going to hear from.

7 245 Q. Over the course of today and tomorrow.

8 A. Yeah.

9 246 Q. Just whilst you were telling us about the IED, there is
10 interest on the part of Core Participants in respect of 11:23
11 the fact that the TPU was identified as a Mk 19 TPU. I
12 believe your position is that it appeared from what you
13 had seen that that identification was made by the
14 forensic scientists quite quickly after 15th August?

15 A. Yes. 11:23

16 247 Q. But as for a precise date, that's something you will
17 take away and come back to us with?

18 A. Yes, yes.

19 248 Q. Page 7 please. And this is headed "standards."

20 A. Yes, this is just talking about quality standards. The 11:24
21 case notes, analytical results and witness statements
22 indicated that in keeping with the time investigation
23 strategies, the immediate aftermath of the bombing
24 tended to be informal. Large numbers of items were
25 examined. The appropriate range of tests and 11:24
26 techniques were deployed and the results were of good
27 quality, you could see that. And the scientists were
28 clearly under stress. And I think we imagined that
29 they would be, but then the recent statements that

1 we've had from some of the original scientists have
2 actually spelt this out but we aren't at all surprised
3 by that.

4 249 Q. No, and if any of them are watching these proceedings
5 it's important we should emphasise that you concluded 11:25
6 that the appropriate range of tests and techniques were
7 deployed and that they produced good results?

8 A. Yes.

9 250 Q. And that your work identified no critical additional
10 tests? 11:25

11 A. That's right, yes.

12 251 Q. Some comparisons weren't meaningful or possible, owing
13 to time delays?

14 A. Yes, that's right.

15 252 Q. So, an example that's given in the report is on the 11:25
16 manufactured number plate, the false plate for the
17 car --

18 A. Yes.

19 253 Q. -- there were tool marks on part of it?

20 A. Yes. 11:25

21 254 Q. But by the time the forensic scientists got their hands
22 on any tools --

23 A. Yes.

24 255 Q. -- years had passed and those tools would have been
25 subject to additional work pressure and would have 11:25
26 changed so that there could not be meaningful
27 comparison?

28 A. That's right, and Dr. Jacob can talk about that if you
29 want more detail on that.

1 256 Q. Absolutely. And some analyses weren't suitable because
2 of contamination risks, DNA for example?
3 A. Yes, that's right.
4 257 Q. And some results were not fully utilised through a lack
5 of suspect data or a limited database, searching, for 11:26
6 example, the point you made about fingerprints?
7 A. Yes, that's right.
8 258 Q. Would you bear with me for one moment, please. We will
9 get to the end of this and then we'll have a break and
10 Core Participants will have some questions for you. 11:26
11
12 Page 8 next please, "cooperation with other
13 organisations?"
14 A. Yes. This was in response to a question that I think
15 the original scientists were asked as part of this 11:26
16 process.
17 259 Q. Yes.
18 A. And this is a summary of what they've said, where
19 they've mentioned it. So some mentioned some things,
20 some mentioned others. But it's quite clear, I mean 11:27
21 they said that they had limited engagement with other
22 organisations but in relation to the RUC and about
23 casework, of course, they had frequent engagement with
24 them because they were working with them to try and
25 make headway with their investigations. They obviously 11:27
26 had close ties with the Forensic Science Service around
27 specific types of expertise, for example, recovering,
28 enhancing fingerprints. Specialist DNA services, we've
29 heard about that. And, also, some historic comparison

1 data basis, for example, vehicle paints and that sort
2 of thing, I think one of them mentions.

3
4 And then with the Weapons and Explosives Research
5 Centre of the RUC, some cooperation relating to trends 11:27
6 and patterns in vehicle-borne IEDs. But there also
7 seemed to have been some closer informal contact. I
8 think the handwriting team were physically located
9 close to the WERC. And so, sometimes they would be
10 asked to give an informal opinion about something and 11:28
11 certainly the scientist involved mentions that and
12 mentions particularly writing on TPUs.

13
14 They had limited formal engagement, they say, with the
15 military, mostly about scene safety and awareness 11:28
16 training and so on. And some contact in relation to
17 testing and evaluation of IEDs. And limited
18 engagement, also, with the Forensic Science Service in
19 Ireland, in Éire, mostly about cross-border cases.
20 They also -- there was a but if sharing of specific 11:29
21 expertise and, on occasion, they helped with peaks in
22 caseload. So, they would take some cases and work them
23 through when -- I'm not quite sure whether it was both
24 ways or just one-way traffic, but they would certainly
25 help to deal with peaks to make sure the work was 11:29
26 progressed more effectively than it could be otherwise,
27 and particularly in relation to DNA.

28 260 Q. Now, at page 9 of your presentation you deal with
29 explosive devices and substances?

1 A. Yes.

2 261 Q. And, as you know, we heard from Hazel Hutson of the
3 Forensic Explosive Laboratory about that on Thursday of
4 last week?

5 A. Yes. 11:29

6 262 Q. And then at page 10 you deal with fingerprints;
7 page 11, DNA; page 12, textile fibres; page 13, marks
8 and traces; and page 14, questioned documents. And
9 separate members of your team are going to deal with
10 each of those. 11:30

11 A. Yes.

12 263 Q. I won't trouble you to summarise their conclusions.

13 A. I'm grateful.

14 264 Q. But I will ask you to help us with your overall
15 conclusions at pages 15, 16 and 17. Could we go to 11:30
16 page 15, please. [Presentation played].
17

18 So, you had focused on those two time periods, and what
19 overall did you conclude, you and your team, Professor?

20 A. That the scientific investigation strategies are very 11:30
21 important and they've developed over time and I've
22 described why they've developed and how they've
23 developed. I thought it was important to go through
24 that because it provides background to Dennis McAuley's
25 approach and then the involvement of the Forensic 11:30
26 Science Service adviser, John Davidson, and the role
27 that Ruth Griffin was appointed to.

28 265 Q. That has, as you put in the slide, re-energising
29 impact?

1 A. Yes, absolutely. I think that that's when the
2 investigation really changed track and became much more
3 effective.

4 266 Q. Page 16, please.

5 A. Which was the point of appointing them in the first 11:31
6 place.

7 267 Q. Absolutely. I mean why have a review unless the review
8 is going to identify --

9 A. Absolutely.

10 268 Q. -- things that might be done differently and one would 11:31
11 hope better?

12 A. Yes, absolutely.

13 269 Q. We've been through this, the fact that they did
14 identify improvements is, in your judgment, not
15 reflective of the criticism of those who went earlier? 11:31

16 A. Yes, that's right.

17 270 Q. Then page 16, would you talk us through this slide
18 please?

19 A. I've said here:

20 11:31

21 "Overall, despite significant and clearly stressful
22 lack of resource..."

23

24 As I say, supported by recent statements from the
25 scientists involved there was a large amount of 11:32
26 scientific work carried out in this case to a good
27 standard during the relevant time periods and, in
28 particular, I think Dennis McAuley managed the scene
29 examination really well, identifying the precise nature

1 of the explosive device at an early stage, and ensuring
2 that laboratory work in the other disciplines got under
3 way.

4 271 Q. There are, as you say, signs that this work could have
5 been better coordinated and more fully documented? 11:32

6 A. Yes.

7 272 Q. But you didn't find that surprising in the
8 circumstances?

9 A. Yes, that's with hindsight. It's not surprising in the
10 circumstances. 11:32

11 273 Q. And while some opportunities may have been missed or
12 work taken a little longer, you say "this may not have
13 affected outcome"?

14 A. Yes, I think that's right.

15 274 Q. By outcome what are you talking about? 11:32

16 A. What they found.

17 275 Q. And, certainly, when the scientific investigation
18 extended and was enriched under John Davidson and
19 Ruth Griffin, it was not especially surprising that
20 their long shot efforts failed to result in the 11:33
21 emergence of robust scientific evidence?

22 A. Yes, they described them as long shot efforts
23 themselves, I think, and I agree with that, but you
24 never know what you're going to get so it's always
25 worth trying the long shot just in case something 11:33
26 emerges from it.

27 276 Q. So, the foundational work had been done by
28 Dennis McAuley and the team that were working with him
29 and when John Davidson and Ruth Griffin were appointed

1 they identified some long shots?

2 A. Yes.

3 277 Q. And took those but they did not produce any useful
4 outcome?

5 A. No. 11:33

6 278 Q. And then page 17. [Presentation played].

7 A. It's unfortunate that the DNA LCN technique wasn't
8 available from the outset, it was sort of definitely
9 well on its way but was not available. And then, of
10 course, the extent of its use was curtailed by these 11:34
11 concerns, retrospective concerns about contamination
12 and the fact that some items couldn't be examined
13 because they had been exposed to environment that could
14 have meant that they could have become contaminated,
15 and give misleading results. So, that was really 11:34
16 unfortunate.

17 279 Q. And it was also unfortunate that it may have been
18 unavoidable that items from suspects --

19 A. Mmm.

20 280 Q. -- didn't become available to the forensic scientists 11:34
21 until it was too late for useful comparisons to be
22 made?

23 A. Yes, that's right.

24 281 Q. For example, the ends of sticky tape?

25 A. Yes. 11:35

26 282 Q. Comparing it?

27 A. Yes.

28 283 Q. Pointless if years had passed?

29 A. Yes, that's right.

1 284 Q. And the same with tools, as we've explored earlier?
2 A. Yes.

3 285 Q. You observe, and we'll get into this later on, that
4 it's unclear why evidence of a potential link involving
5 blue-green acrylic fibres between the TPU and a jumper 11:35
6 from the home address of two suspects assumed
7 diminishing importance?

8 A. Yes, not clear from the records that we've got access
9 to.

10 286 Q. And then your final conclusion, would you say, perhaps 11:35
11 most significantly, was what?

12 A. Despite good work from the RUC fingerprint expert,
13 Julie Mallaghan, gaps in the reference prints from
14 suspects, including the more detailed TACT prints which
15 are just a more thorough way of taking fingerprints, 11:35
16 the limited scope of database interrogation and the
17 apparent and unusual lack of involvement of the
18 Metropolitan Police fingerprint experts means that the
19 full potential of fingerprint evidence is unlikely to
20 have been realised. 11:36

21 MR. GREANEY: Well, Professor thank you very much
22 indeed for answering my questions. As I've said, I
23 anticipate there will be some questioning by others.
24 Can I thank also Ms. Harrison for sitting and doing her
25 work for longer than normal. So, could we have a break 11:36
26 at this stage for 15 minutes.

27 CHAIRMAN: We'll sit again at about five to 12, shall
28 we?

29 MR. GREANEY: Yes, please, Sir.

1 THE INQUIRY ADJOURNED BRIEFLY AND RESUMED AS FOLLOWS:

2
3 CHAIRMAN: Mr. Greaney.

4 MR. GREANEY: Sir, we're going to call on Mr. McGowan
5 to ask his questions for on behalf of Fox Law Core
6 Participants. 11:56

7 CHAIRMAN: Mr. McGowan.

8
9 PROF. ANGELA GALLOP WAS QUESTIONED BY MR. MCGOWAN AS
10 FOLLOWS: 11:56

11
12 287 Q. MR. MCGOWAN: Thank you, Sir. Prof. Gallop, you were
13 speaking this morning about the resourcing of FSANI and
14 you were saying that they had, I think, extremely
15 limited resources as a result of that situation where 11:56
16 there had been a reduction in staffing levels, an
17 increase in incidents and then not a consequent recent
18 staffing levels again?

19 A. In particular the explosives section again.

20 288 Q. The explosives section. I just wanted to explore this 11:57
21 issue about the extent of the roles which were
22 undertaken by Dennis McAuley at the relevant time. I
23 just want to bring up your paragraph 2.11, which is
24 INQ 048905 at page 17. And so, at paragraph 2.11, what
25 is said - and I'm starting from the middle of the 11:58
26 paragraph:

27
28 "In addition to his roles in relation to scene
29 examination and as an expert in explosive devices and

1 substances, Mr. McAuley also led the investigative
2 effort within the laboratory with responsibility for
3 directing the types of examination and analyses
4 required for each item and in what sequence."

11:58

5
6 And then what you say is:

7
8 "Even at the time this seems to have been an
9 extraordinarily wide range of activities for any one
10 person to have been responsible for, reflected in the
11 later recommendations from John Davidson for these to
12 be shared."

11:58

13
14 Is that your evidence today.

15 A. Well, I think, it's probably not unusual but the case
16 was so big that it was -- you know, so I think that the
17 whole approach was, you know, absolutely what you might
18 expect at the time. This case was so big that it just
19 made a huge amount of work for him to be covering.

11:58

20 289 Q. Yes. And it's not -- I think the point I would make
21 is, on the basis of your evidence, it's not even only
22 that the case was so big, but it's also that FSANI was
23 starting from a very low bar because even before 15th
24 August 1998 there was limited resources?

11:59

25 A. Yeah. I mean, I think that Dennis McAuley was
26 obviously given the time to go and do the scene to the
27 extent that he, obviously, felt necessary. He was an
28 extremely experienced explosive scientist so I think he
29 did as well as anybody could possibly have done in

11:59

1 relation to that, you know, the scene examination.

2 290 Q. Yes. But, I suppose, the point I'm making is slightly
3 different, it's not whether or not he did his job as
4 best as he could in difficult circumstances, it's more
5 to confirm that even at the standards of the time, even 12:00
6 at the time these were extremely difficult
7 circumstances for him to be placed in?

8 A. Yes, it was certainly, you know, that he didn't have
9 the support that he would have had if there had been a
10 whole section like there had been in the past. 12:00

11 291 Q. Yes. And I want to ask you a little bit about the
12 examination of the TPU because I think what you had
13 said in your evidence this morning was that it was
14 found very quickly, and that was one of the points that
15 you'd drawn out? 12:00

16 A. Yes.

17 292 Q. And I want to bring up INQ 025391, at page 40. Now,
18 this is a FSANI document detailing the examination of
19 the part of the timer power unit from the Omagh bomb.
20 Now, as you said this morning, the TPU was found at a 12:01
21 relatively early stage, I think 23rd August 1998 it was
22 identified. It would have been, am I right, a key
23 component in the forensic investigation?

24 A. Yes, it would be. I don't want to talk in detail about
25 anything to do with the explosive device, it doesn't 12:01
26 come under my area of expertise.

27 293 Q. No, sorry, I don't want to ask you in detail about that
28 either.

29 A. I'm a bit nervous about that.

1 294 Q. The point I'm making is, the date on the document which
2 goes to the date on which this device, which was
3 recovered on 23rd August, the date on which it was
4 forensically examined is 29th January 1999. I suppose
5 what I'm asking is, is it surprising that for an item 12:02
6 that's a key component in the investigation, and had
7 been identified within a very short period after the
8 explosion, is it surprising that it took more than five
9 months for the forensic examination of that item to
10 take place? 12:02

11 A. Well, I've got no idea what the notes in
12 Dennis McAuley's file encompass and whether there was
13 some informal initial notes about it. So, I feel I
14 really can't answer that question without understanding
15 the background in much greater detail. 12:02

16 295 Q. Okay, that's fair enough. Well, I suppose, if I put
17 it --
18 CHAIRMAN: Mr. McGowan, what does that tell us? I find
19 it's quite difficult to read on my screen, it's maybe
20 easier on yours. The document at the top has a box 12:02
21 that says "details on label."
22 MR. McGOWAN: Yes.
23 CHAIRMAN: What does that read?
24 MR. McGOWAN: It reads:
25
26 "Item bearing Metropolitan Police label marked AWD/22
27 part of time and power unit."
28
29 Item number is 255 DMCA88 which is the code given to 12:03

1 the timer power unit from the Omagh bombing. Sorry,
2 the exhibit reference number given to the timer power
3 unit from the Omagh bombing.

4 CHAIRMAN: And what part of the timer power unit is
5 being examined here, can we tell?

12:03

6 MR. McGOWAN: Well, Sir, if it goes further down the
7 page, reference is made to Coupatan, which is the
8 Coupatan timer part of the timer power unit.

9 CHAIRMAN: And what's the significance of it having a
10 Metropolitan Police label?

12:03

11 MR. McGOWAN: There's no particular significance to
12 that, I think that is because the Metropolitan Police
13 were brought in to assist in the aftermath with the
14 identification of the parts amongst the debris from the
15 Omagh bombing. I don't think there's any additional
16 significance to that. The significance of this
17 document, from my point of view, the significance is
18 the date on which the examination is being carried out.

12:04

19 THE WITNESS: But it may not be the first time that
20 this item was described or logged and I think that's
21 the difficulty with these laboratory notes. You know,
22 you make notes in one day away and then you may go away
23 and do something else and then you come back and, you
24 know, maybe you ask your assistant to make more
25 detailed notes about something. So, it's very
26 difficult, without the context of the case file, to be
27 confident that what you are assuming from this is
28 actually the case.

12:04

12:04

29 296 Q. Okay. Well, if I put it this way: If this was the

1 first examination of the Coupatan device or timer power
2 unit from the Omagh bombing, would that be surprising?
3 A. Well, I would've expected there to be some sort of note
4 but it might not be on the kind of paper that that's
5 on, it might have been a scribbled note in those days. 12:05
6 But I would expect there to be some sort of note of it
7 a bit earlier.

8 297 Q. Okay. So, it would be surprising?
9 A. Yeah, but you can't -- well, you can't say that this is
10 the first and only or the first and/or only piece of 12:05
11 examination record that relates to this item without,
12 you know, looking at the whole case file and being sure
13 of that point.

14 298 Q. But, in any event it might be helpful to examine the
15 case file to see whether there was any further 12:05
16 examination?

17 A. Yeah, it would certainly be possible to go through the
18 original case files and to explore that.

19 299 Q. Thank you. I want to move on to a sort of broader
20 topic which is in relation to forensic strategy and 12:06
21 linked incidents and you deal with this in your report,
22 there's no need to bring it up but page 15 to 23 you
23 look at the forensic strategy in the immediate
24 aftermath of the Omagh bombing and then following 2001.
25 And the point I want to make is that from the Core 12:06
26 Participants that I represent, from their point of view
27 it appears that the approach to the investigation of
28 the Omagh bombing by reference to linked incidents has
29 taken a course where there has been incremental

1 expansion, at first there isn't really investigation by
2 reference to linked incidents and over the course of
3 time there is incremental expansion to include
4 additional linked incidents, and from their point of
5 view, in the context of The Troubles which had just 12:06
6 happened, and the extensive experience of police and
7 forensic FSANI in investigating incidents such as this,
8 it might have been thought that it would have been part
9 of the investigative approach from the outset to
10 investigate incidents, not only in their own right but 12:07
11 also by reference to similar incidents or linked
12 incidents and --

13 CHAIRMAN: Mr. McGowan, this is beginning to sound like
14 a speech or a submission. We're ready of half a page
15 of transcript, there's going to have to be a question. 12:07

16 300 Q. MR. MCGOWAN: Yes, Sir. I suppose my question then is,
17 is it surprising to you that it wasn't part of the
18 forensic approach from the outset to investigate the
19 Omagh bombing by reference to similar linked incidents?

20 A. I don't think particularly, I think it came fairly 12:07
21 quickly after the device was identified of this
22 particular kind. But I think, first of all, with
23 forensic science you have to look at the stuff you've
24 got and work out what it is and then when you've done
25 that and more sure you get about that then you can 12:08
26 start expanding the scope of your investigation. So,
27 it feels quite a natural process that you know, the
28 device, or bits of the device were discovered and then
29 it was worked out what it looked like overall and what

1 mark number you might ascribe to it. And then after
2 that you might start thinking more broadly about
3 whether it's ever been encountered before, and so on.
4 So, I think it's a sort of an incremental exploration
5 of what you're examining.

12:08

6 301 Q. Okay. Well, I wonder can I bring up INQ 012122. Now,
7 this is a report from FSANI to the police and what this
8 report does, if I go to page 2 of the report -- sorry,
9 I should note at the outset it's 13th April 1999 is the
10 date on this report. So, what this report does is it
11 identifies, in response to a request from police, it
12 identifies certain incidents that may be linked to the
13 Omagh bombing. Now, the date of this report is 13th
14 April 1999, even at that stage there was no formal
15 linked incident investigation and my question is, in
16 terms of timeframe, is that surprising that the first,
17 from our understanding, the first forensic document
18 indicating link with other incidents is 13th April
19 1999?

12:09

12:09

20 A. We haven't really looked at linked incidents, and I'm
21 quite uncomfortable in this area. I do know that there
22 were three incidents, the ones I think that were
23 mentioned earlier, that were identified quite soon.
24 But, I haven't got a picture in my mind of how the
25 whole thing developed in relation to linked incidents.

12:10

12:10

26 302 Q. That's fair enough. And I think we can return to that
27 then at a future occasion.

28 A. Yes.

29 303 Q. I want to ask more generally about the Mk 19 TPU and

1 the forensic investigation because it was identified I
2 think, at a relatively early stage that a Mk 19 TPU had
3 been used in the Omagh bombing device?

4 A. Yes, I understand that.

5 304 Q. And my understanding of the point of the Mk 19 12:10
6 categorisation is that it enables forensic scientists
7 to identify links between the construction of a
8 particular device and the construction of earlier
9 devices?

10 A. I can see that it would be used, but I think you really 12:11
11 need to talk to an explosive device expert about that.

12 305 Q. That's fair enough. I suppose, the point I was going
13 to ask you about is, from our point of view it seemed
14 strange that a forensic investigation wouldn't, from a
15 very early stage, have been conducted on the basis of 12:11
16 links with earlier Mk 19 TPU incidents, but if you
17 can't speak to that?

18 A. No, and I think from what little I do know, that
19 actually the identification of three incidents, what I
20 remember, at a fairly early stage but which I must 12:11
21 check the dates for you, but I thought that that was
22 quite quickly it was recognised actually this was
23 really important thing to do.

24 306 Q. Thank you. I was going to ask you about the Coupatan
25 timer specifically, because one of the issues that is 12:12
26 of importance to our clients is the delay in
27 identifying the batch number on the Coupatan timer and
28 in investigating the Coupatan timer by reference --

29 A. I think, again, you need to talk to an explosive device

1 expert for that.

2 307 Q. well, my question isn't specifically about explosive
3 devices but it's just about whether or not the batch
4 number would be something, if there is, and I don't
5 know, recovered from a scene of investigation and 12:12
6 there's a batch number on that item, is that something
7 that forensic investigators identify and communicate to
8 police?

9 A. well, I would think so but I can't comment at all on
10 dates and times and communications and anything because 12:13
11 I haven't myself, done that part of this investigation.

12 308 Q. okay.

13 A. So, you know, I think you need to talk to someone else,
14 you need to talk to an explosive device expert, of
15 which, you know, obviously, there are some available 12:13
16 from the FEL and from our own scientific team.

17 309 Q. Yes. Okay. I just have one more question and it's in
18 relation to the evidence you gave this morning in
19 respect of John Davidson's assessment of quality
20 assurance and FSANI's investigations? 12:13

21 A. Yes.

22 310 Q. And you had indicated that you are content to accept
23 John Davidson's judgment about quality assurance and
24 that investigations were conducted to a high standard?

25 A. In addition to the team's own observations from the 12:13
26 material that they've had access to, so it kind of
27 supports that.

28 311 Q. Yes. What I want to ask you is, it seems to us while
29 that speaks to the quality of the forensic

1 investigations that were carried out, it doesn't
2 necessarily speak to whether there was delay in
3 carrying out assessments and whether or not there was a
4 lack of resources that impacted on the carrying out of
5 those assessments. I suppose, my question is, from 12:14
6 your review of the investigation, the forensic
7 investigations, was there delay at times in carrying
8 out forensic investigations in respect of --

9 A. I think there might have been, and I think this will
10 come out in the evidence from the individual scientists 12:14
11 and, perhaps, particularly the marks and chemical
12 traces expert, Dr. Jacob. But the others as well, it's
13 certainly something worth asking them, because there
14 were some elements of the investigation that we were
15 surprised to see came a little bit later on but there 12:15
16 could be -- sometimes there's very good reason for that
17 like, for example, the police investigation didn't
18 reveal the suspects and so, you know, there was no way
19 that items would have been at -- home addresses and
20 vehicles would have searched and items discovered and 12:15
21 submitted, so there's often, you know, very good reason
22 for that. But I think individual scientists should be
23 able to help with that point.

24 312 Q. Okay. But from your point of view and I think the
25 question that I'm asking for your general comment, 12:15
26 could the potential delay and potential lack of
27 resources which you have spoken about this morning --

28 A. Yes.

29 313 Q. -- could those things ultimately have an impact on the

1 ability of a forensic investigation to produce
2 findings --

3 A. Yes.

4 314 Q. -- that can then be used by police to progress the
5 investigation? 12:15

6 A. Yes, potentially.

7 MR. MCGOWAN: Thank you. I've no further questions,
8 Prof. Gallop. Thank you, Sir.

9 MR. GREANEY: Sir, Mr. Henry has permission to ask
10 questions on behalf of PSNI, could he ask his questions 12:16
11 now please.

12

13 PROF. ANGELA GALLOP WAS QUESTIONED BY MR. HENRY AS
14 FOLLOWS:

15 12:16

16 315 Q. MR. HENRY: Prof. Gallop, you can hear me okay?

17 A. Yes.

18 316 Q. I'm going to ask you a number of questions, the context
19 of most of them are the investigation of the previous
20 incidents but I've listened carefully to what you've 12:16
21 got to say, that you haven't looked at those in detail
22 and it's in a very general way I'm going to ask you to
23 relate some of your evidence today and in your report
24 back to those incidents.

25 A. Yes. 12:16

26 317 Q. Now, you mentioned in your evidence to Mr. Greaney that
27 there was no formal written forensic strategy document
28 within the papers that you looked at for the Omagh
29 investigation?

1 A. Well, we haven't come across one.

2 318 Q. And you fairly indicated that that didn't come as a
3 particular surprise to you because it wasn't the norm,
4 at that time, it was starting to develop and I think
5 the word you used was "embryonic"? 12:17

6 A. That's correct.

7 319 Q. So, if we're thinking about investigations which took
8 place prior to 15th August 1998, again, is it unlikely
9 or unsurprising not to find any formal written forensic
10 strategy documents in those case papers if that turns 12:17
11 out to be the case?

12 A. Yes, it's unsurprising.

13 320 Q. I'm going to move on to a different issue now, you
14 mentioned the involvement of Mr. Davidson, you
15 helpfully explained how that came about, it was part of 12:17
16 an internal police review, what we're all referring to
17 as the McVicker Review or the McVicker Report - for
18 your benefit that's the name of the officer who
19 undertook that exercise from within the RUC. He asked
20 for Mr. Locksley to become involved to review the 12:18
21 forensics as part of that review, isn't that correct?

22 A. Yes.

23 321 Q. And then sadly he fell ill and he was replaced by
24 Mr. Davidson?

25 A. Yes. 12:18

26 322 Q. And what I'm going to ask you about then is the
27 appointment of Mr. Davidson as a specialist, I think
28 the phrase was "specialist forensic adviser"?
29 A. Yes.

1 323 Q. And the reasons for that, it was following on from a
2 recommendation that he made himself but, in broad
3 terms, what were the reasons behind recommending that
4 someone would take up that post in the Omagh
5 investigation? 12:18

6 A. Well, I think it was something that was being trialed
7 in England and Wales and I think it goes back to the
8 Ripper Inquiry, the Yorkshire Ripper Inquiry, if you
9 remember that, when there were lots of shortcomings
10 exposed in the investigation. And one of the things 12:19
11 that was recommended there was that there should be
12 specialist, very experienced forensic scientists who
13 would be available to come and help in large complex
14 investigations if they looked as if they were going
15 nowhere. And so -- and these specialist advisers, I 12:19
16 don't think they'd been in the position long, I think
17 it was sort of during the '90s that they were
18 appointed, one or two of them were appointed, and
19 John Davidson was one of those. And so I imagine that
20 the RUC heard about this and thought that this would be 12:19
21 a good idea.

22 324 Q. Thank you, Professor. Are we to understand from your
23 evidence that their appointment was exclusively or
24 normally in relation to larger more complex
25 investigations? 12:20

26 A. Yes, or, I suppose, if there's been a particular spate
27 of cases of a particular kind then they might be able
28 to assist in those as well, even if they were a low
29 level of severity, as it were.

1 325 Q. okay. But in smaller, less complex investigations it
2 is less likely?

3 A. Oh, yes, absolutely, you wouldn't bother with a
4 scientific adviser for that.

5 326 Q. Just before I come to that. One of the purposes as 12:20
6 well, I think, was to remove the burden from
7 Mr. Dennis McAuley who had been performing a number of
8 different roles and it was to allow him to get on with
9 his laboratory work as well?

10 A. Well, that was one of the recommendations that 12:20
11 John Davidson made in his first report.

12 327 Q. And, again, asking for the benefit of your experience,
13 the appointment of a specialist forensic adviser, did
14 that tend to be in cases which had reached a certain
15 point without significant forensic progress in terms of 12:21
16 identifying the offender or the offenders?

17 A. Yes, that's as I remember.

18 328 Q. Okay.

19 A. I mean maybe they also were able to help with more
20 current cases that just looked particularly complex, 12:21
21 but they were available generally I think, where the
22 police thought that it was warranted that they were
23 used.

24 329 Q. So, if we apply that evidence back, in general
25 principle, to the earlier pre-Omagh investigations, if 12:21
26 they were not as individually as large or complex, it's
27 less likely that a special forensic adviser would have
28 been appointed if one had been considered?

29 A. I mean, I don't know anything at the moment about these

1 previous incidents, so I'm nervous about saying that.
2 On the other hand, you know, the Omagh incident was so
3 complex and so large and so serious that it's a kind of
4 no brainer for something like that if you wanted a
5 review of the case.

12:22

6 330 Q. Thank you, Professor. Now, I'm going to ask you what I
7 think is probably a very simple question in relation to
8 low copy number DNA. On the basis of your evidence
9 today - and I know we'll hear more about the detail of
10 this in just a moment - but on the basis of your
11 evidence today and it not having emerged as a science
12 in FSS until 1999, it obviously wouldn't have been
13 available in any of the previous incident
14 investigations?

12:22

15 A. Yes.

12:22

16 331 Q. Now, the final thing I would like to ask you about is
17 the issue of linked incidents and the consideration of
18 forensic relationships. This is really touching upon
19 the point that Mr. McGowan -- initially asked by
20 Mr. Greaney and touched upon in a little bit more
21 detail by Mr. McGowan just recently. And your memory
22 is that there was, at a relatively early stage, and I
23 mean your memory of the papers?

12:23

24 A. Yes.

25 332 Q. There was at a relatively early stage an identification
26 of a link between the TPU used in the Omagh bombing and
27 some previous incident TPUs as well?

12:23

28 A. Yes, but I have to check, you know, when it was first
29 started to be mentioned.

1 333 Q. And I know that's something you're going to go off and
2 look at for us, Professor, and probably address by way
3 of an additional note or oral evidence or whatever
4 format is appropriate?

5 A. Yes. It would be helpful if you wrote down exactly 12:24
6 what you wanted us to look at.

7 334 Q. Certainly.

8 A. Thank you.

9 335 Q. I'm going to invite you -- you'll look at the
10 underlying forensic documentation that you and your 12:24
11 team will be better placed to consider than the rest of
12 us. You may also wish to consider paragraph 9.3 of the
13 McVicker Report and I must confess, we didn't provide
14 the INQ number to the Inquiry in advance of your
15 evidence in relation to this, but it falls on from the 12:24
16 date issues that were raised by Mr. McGowan, it states
17 that:

18

19 "At a case conference on 17th August 1998, the
20 investigation team was informed by the leading forensic 12:24
21 scientist in the case that the Mk 19 TPU used in Omagh
22 was linked to a number of attacks (including Armagh,
23 Enniskillen and Newry)."

24

25 And so that's within two days of the -- 12:25

26 A. Yes.

27 336 Q. -- detonation. So, I wonder if you would take that
28 into consideration whenever you're reviewing that as
29 well?

1 A. Yes, absolutely.
2 MR. HENRY: Thank you very much.
3 THE WITNESS: Thank you.
4 CHAIRMAN: Mr. Greaney.
5 MR. GREANEY: Sir, I don't have any further questions 12:25
6 for the Professor, do you have any questions for her.
7 CHAIRMAN: I don't, thank you very much.
8 MR. GREANEY: Well, that will conclude this phase of
9 the evidence of Prof. Gallop.
10 12:25
11 The next witness will be Dr. Philip Avenell who will
12 deal with DNA analysis.
13 CHAIRMAN: Thank you, Prof. Gallop.
14 MR. GREANEY: And he will be called by Mr. de la Poer.
15 MR. DE LA POER: I wonder, if the witness could be 12:26
16 sworn please.
17
18 DR. PHILIP AVENELL HAVING AFFIRMED WAS QUESTIONED BY
19 MR. DE LA POER AS FOLLOWS:
20 12:27
21 CHAIRMAN: Thank you, Dr. Avenell.
22 337 Q. MR. DE LA POER: Please could you give us your full
23 name?
24 A. Dr. Philip James Avenell.
25 338 Q. Dr. Avenell, we're going to begin by a whistle-stop 12:27
26 tour through your CV which will be published in due
27 course, and in relation to which there will be more
28 detail available online. But, did you undertake your
29 academic education relevant to your current expertise,

1 345 Q. And, unless it wasn't clear already, you have an
2 expertise in DNA?
3 A. I do, yes.
4 346 Q. So, having introduced you briefly we're going to just
5 take up where Prof. Gallop left us in the morning 12:29
6 session and just seek to understand a little bit more
7 about the seismic change - although if you disagree
8 with that word then give us a better one please - which
9 took place in around 1999 in relation to DNA. So,
10 first of all, am I overstating it to describe it as a 12:30
11 seismic change?
12 A. I would say it was a substantial change.
13 347 Q. A substantial change, well your word then is the
14 appropriate one. So, this substantial change, let's
15 look first at the position before that change took 12:30
16 place. And putting it in simple and lay terms, what
17 were scientists before the introduction of that
18 technique that we'll come to, looking for when
19 considering whether there was a DNA opportunity? So,
20 what sort of level of material did they expect that 12:30
21 they would need in order to make meaningful findings?
22 A. Are we talking from the introduction of SDL profiling.
23 348 Q. Yes.
24 A. So, DNA profiling.
25 349 Q. Yes. 12:31
26 A. We were looking for significant visible staining, we
27 were looking for areas where we might expect there to
28 be a body fluid transfer, so, for example, a cigarette
29 which has been touched with the mouth would be a good

1 example of areas that we would be looking where we
2 expect there to be large amounts of DNA present.

3 350 Q. And so for the scientist in August 1998 through into
4 1999, that's the consideration that they would have in
5 their mind when looking through what had been recovered 12:31
6 from scenes and deciding whether or not there was a DNA
7 opportunity?

8 A. They would, yes. They'd have gone from the earlier
9 techniques of things like blood grouping were you
10 needed substantial visible stains, they would have 12:31
11 become more and more sensitive, they would know that
12 you could now get DNA profiles from things that we knew
13 had good contact and left, for example, a body fluid
14 such as saliva, behind. But that was the limit of the
15 knowledge at that time, and our expectation. 12:32

16 351 Q. And the technique that was being used at that time what
17 was that called, please?

18 A. That was SGM.

19 352 Q. SGM?

20 A. Single generation multiplex. 12:32

21 353 Q. And was there, around this time, an advance or
22 improvement in that technique that led to the word
23 "plus" being added to it?

24 A. There was, yes. The technique was expanded to look at
25 more areas which made it more discriminating in 12:32
26 identifying somebody and it went from SGM to SGM+.

27 354 Q. Did that change make any difference to what was the
28 scientist on the ground was looking for by way of the
29 sort of material that might generate opportunities?

1 A. Yes, with any technique there was an improvement in
2 sensitivity as it came along, so there was a better
3 understanding and a recognition that we could get DNA
4 from smaller amounts, and we could start to look at
5 sampling other areas than just having a presence of a 12:32
6 lot of body fluid.

7 355 Q. So, when did the SGM+ technique become widely used?

8 A. That was around '99, 1999.

9 356 Q. And when you say around 1999, are we talking at the
10 earlier stage or are we talking later? 12:33

11 A. It was around the earlier stage and it was introduced
12 into different laboratories at different times
13 depending on where they were at.

14 357 Q. And, so, did the SGM+ technique include all of those
15 opportunities that would previously have been in the 12:33
16 mind of the scientists but that they might be looking
17 to push the envelope in terms of items that previously
18 wouldn't have been thought to be useful?

19 A. Yes. You needed approximately half the amount of DNA
20 for that test that you needed for the SGM test 12:33
21 previously.

22 358 Q. And so, let's just make this a little bit more
23 practical and you've done so already, you've mentioned
24 cigarette butts, for example, in other words, an item
25 that has had substantial and persistent contact with 12:34
26 somebody's mouth and, therefore, their saliva; can you
27 give us any other examples of the sort of things that
28 DNA specialists in 1998 into the very start of 1999
29 would have been looking for?

1 A. When you were using the SGM technique then you were
2 very much looking for things where there might have
3 been a body fluid. So, for example, as I've mentioned
4 already cigarette butts with saliva on them. In those
5 days with the lick and stick stamps and envelops, we'd 12:34
6 be look at the area that would've come into contact and
7 would've been licked, and therefore stuck down. We'd
8 be looking at small bloodstains that were visible to
9 the naked eye but very small. Those sorts of samples.
10 As we progressed on to SGM+, we might be looking at a 12:34
11 higher expectation of getting a result from those
12 samples and also looking at them from slightly smaller
13 areas. We may have been considering touch but not in
14 the sense that we would today, it was very much
15 items -- by touch DNA then we were talking about things 12:35
16 like wearers' areas from shirts where there's heavy
17 contact that's been made.

18 359 Q. So, for you that's the standard as at 1998 into 1999,
19 that those kind of items that you would expect the
20 forensic scientist to be focusing on from a DNA 12:35
21 perspective?

22 A. With the difference between the SGM and SGM+, the two
23 techniques I've described, yes, the two areas I've
24 described.

25 360 Q. Now, there were challenge's which you've identified for 12:35
26 us in your report in relation to the events which might
27 confound success in relation to SGM and SGM+. At the
28 scene of a detonation of a bomb, for example, would
29 dirt and debris potentially defeat testing on items

1 that are recovered from that area?

2 A. Absolutely. Certainly with both of those tests the
3 presence of dirt and debris did cause problems with
4 being able to extract and see the DNA that was in the
5 sample. 12:36

6 361 Q. So, might that inform decision-making by somebody in
7 terms of what they're going to prioritise and what
8 they're not within an investigation?

9 A. Absolutely, it would have been one of the many things.
10 There were certain chemicals we knew of at the time as 12:36
11 well which inhibited, prevented the reaction from
12 taking place so we couldn't get DNA profiles as well.
13 So, those sorts of things were being considered around
14 time.

15 362 Q. Now, what about bloodstaining at the scene when it is 12:36
16 known that victims of whatever event took place had
17 themselves bled; would that be something that a
18 forensic scientist at the time would be thinking about
19 in terms of forensic opportunity?

20 A. Absolutely. In a scene like this we know the victims, 12:36
21 there would have been a lot of bleeding from victims,
22 and we would look expectation of a suspect or somebody
23 involved in setting the device and their expectation
24 being -- and so there would be a consideration made on
25 that basis as to whether or not blood was appropriate 12:37
26 to sample or not.

27 363 Q. What about the presence of water? So, where emergency
28 services have had to douse fires, is that something
29 that was capable of defeating the testing that was in

1 place in 1998 into '99?

2 A. Again, it would have been a consideration. The
3 presence of chemicals in the water moving around, the
4 presence of water washing away, removing DNA leading to
5 a degradation of DNA as well by its presence there for 12:37
6 a long period of time, would all have been things that
7 would need to be considered when sampling and looking
8 at items for DNA.

9 364 Q. And so, taking all of those factors together for your
10 DNA specialist in mid-1998 looking at potential 12:37
11 opportunities, would the general expectation be that
12 the scene itself of the detonation was likely to be
13 hugely challenging in terms of finding a meaningful DNA
14 sample?

15 A. It would have been very challenging, it would still be 12:38
16 challenging today but in those times knowing the
17 sensitivity and the amount of DNA that's required, it
18 would have been very challenging to select correct
19 items or items that might potentially yield a DNA
20 profile. 12:38

21 365 Q. Obviously, those considerations apply to the particular
22 circumstances of the detonation of a bomb where people
23 have been injured and killed and where the emergency
24 services have been on site. But, would you expect the
25 forensic scientist to also be considering other 12:38
26 potential scenes as well, so where the police
27 investigation took them to other particular scenes,
28 which aren't inhibited by those factors, is that
29 something that the forensic scientists of the day

1 should have been thinking about in terms of, well, this
2 might give rise to a better forensic opportunity?

3 A. Yes, they would, yes.

4 366 Q. Now, a factor that you have mentioned, and Prof. Gallop
5 touched upon this, although that wasn't a very helpful 12:39
6 phrase by me just then, was the concept of touch and
7 trace, and speculative samples. Does it take the
8 introduction of the technique that we've heard about
9 already, LCN, before thinking moves towards touch and
10 trace providing a meaningful forensic opportunity for 12:39
11 DNA?

12 A. Yes, until the introduction of the low copy number
13 technique, DNA profiling wasn't sensitive enough to
14 pick up those very low levels of DNA you might expect
15 from simply touching a surface or handling a surface. 12:39
16 So, it wasn't until it came along and the sensitivity
17 was realised, it was identified the possibility of
18 touch DNA samples and getting DNA profiles from things
19 like that.

20 367 Q. Let's just turn to LCN now just to understand a little 12:40
21 bit about the practical differences that it brings. If
22 a surface that you touch now may leave detectable
23 levels of DNA, does that create a potential problem of
24 contamination?

25 A. It does, absolutely. 12:40

26 368 Q. And so just talk us, please, about practically speaking
27 why that might create a contamination problem?

28 A. So, if we look at, for example, the SGM technique, that
29 required around 2 ng of DNA in order to get DNA

1 profile. If we then progress that on to SGM, we were
2 halving that to around 1 ng because of increase in
3 sensitivity. Low copy number then drops that down to
4 around 0.4 ng, so you've got only around a quarter of
5 the DNA required. This is into the areas where you
6 must be very careful now and start to consider -- if
7 you can pick up touch DNA from an item you must
8 consider both the examiner, are they talking
9 appropriate precautions to prevent their DNA from
10 getting onto the item, as well as other items coming
11 into contact, we're looking at the same areas,
12 preventing DNA getting from one item onto another, as
13 well. We're talking very sensitive techniques now.

12:41

12:41

14 369 Q. The examiner themselves could contaminate because their
15 touch, if not adequately protected, may leave their,
16 DNA mixing their profile into whatever is there or
17 maybe it will only be their profile, you've also talked
18 about the possibility of other items introducing
19 contamination. Is that known as secondary transfer?

12:41

20 A. It can be known as, yes, secondary transfer or tertiary
21 or multiple.

12:41

22 370 Q. And here are we envisaging a situation where an
23 unrelated item to the one that is being examined has
24 been touched by somebody else's DNA, that has been
25 deposited on that unrelated item and the unrelated item
26 has then come into contact with the item that is the
27 focus, and a transfer of that third party DNA has
28 resulted in that third party DNA being on the item
29 under examination?

12:42

1 A. Yes, that's correct.

2 371 Q. So, these are all things that the LCN expert will have
3 very much in their mind when considering how to seize
4 items, handle items, test items and store items?

5 A. Yes. As the sensitivity of LCN was realised, it became 12:42
6 much more aware of the possibility of these very low
7 levels of DNA being able to be detected.

8 372 Q. One question that Prof. Gallop was asked that she
9 deferred to you given your enormous expertise in this
10 area, was in relation to whether or not LCN was seen 12:43
11 coming? In other words that scientists in 1998 had an
12 idea in their head that a much more sensitive technique
13 was around the corner and that, therefore, they needed
14 to ensure that they were acting then in readiness for
15 the technique coming online? In your awareness, was 12:43
16 that a thought that was in the heads of forensic
17 scientists in the UK in 1998?

18 A. I don't think it would have been a thought that was in
19 the head. As we know, technology advances but it's not
20 knowing what it will actually produce and how it will 12:43
21 actually develop and then come forward. We see that
22 with all DNA advances. We always see something coming
23 around the corner but we never truly know the impact of
24 it until we actually have the technique in our hands
25 and start to use it and see how it develops. Research 12:43
26 will give us a very good indication, so we'll have an
27 indication of what technology is coming along and how
28 that will progress, but I don't think in 1998 they
29 would have been aware of the low copy number coming

1 along as well as SGM+.

2 373 Q. So, you wouldn't expect that a competent scientist in,
3 say, August or September 1998 would be thinking to
4 themselves, 'a much more sensitive technique is about
5 to come online, I need to take extra precautions now so 12:44
6 that this exhibit can be managed properly in readiness
7 for that technique'?

8 A. I don't think you would always balance up the
9 likelihood of getting a result from what you're
10 sampling at the time with what you think is coming 12:44
11 around the corner, but what you think is coming around
12 the corner and what you know is very different and if
13 you have an opportunity to potentially get a result at
14 that time then you may want to use the technology you
15 have. So, it's a very difficult balancing act as to 12:44
16 whether or not you would save an item rather than
17 examine it at that time not knowing how quickly
18 something is coming around the corner and is becoming
19 available to you, and what actually those results are
20 you can get from that technique when it arrives as 12:45
21 well.

22 374 Q. Just before we look at the Omagh investigation itself,
23 we just need to think a little bit more about this
24 issue of contamination. Now, you've told us that in
25 the context of low copy number DNA testing, because it 12:45
26 is so much more sensitive, additional care and
27 precautions need to be taken to avoid contamination.
28 But, in relation to SGM, was it still necessary and
29 appropriate to take precautions against contamination?

1 A. Precautions were still taken, absolutely. Lab coats
2 would have been worn but the difference between SGM and
3 SGM+ and low copy number is additional precautions such
4 as face masks, hair nets, regular changing of gloves in
5 order to ensure that you're removing any excess DNA 12:45
6 that might be accumulating on them. Things like that
7 weren't necessarily in place because the techniques
8 weren't sensitive enough and wouldn't have been
9 affected by the laboratory precautions that were in
10 place prior to those techniques. 12:46

11 375 Q. That, really, was what I was seeking to draw out and
12 you've illustrated it, if I may say so, very clearly.
13 The level of precaution against contamination with SGM
14 will be lab coats; would you expect the scientists to
15 wear gloves when handling things? 12:46

16 A. In many of the procedures they said you would likely
17 wear gloves, but probably more with the consideration
18 around contamination of yourself with blood, for
19 example, that may have been on the item. But,
20 typically, you would wear gloves. But it would be a 12:46
21 lab coat and gloves and that would be almost it.

22 376 Q. What about upstream, so to speak? So, obviously, the
23 exhibit arrives in the hands of the scientist, and they
24 take the precautions that they do, but would there have
25 been an expectation that investigators, so scenes of 12:46
26 crimes officers, police officers who are seizing any
27 items as part of the investigation as exhibits, that
28 they would be taking SGM precautions?

29 A. I can't comment specifically on that but it would be

1 unlikely. They may have been wearing gloves for other
2 reasons, such as protection from chemicals or hazards
3 such as sharps, but as in routine glove wearing during
4 the seizure of items then I would have thought that
5 would be unlikely.

12:47

6 377 Q. So, once low copy number DNA comes along in relation to
7 any exhibit that has been seized in that pre-LCN
8 period, do we have to acknowledge the risk that
9 investigators may have contaminated it and the
10 scientists themselves may have contaminated it, all
11 perfectly innocently and inadvertently because they
12 didn't realise what was around the corner?

12:47

13 A. Absolutely, yes.

14 378 Q. Well, we're going to come back to that in Chapter 4
15 with you, but that sets the scene for what we come to
16 now, which is to consider, in brief terms, the evolving
17 strategy in relation to DNA specifically and we've
18 heard an overview of this from Prof. Gallop already.
19 But was it John Logan, a forensic scientist at FSANI,
20 who was initially responsible for biological
21 examinations?

12:47

22 A. Yes.

23 379 Q. And were you able to discover any formal strategy,
24 either provided to Mr. Logan or created by him in
25 relation to DNA?

12:48

26 A. Not in the paperwork that I saw, I couldn't find that
27 in the paperwork, no.

28 380 Q. Avoiding the risk of hindsight bias and applying the
29 standards of 1998 in relation to DNA specifically,

1 would you have expected a formal and written strategy
2 at an early stage in terms of how DNA would be thought
3 about within the context of the investigation?

4 A. Through the documentation I've seen I haven't seen full
5 case files in order to know what was documented on the 12:49
6 case file or was not. I might have expected on the
7 case file if there had at least been notes into which
8 items would be looked at in DNA and sampled for DNA.
9 Within the paperwork I reviewed there were notes of
10 case conferences which had taken place, not that 12:49
11 John Logan was present at those but had taken place.
12 There was evidence of submission paperwork forms of
13 which certain items had DNA submission written on what
14 item to be considered for DNA or for DNA, and,
15 therefore, I would have expected John Logan to have 12:49
16 reviewed those items as well as any other item coming
17 in and consider the potential for DNA on those items as
18 they came through and made a note of which ones were
19 required.

20 381 Q. So those submissions which contain reference to DNA, do 12:50
21 you understand them to be requests of John Logan, i.e.
22 here's an item, do you want to look at this for DNA or
23 do you understand them to have been John Logan saying
24 please provide me with those items because I would like
25 them to be considered for DNA? 12:50

26 A. I understand them to be requests for items to be
27 examined as a result of case conferences and meetings
28 that have taken place and they have been submitted to
29 the laboratory and then John Logan is being made aware

1 of which items might be considered.

2 382 Q. The order appears to be that at a case conference
3 implicitly there must have been a discussion about what
4 the approach was going to be and that then led to items
5 coming through to Mr. Logan for him to consider? 12:50

6 A. Yes.

7 383 Q. And so, that wouldn't represent necessarily on its own
8 a formal and written strategy but it would suggest that
9 there was thought being given to DNA at those early
10 stages of the investigation? 12:51

11 A. Absolutely, yes, the consideration was being made of
12 every item that came in.

13 384 Q. You have carefully caveated your earlier answers by
14 saying that you don't have confidence you have seen the
15 entire case file therefore you don't know what else may 12:51
16 have been in it, but just applying the standards of
17 1998, ought there to have been a written strategy for
18 do you think the standards of the time meant that a
19 meeting at which it was discussed which led to actions
20 was within the standard of the day? 12:51

21 A. I would have expected some form of strategy to be
22 present on the file, not necessarily in a structured
23 way it would be later and today, but at that time I
24 would have expected there to at least have been an
25 instruction or note within the file as to what was 12:51
26 required.

27 385 Q. And so, you haven't seen that, so that is either
28 because it is within material that hasn't been made
29 available to you or it is because no such document was

1 created, are those the two options?

2 A. I have only seen formal statements and formal
3 production, I haven't seen the case file to my
4 knowledge and it is not on the system I have looked at,
5 what I would consider to be parts of the case file. 12:52

6 386 Q. So, Mr. Logan is driving the DNA strategy at the early
7 stage, did that continue to be the case until John
8 Davidson became involved?

9 A. As I understand it and from the reports I have seen,
10 yes. 12:52

11 387 Q. And so we know from Prof. Gallop that that is around
12 the summer of 2000 and that John Davidson formed part
13 of the McVicker team that came in and he reported in
14 the Autumn, October 2000?

15 A. Yes. 12:52

16 388 Q. Now, paragraph 6.7 you set out four general
17 recommendations which are significant to DNA, I am here
18 on page 53 if you want to look in your report, just to
19 remind yourself. We'll just headline each of these
20 Dr. Avenell, so page 53? 12:53

21 A. Yes.

22 389 Q. Paragraph 6.7:
23
24 "His general recommendation 4 stated that consideration
25 be given to new strict anti-contamination procedures at 12:53
26 all scenes where LCN DNA analysis may be subsequently
27 required."
28
29 "His general recommendation 5 and 6, that the FSANI

1 laboratory reconsiders its policy of giving sequential
2 exhibit numbers different from HOLMES, police numbers
3 and that consideration be given to including more
4 specific details relating to exhibits in HOLMES lists."

12:53

5
6 And finally general recommendation 7:

7
8 "The laboratory ensure that written records in relation
9 to decisions, examination strategies, case conferences
10 and all communications internal or with the
11 investigating officers are maintained on file."

12:54

12 A. Yes.

13 390 Q. Let's just use the benefit of your knowledge and
14 experience Dr. Avenell, just to try and understand what
15 implicitly Mr. Davidson must have discovered when he
16 came in, in order for him to cause him to make those
17 recommendations. So his general recommendation 4:

12:54

18
19 "Consideration be given to new strict
20 anti-contamination procedures at all scenes where LCN
21 DNA analysis may subsequently be required."

12:54

22
23 This is October 2000, in your view was that an
24 appropriate recommendation for Mr. Davidson to give?

25 A. Absolutely, yes, at that stage we would have known the
26 sensitivity of LCN was coming along and from the
27 research that had been done and would know that
28 handling of items must take place with gloves and
29 precautions in place to prevent transfer of DNA.

12:54

1 391 Q. LCN as a technique became available within the Forensic
2 Science Service in, I think, 1999?
3 A. October 1999, yes.
4 392 Q. About a year before this report. So that leaves a
5 year's period potentially for once that technique 12:55
6 becomes established and is being used. Would you have
7 expected scientists operating in Northern Ireland
8 during the period October 1999 to October 2000, to have
9 identified this need for themselves or was the
10 technique evolving in such a way that that wouldn't 12:55
11 necessarily have been clear to the competent scientist?
12 A. It might not necessarily have been clear to them on the
13 ground. The Forensic Science Service was obviously
14 using the technique in-house and using it themselves
15 and were identifying the requirements they need for 12:55
16 their examinations through what they were doing. The
17 degree to which that knowledge was being distributed
18 around the rest of the UK and the world through
19 communications, I wouldn't have been aware of how much
20 or how much they would have known about the need for 12:56
21 that.
22 393 Q. So we can understand the moment of time the creation of
23 this technique being established as a reliable one, was
24 the UK a global leader in the development of this
25 technique? 12:56
26 A. Yes, it was, yes.
27 394 Q. And if it started being used in October 1999, no doubt
28 it formed part of your training when you began to
29 practice in 2002?

1 A. That's correct, yes.

2 395 Q. So, although you weren't in practice in 1999, it was
3 very much in the living memory of the people you were
4 working with and no doubt formed an important part of
5 your training? 12:56

6 A. It did form an important part of our training and
7 strategy setting when we were reviewing cases.

8 396 Q. So, I am just seeking to understand the degree to
9 which, as far as you are aware, when in October 1999
10 the technique was decided to be reliable and to be 12:57
11 rolled out within the Forensic Science Service, there
12 were case conferences and scientific papers and the so
13 on, promoting this world leading event that had taken
14 place within UK science. Are you able to help us with
15 that at all in terms of how well promoted it was, when 12:57
16 it started to be used?

17 A. I don't believe it was promoted that much when it was
18 first started to be used, it was rolled out alongside
19 SGM+ as a technique as well. So SGM+ was very much an
20 advance from SGM and LCN was then being used by 12:57
21 Forensic Science Service as another stage in certain
22 case types where only very limited opportunity was
23 available on SGM+ wouldn't be used it was then the next
24 stage, if you like, for testing.

25 397 Q. So, sitting there, based on the knowledge that you 12:58
26 have, does it come to this, that you wouldn't be
27 critical or regard yourself as having any basis to be
28 critical of any scientist in 1999 into 2000 who didn't
29 immediately recognise the value of LCN and start acting

1 upon it?

2 A. No, I wouldn't, no.

3 398 Q. But, Mr. Davidson as part of the Forensic Science
4 Service that was practising this technique?

5 A. Yes. 12:58

6 399 Q. Came in, in the summer of 2000 and in October made the
7 recommendation that he did which you regard as being an
8 appropriate one?

9 A. Yes, absolutely, he would have been looking at the
10 retrospective practices which had been taking place and 12:58
11 was putting them in as a benchmark, if you like, for
12 moving forward.

13 400 Q. The next two recommendations, seem to relate to,
14 matters which might be dismissed as bureaucracy but I
15 dare say you are going to tell us that they are 12:59
16 extremely important within forensic science, is that
17 right?

18 A. Yes.

19 401 Q. This is important of shared labelling system that
20 doesn't result in confusion? 12:59

21 A. That's correct, yes.

22 402 Q. And so, implicitly from this recommendation, does it
23 appear to you that there was some sort of challenge
24 which was being faced within the investigation as
25 between references on the police system and references 12:59
26 that the scientists had?

27 A. There was, and it was a challenge that I faced when I
28 was going through the documentation as well. Because
29 it is typical at a crime scene that an exhibit will be

1 given the initial and then a number of the person who
2 is examining it and those same examiners are attending
3 different scenes in different areas then you can end up
4 with the same exhibit number as initials and numbers
5 and then when you compare that with a description there 12:59
6 might not have been enough detail to isolate the item
7 and you are looking at similar items from the incident
8 as well. And then two number systems as well, it
9 becomes confusing to identify exactly which AD11, for
10 example, you are looking at and where it comes from. 13:00
11 403 Q. So, the very opposite of mere bureaucracy, absolutely
12 essential to know what you have got and what you are
13 looking at?
14 A. Yes.
15 404 Q. And finally, if I may Sir, just before lunch to just 13:00
16 deal with this final recommendation. Written records
17 in relation to decisions, examination strategies and
18 case conferences, again, you didn't have the benefit
19 that Mr. Davidson did of coming in nearer the time and
20 being given the access he was, but does it appear that 13:00
21 Mr. Davidson considered that there could be a
22 substantial improvement in terms of writing out
23 strategies and keeping proper records of what the
24 approach out to be?
25 A. Yes, it would appear Mr. Davidson identified that they 13:00
26 weren't clear enough to determine exactly what had been
27 done.
28 MR. DE LE POER: well, Sir, I wonder if that might be a
29 convenient moment and whether we could resume again

1 with Dr. Avenell at two o'clock please?
2 CHAIRMAN: Yes, thank you, Mr. de la Poer.
3
4 THE INQUIRY ADJOURNED FOR LUNCH AND RESUMED AS FOLLOWS:
5 14:03
6 CHAIRMAN: Mr. de la Poer.
7 MR. DE LA POER: Thank you, Sir.
8
9 DR. PHILIP AVENELL CONTINUED TO BE QUESTIONED BY
10 MR. DE LA POER AS FOLLOWS: 14:04
11
12 405 Q. MR. DE LE POER: Dr. Avenell, we are on page 54 of your
13 report and we're just going to mark some moments in
14 time following the first set of recommendations by
15 Mr. Davidson. So, by December 2001 was a joint report 14:04
16 produced by John Davidson and a scientist we've heard
17 about, Ruth Griffin?
18 A. Yes.
19 406 Q. And was the strategy described in that document to
20 focus upon the opportunities that LCN provided? 14:04
21 A. Yes, that's right.
22 407 Q. And were there three key purposes to the strategy,
23 namely, to directly connect any individual with the
24 Omagh offence, is No.1?
25 A. Yes. 14:05
26 408 Q. No.2, establish conclusively that the same persons were
27 directly involved in the three linked offences and
28 Omagh?
29 A. Yes.

1 409 Q. And, thirdly, directly connect any individual with the
2 three linked offences?
3 A. That's correct, yes.
4 410 Q. And we can see from your next paragraph that we're
5 there dealing with the previous incidents as we're 14:05
6 describing them, rather than linked offences for the
7 time being, Newry Courthouse, Market Street, Lisburn
8 and Banbridge?
9 A. Yes.
10 411 Q. So, each of those previous incidents are going to be 14:05
11 the subject of the Chapter 4 evidence so we're, having
12 noted that, just going to move forward?
13 A. Yes.
14 412 Q. And just return to the challenges that face the
15 forensic scientists looking for opportunities for DNA 14:06
16 information. Is it right that within forensic science,
17 scientists are sometimes presented with a choice to
18 pursue one technique or another in relation to a
19 particular item?
20 A. They may be, yes, that's right. 14:06
21 413 Q. And the reason that there's a choice is because the use
22 of one technique may destroy the opportunity of the
23 second technique being successful?
24 A. That's correct, so you're weighing up which technique
25 is the most likely to give you a useful result. 14:06
26 414 Q. And if we just go back to 1998 before SGM+ and LCN, is
27 the reality that in relation to an item that was
28 thought to have been handled, so where fingerprints
29 might have been left, that the consensus was that the

1 likely better forensic opportunity would be through
2 fingerprints rather than DNA?

3 A. That's right, yes. It would usually be looked at by a
4 fingerprint expert and if there was thought to be an
5 opportunity for fingerprints then that would override 14:07
6 the use of DNA.

7 415 Q. And the effect of making that choice, if you then
8 administer the fingerprint test, is that the testing
9 for fingerprints will destroy or substantially reduce
10 the chance of finding DNA on the item? 14:07

11 A. That's right. The most common reagents that are used
12 to look for the fingerprints to enhance those marks
13 will have a negative effect on the DNA and DNA process.

14 416 Q. And was that also the case once LCN came in, that a
15 choice is having to be made in relation to an untested 14:07
16 item?

17 A. There was still a degree of choice that needed to be
18 made, yes.

19 417 Q. Did LCN allow for both tests to be done with confidence
20 or was it still the position that it was one or the 14:07
21 other?

22 A. It would very much depend on the item that was being
23 looked at and the area that was available for testing,
24 whether there was sufficient area that you could take
25 some for LCN and still be left with sufficient for, for 14:08
26 example, fingerprint.

27 418 Q. And so, you have had the opportunity to review, from
28 the documentation available to you, the approach that
29 was taken by Davidson and Griffin as they developed

1 their strategy from those three key objectives. And
2 did they appear to you to be making appropriate and
3 competent choices as they developed that strategy?
4 A. Yes, from the exhibits that I saw were being selected
5 and exhibit list, then I thought they were appropriate 14:08
6 strategies for the examinations.
7 419 Q. And so, we're now going to move on to the topic of what
8 evidence was in fact generated by these DNA enquiries.
9 You start dealing with that through identifying what
10 was recovered from the scene and elsewhere - this is 14:09
11 page 57, your paragraph 6.20. The starting point is
12 that within the very large number of submissions made
13 to the laboratory across forensic science disciplines,
14 were there approximately 33 items on which DNA
15 examination had been requested? 14:09
16 A. Yes, this is referring to the submission forms that I
17 was talking about earlier, and they had a specific note
18 within the comments regarding DNA.
19 420 Q. Just to give us a sense of it, were all of those before
20 John Davidson and Ruth Griffin became involved or were 14:09
21 some generated after that?
22 A. I'd need to go back and check the dates, I believe they
23 were before but I would need to double-check that.
24 421 Q. If we move forward to your paragraph 6.21, you identify
25 the initial DNA submissions in a table, your Table 1 14:09
26 and we can see just counting those that there are six
27 individual exhibit references or item numbers?
28 A. That's correct.
29 422 Q. But is this right, that some of them may contain more

1 than one opportunity for DNA, so for example, we have
2 under one Item 19, three cigarette butts?

3 A. That's correct.

4 423 Q. So, that would in fact represent at least three
5 opportunities for DNA? 14:10

6 A. It would, yes.

7 424 Q. And, obviously, Mr. Logan was using the SGM test at the
8 time, the less discriminatory test?

9 A. Yes.

10 425 Q. And did he conclude that no DNA was detected on any of 14:10
11 those items that he considered?

12 A. That's right, from the tests that he ran at the time he
13 got no DNA detected.

14 426 Q. Although he doesn't specify the test, the standard of
15 the day was SGM so do you infer that's what he was 14:10
16 using?

17 A. Yes, absolutely.

18 427 Q. If we then move in time to a test that wasn't available
19 to Mr. Logan when he did his early work. Ruth Griffin
20 became responsible for the laboratory examinations from 14:11
21 early 2001 onwards, is that right?

22 A. Yes, that's right.

23 428 Q. And as a result of her involvement was a table created
24 that was then updated in terms of DNA submissions?

25 A. There was, yes. 14:11

26 429 Q. And if we just have a look at your Table 2, we can see
27 that there are significantly more items on that later
28 list, is that right?

29 A. There are, yes.

1 430 Q. It's going to be published so we don't need to go
2 through every single one?

3 A. No.

4 431 Q. But we can see that the same three cigarette butts are
5 still on the list? 14:11

6 A. Yes.

7 432 Q. They're Item 19. We can also see that Item 168, which
8 was a swab taken from a mouthpiece and earpiece of a
9 handset telephone, that appears on both lists, the
10 initial Logan list and the later Griffin list? 14:12

11 A. Yes.

12 433 Q. And we can also see that Item 254, which is a swab of
13 Item 24 handset, so a subcategory, if you like, of
14 that, also on the later list?

15 A. Yes, that's right. 14:12

16 434 Q. But there are a significant number of other items which
17 are down on this list?

18 A. Yes, that's correct.

19 435 Q. Obviously, what you don't have available to you is a
20 detailed explanation setting out, in clear terms, why 14:12
21 the two lists were different, that's not apparent from
22 the material, is it?

23 A. No, but the second list was considering low copy
24 number, so there was an enhanced opportunity from
25 items. 14:12

26 436 Q. But my point was exactly that, Dr. Avenell, that
27 although you don't have a line-by-line explanation,
28 because Ruth Griffin is applying a different test, one
29 which is capable of greater sensitivity, you would

1 expect the list to be substantially longer, wouldn't
2 you?

3 A. I would, yes, absolutely.

4 437 Q. Because no longer are we looking for those visible to 14:13
5 the naked eye opportunities or, as with a cigarette, an
6 area which is known to have been in substantial contact
7 with a person's mouth, here we can look at the
8 possibility of touch and trace?

9 A. That's correct, yes.

10 438 Q. And so, very many more items over the period 2001 to 14:13
11 2005 made their way on to the list. And, what I'd like
12 you to do for us please, here at your paragraph 6.26,
13 is just headline for us what the outcome of all of
14 those items that were subjected to the much more
15 sensitive LCN test? 14:13

16 A. So, the three cigarette butts were each individually
17 tested. Two of the samples taken from the cigarette
18 butts produced DNA profiles, one was a male DNA
19 profile, a partial male DNA profile, another one was an
20 almost complete female DNA profile. Do you want me to 14:14
21 go through the --

22 439 Q. Is it the position that those profiles were
23 unidentified as at the date of your examination?

24 A. That's correct, yes.

25 440 Q. But, they don't match other profiles that have been 14:14
26 obtained, namely from the telephone handsets?

27 A. That's quite correct, yeah, they don't match other
28 profiles obtained within the list of items examined.

29 441 Q. Can I just pause there for a moment, in terms of the

1 amount of information that we have available - and we
2 don't need to descend into the technicality here
3 because you'll be able to make this simple for us, I
4 have no doubt - is there sufficient within each of
5 those profiles that were identified for LCN techniques 14:14
6 to produce a reliable match to a person, or was there
7 insufficient information within it to make that match?
8 A. There was enough information within those profiles,
9 they could be compared to an individual.
10 442 Q. And enough to produce a match probability? 14:15
11 A. Yes, yes, potentially.
12 443 Q. Do you know, from the information that you had
13 available, what attempts there were to match those two
14 cigarettes to any cohort of people? So, here was it
15 only suspects who produced DNA, was it against any form 14:15
16 of database, or was it only against the other exhibits
17 and what they produced?
18 A. It would have been against the other exhibits within
19 the case and also against the national DNA database
20 that was available at the time. 14:15
21 444 Q. So, that's an important caveat, isn't it, because that
22 is an evolving database which is getting bigger all the
23 time?
24 A. It is, yes.
25 445 Q. So, that is database, as it existed then? 14:16
26 A. Yes, which is substantially smaller than it is now.
27 446 Q. And I know that this is of interest to Core
28 Participants, and nobody should read anything into my
29 questioning in terms of what that might lead to, but in

1 principle could those DNA profiles be matched to the
2 current national database, from a scientific
3 perspective?

4 A. They can be searched against the current database, yes.

5 447 Q. So, next we have the phone handset, did that produce 14:16
6 any LCN result?

7 A. No, it didn't. No DNA was detected.

8 448 Q. And I think that that was looked at from a number of
9 different perspectives in terms of Item 22 and
10 Item 254, no result? 14:16

11 A. No.

12 449 Q. Then we have Items AD11 and AD12, which were other
13 telephone handsets; did that produce any meaningful DNA
14 result?

15 A. They were the same handsets, I believe, but I don't 14:17
16 have the examination notes to know exactly what samples
17 were taken or how they were taken. But from those, DNA
18 profiles were obtained from each of them, two different
19 ones were obtained, one from AD11 and one from AD12.

20 450 Q. I understand. So, the earlier two items, 22 and 254, 14:17
21 AD11 and AD12 are subsets of those physical items?

22 A. I believe AD11 and AD12 are the actual handsets, but I
23 haven't been able to locate notes to identify exactly
24 which is which, and that IMCN4 and certainly SAC1 are
25 swabs taken from a handset. 14:17

26 451 Q. And what were the results that were taken, as it
27 appears, straight from the handset rather than those
28 other swabs?

29 A. From AD11 there was partial male DNA result which

1 occurred in approximately one in 4.7 individuals,
2 million individuals, sorry. This produced a partial
3 match against the United Kingdom National DNA Database,
4 however, further investigation of that match revealed
5 that the sample on the database had come from an 14:18
6 individual who was only 14 years of age at the time of
7 the Omagh bomb, and also lived in a different part of
8 the country and, therefore, was eliminated from the
9 investigations. And it appears to have been what's
10 called an advantageous match, where it matched by 14:18
11 chance.
12
13 The remaining sample produced a DNA profile which
14 matched a member of the laboratory staff and would
15 appear to have been introduced as a result of 14:18
16 contamination during the examination.
17 452 Q. And you go on to deal with a number of items in the
18 following paragraphs, including number plate, plastic
19 lunchbox, timer, toggle switches; was any DNA capable
20 of meaningful comparison identified from any other 14:19
21 item?
22 A. No, they all produced complex DNA results which
23 couldn't be separated into the individuals that had
24 produced them.
25 453 Q. Again, nobody should read anything into this, this is 14:19
26 just an answer on a scientific basis?
27 A. Yes.
28 454 Q. But those were the techniques of the day, so we're
29 talking 2001 to 2005; do modern techniques allow

1 further discrimination or would the position remain the
2 same given the complexity of those results?

3 A. In terms of could we separate those DNA components now?

4 455 Q. Yes.

5 A. Without seeing the DNA results themselves, which I've 14:19
6 been unable to do because they're not within the files
7 I've seen, I would be speculating but I would consider
8 it unlikely that modern techniques and technology could
9 separate and be able to separate those individuals.

10 456 Q. I think you've identified one item, your paragraph 14:20
11 6.27, Item 551, where there appears to have been a
12 breakdown in continuity and that you haven't managed to
13 satisfy yourself in relation to what happened with that
14 particular item, is that right?

15 A. Yes, that's right. Through the information I had 14:20
16 available I couldn't find any further information
17 regarding that item.

18 457 Q. And so, we have the results that you've described and
19 where people haven't been eliminated we are essentially
20 left with two cigarette butts which did not match 14:20
21 anyone at the time that they were compared, and which
22 did not match any other profile that was obtained?

23 A. That's correct, yes.

24 458 Q. Now, a question that you were asked, and we've heard 14:21
25 from Prof. Gallop about this but bearing in mind she
26 has deferred to you as the expert on DNA within your
27 team, LCN testing, is it a reliable form of testing, in
28 your view?

29 A. Yes, I consider it is s reliable form.

1 459 Q. well, it may be we will come back to that in a later
2 chapter, particularly in the context of the Sean Hoey
3 trial and what was said there but that is matter for
4 another day and you will have an opportunity to address
5 that in a further report. 14:21

6 A. Okay.

7 MR. DE LE POER: So, Dr. Avenell those are the
8 questions that I would like to ask you. Can I turn now
9 to the Fox Law team who have permission, Mr. McGowan
10 kindly indicates that he has no questions. And 14:21
11 similarly, Mr. Henry, King's Counsel, no questions.
12 And so those conclude the questions I have for you.
13 Sir, do you have any questions for Dr. Avenell.

14 CHAIRMAN: No, I don't. Thank you very much
15 Dr. Avenell. 14:22

16 THE WITNESS: Thank you.

17 MR. DE LA POER: Sir, if it is convenient to you,
18 Prof. Robson who is our next witness has already
19 arranged himself in the hearing room and is ready and
20 able to assist you immediately without the need for a 14:22
21 break.

22

23 PROF. ROGER ROBSON, HAVING BEEN SWORN, WAS QUESTIONED
24 BY MR. DE LA POER AS FOLLOWS:

25 14:22

26 CHAIRMAN: Thank you, Prof. Robson.

27 460 Q. MR. DE LA POER: Prof. Robson, can you please start
28 with your full name?

29 A. Roger Robson.

1 461 Q. And I'm looking at the appendix to the first report,
2 just to run you through some of your career highlights.
3 That's going to be published in full so we don't need
4 to be exhaustive in it, but did you have a career as a
5 scientist at the Forensic Science Service in both 14:23
6 biology and chemistry section for 20 years?
7 A. That's correct.
8 462 Q. Were you a specialist at the Wetherby Laboratory and
9 subsequently head of analytical services by 1992?
10 A. Yes. 14:23
11 463 Q. Are you a founder member of the European Fibres Working
12 Group?
13 A. That's correct.
14 464 Q. And by 1996 were you the colead within the Forensic
15 Science Service on textile fibres which involved 14:24
16 interlaboratory collaboration of methods and
17 proficiency testing across the UK?
18 A. Yes, I was.
19 465 Q. Did you then leave the public sector and join Forensic
20 Alliance in 1998? 14:24
21 A. That's correct.
22 466 Q. And by 2002 were you the head of operations there?
23 A. I was, yes.
24 467 Q. And did you lead the implementation of the current
25 international quality standard for laboratory-based 14:24
26 forensic science?
27 A. I did.
28 468 Q. The following year, was that company acquired by LGC
29 Forensics Limited where you became the head of homicide

1 investigations?

2 A. Yes.

3 469 Q. LGC Forensics took you to 2007, did you then become the
4 managing director of Forensic Access Limited?

5 A. Yes, I did. 14:24

6 470 Q. And did, you, again implement further standards?

7 A. Yes.

8 471 Q. Overlapping with your time at Forensic Access, so 2010
9 to 2019, were you part of the Forensic Regulators
10 Advisory Council? 14:25

11 A. Yes, I was, for ten years.

12 472 Q. And in 2019, did you become a visiting Professor at
13 Staffordshire University?

14 A. I did.

15 473 Q. Bringing us right up to date, have you recently been 14:25
16 approached by the United Kingdom Accreditation Service
17 to take up a new role as their trace specialist?

18 A. That's correct.

19 474 Q. So, that we're clear about it, do you hold that role
20 now or is that something in your immediate future? 14:25

21 A. No, I hold that role now.

22 475 Q. Thank you very much indeed. Well, as I say, there is
23 more information including cases that you've been
24 involved in and publications that you've been involved
25 in, all of which will be on the Inquiry website already 14:25
26 as part of the Report 1 by the team of forensic
27 scientists.

28

29 So, Professor, having been through who you are, we're

1 going to just go back in time here in terms of the
2 Inquiry oral evidence hearing and just go over evidence
3 that Prof. Gallop has already given to introduce some
4 key terms so that they are all very much fresh in our
5 mind when we come to look at the detail of this. And 14:26
6 to help us with that, have you prepared a slideshow?

7 A. I have, yes.

8 476 Q. So, your presentation, 049585, we're just going to work
9 through what your discipline does and if I can turn the
10 floor to you please, Professor, just to talk us through 14:26
11 what you think we need to take away from your first
12 slide, please?

13 A. So, fibres really went through a step-change in the
14 mid-1990s. Fibre evidence had been something that
15 forensic experts had looked at for many years but I 14:27
16 think it really took off very much so in the mid-'90s
17 during quite a wide range of new fibre types and dye
18 types that the manufacturers were releasing and, at the
19 same time, the ability for the scientist to bring in
20 new technologies which actually assisted with the 14:27
21 analysis and ultimately with the opinion of what the
22 evidence actually meant.

23 477 Q. You're talking about the period in the '90s, obviously
24 we are particularly interested, in this Inquiry,
25 generally in the period mid-1997 through to mid-1998, 14:27
26 but for the purpose of your evidence today, mid-1998,
27 the step-change that you are describing, was that
28 taking place during that latter half of the 1990s or
29 had it already occurred by the time we reached 1997?

1 A. I would say the step-change really started about '94
2 and continued right up to 2000.

3 478 Q. And is this a step-change in academic thinking, so in
4 publications and pockets of academia or is this a
5 step-change in the practical reality on the ground as 14:28
6 is it takes place in investigations across the UK?

7 A. It was really a combination of both. So, by bringing
8 in new instrumentation which really upgraded the
9 original instrumentation, the scientists realised that
10 they could gain a lot more information from textile 14:28
11 fibres which actually led to quite a large number of
12 published papers being released frequently over those
13 years.

14 479 Q. So, what it will be important for us to bear in mind to
15 ensure that we aren't judging people unfairly by a 14:29
16 standard that didn't apply to them, is just to bear in
17 mind, with any of the techniques that we're going to
18 talk about, whether or not they were part of the common
19 practice of competent scientists at the time that we're
20 talking about. So, I think that deals with your first 14:29
21 slide. Shall we turn over, please, or go to the next
22 slide to look at those techniques. And so, you've
23 broken this down into three categories, search and
24 recovery, so this is the scenes of crime officers, or
25 potentially the scientists themselves, or police 14:29
26 officers at the scene recovering, seizing exhibits, is
27 that right?

28 A. If you want to go that far back, this is more the
29 techniques available in the laboratory. So, this is

1 assuming that the items have been submitted.

2 480 Q. I understand. So, search and recovery is you have a
3 physical item in front of you, you are now looking for
4 fibres on it?

5 A. Exactly. 14:30

6 481 Q. Thank you for that correction. And so that's the first
7 one. Speak to us, please, about the second and what
8 you would expect to take place at that stage?

9 A. So, in terms of, whilst searching for fibres, we would
10 use various techniques to recover the fibres from the 14:30
11 garments using what we call tape lifts which is very
12 simply a sticky tape that goes over the surface of a
13 garment, removing loose fibres, that's then sealed
14 under a plastic sheet to preserve them and then we
15 would look specifically at those tape lifts for fibres 14:30
16 that we felt might be of interest in terms of where
17 they may have come from, particularly if we had an
18 indication of what we were looking for. So, it would
19 start of with a low power microscope, simply looking
20 for fibres of interest, mark them up, and they would be 14:31
21 individually picked off, mounted on a microscope slide,
22 sealed in a type of mount with a cover slip over the
23 top and then go on for further testing using various
24 degrees of power of magnification and different light
25 sources. 14:31

26 482 Q. Does that bring us then to the analytical testing that
27 you're speaking about?

28 A. It does. So, microscopic identification and comparison
29 is still subjective, in many ways, because it's as good

1 as the naked eye is, whereas we can now go on to
2 analytical testing than we could do in the '90s where
3 we subjected the fibres of interest to a range of
4 analytical tests. MSP, which stands for
5 microspectrophotometry, analyses the colour of the 14:32
6 fibre. TLC stands for thin layer chromatography, where
7 we could extract and look at the dye components. FTIR,
8 Fourier transform infrared, we were actually looking at
9 the chemical makeup of the fibre itself.

10 483 Q. So, if we move forward to your next slide, I think 14:32
11 we're going to better understand some of the items that
12 you have just described on that previous list. So,
13 you're here giving us examples of photographs of the
14 sort of thing that you're talking about as it happens
15 in the lab. Just talk us through, please, each of 14:32
16 those four photographs.

17 A. So, starting at the top left, that's a scientist
18 literally placing the sticky film onto the surface in a
19 grid-like fashion over the garment to remove loose
20 fibres. And then you can see in the image below, the 14:33
21 tape lift is being mounted on a plastic sheet. Jumping
22 across to the lower right is where the scientist has
23 started to mark up fibres of interest using the
24 microscope in the middle, the low power microscope, and
25 they may use different symbols, depending on the fibres 14:33
26 of interest, some in circles, some in triangles. So,
27 each of those tiny little circles will have an
28 individual fibre of interest within it. And then a
29 view above that of what you're likely to see down the

1 microscope.

2 484 Q. And is that view in the top right-hand corner the low
3 power microscope in terms of the view you get, or is
4 that greater magnification?

5 A. No, that's low power. 14:33

6 485 Q. So, we move forward, please, to your fourth slide.

7 A. So, this is using the microscope, you can just see on
8 the left-hand side, which is a polarising light
9 microscope and we use this as an aid to identify the
10 fibres of interest. And, certainly, by the '90s the 14:34
11 manufacturers were getting very clever in terms of
12 determining the cross-sectional shape of the fibre,
13 depending on the garment that they wanted to create.
14 So, they could literally make the fibres hollow to trap
15 air which helps keep a garment a lot warmer. And it 14:34
16 became very useful for the forensic scientist that the
17 manufacturers were using all these different
18 cross-sections because it just becomes an extra point
19 of observation for us to do the comparisons.

20 14:35

21 The microscope on the right-hand side is a comparison
22 microscope which kind of says what it does. So,
23 there's two high-powered microscopes that are joined
24 with a bridge, and it allows the scientist to view
25 fibres that have been recovered, question fibres as 14:35
26 well as the reference control sample at the same time
27 using different magnifications and using different
28 light sources. So, really putting the fibres through a
29 pretty significant microscopic number of tests.

1 486 Q. Those are all visual tests.

2 A. Yeah.

3 487 Q. We now come on to the analytical on your next slide?

4 A. Yeah.

5 488 Q. So, those three tests, the MSP, the TLC and the FTIR 14:35

6 are all listed there. Do you want to just talk us

7 through the images that surround this and how these

8 tests work in simple terms?

9 A. So, the MSP, which has produced the result on the lower

10 left, produces a line graph, dependent on the mix of 14:36

11 dyes within a single fibre and the purity of the dye

12 itself, and the scientist can look at the distribution

13 of the peaks and troughs that that line graph produces

14 and make a comparison.

15 14:36

16 The middle test is the TLC, thin layer chromatography,

17 this is a very basic scientific test where you extract

18 a quantity of the dye, again, from a single fibre and

19 place it on a powder coat plate, stand it up and run a

20 liquid through it. And, obviously, the components of 14:37

21 the dye separate as the liquid goes up the plate. And

22 the third test, Fourier transform infrared, is similar

23 in some ways to the first graph in that it produces a

24 line graph but this time it's analysing the polymer

25 structure of fibres, so it's particularly useful for 14:37

26 manmade synthetic fibres to actually give a distinct

27 identification and, in some instances, fibres such as

28 acrylic or nylon have sub-classes that you wouldn't be

29 able to identify using microscopy.

1 489 Q. Thank you very much indeed for introducing those
2 different techniques, we're going to take the slides
3 down from it, we'll come back to your slideshow at the
4 end of your presentation where you've got three more
5 specific to the Omagh investigation. But we're now 14:38
6 going to turn to look at the report and, in particular,
7 paragraph 7.1 where you begin to answer the question
8 that was posed to you about what the forensic strategy
9 was in relation to textile fibres. So this is page 64
10 of the joint report. 14:38
11 A. Second report.
12 490 Q. Second report, indeed.
13 A. Which paragraph sorry?
14 491 Q. 7.1 on page 64?
15 A. Okay. 14:38
16 492 Q. So, the question posed was about the forensic strategy
17 and the first date that you begin with is November 1999
18 where you say that they were already being considered
19 when Dave Barclay, an NCF specialist adviser suggested
20 further avenues? 14:39
21 A. Yes. I think he's recorded as Andrew David Barclay on
22 some of the documentation. So, Dave Barclay did elude
23 to the fact that it was worth looking at the TPU to see
24 what fibres were present and it's fair to say that that
25 work had already been done because there's a note to 14:39
26 that fact from John Logan in '98, the year before.
27 493 Q. So, is the reason that you started your answer to this
28 question November 1999 because that is the first
29 discernible written strategic decision, but we are not

1 to understand from that that no work was done on fibres
2 before that, indeed the very thing that was proposed in
3 November 1999 had already been done by that stage?

4 A. That's correct.

5 494 Q. Now, accepting that you, as we heard from Dr. Avenell 14:39
6 won't necessarily have had access to all of the
7 information that was generated, would you have expected
8 a written strategy earlier than November 1999?

9 A. I think that is quite difficult to answer. Certainly,
10 in terms of forming a strategy it was a relatively new 14:40
11 thing, probably by mid-'90s we were putting together
12 fibre strategies for casework in the Forensic Science
13 Service.

14 495 Q. So, in the Forensic Science Service a written forensic
15 strategy was part of standard practice in the mid-'90s, 14:40
16 is that the effect of your previous answer?

17 A. That's correct. It wasn't typed up in those days as
18 part of a statement but it might have been a few notes
19 on a case file.

20 496 Q. You continue your chronology at 7.2 by identifying 14:40
21 witness statements of John Logan. And just help us to
22 understand why you've identified that as the next date
23 that is part of your answer to this question about
24 forensic strategy?

25 A. So, because I hadn't managed to find a forensic 14:41
26 strategy, this was the first statement that I came
27 across where it was documented by John Logan that he'd
28 been examining for fibres and indeed found some of
29 interest.

1 497 Q. You then bring us to a date that we're all very
2 familiar with now in the context of the evidence that
3 has been given today, 16th October 2000 which was the
4 report of specialist adviser, John Davidson. Now, he
5 has the advantage over you that he was much closer in 14:41
6 time to these events and he was embedded into an active
7 investigation, the quotation that you give in your
8 report is this:
9
10 "I find it understandable, given current practice, the 14:42
11 resourcing available and the huge task involved, but
12 nevertheless unfortunate that written records relating
13 to the Terms of Reference, the decision-making and the
14 minutes of daily conferences are sparse."
15 14:42
16 A. Yeah, so that's a quote from John Davidson.
17 498 Q. Yes.
18 A. And I would say by 2000 in the Forensic Science Service
19 and other providers, we were certainly writing
20 strategies by then which is probably the reason 14:42
21 John Davidson brought the strategy into this review.
22 499 Q. He is, on the one hand, indicating it's understandable
23 but describing it as unfortunate, from which it may be
24 inferred that he's not seeking to be critical but he is
25 pointing to the deficit that that creates? 14:43
26 A. Yes, and I would agree with that.
27 500 Q. So, you continue to review various documents, none of
28 which were adequately marked for to you discern their
29 order, but your next date is 11th December 2004 where

1 we have a Peer Review Panel Report which your quotation
2 reads:
3
4 "Only fibres embedded within the thermoplastic glue
5 were considered, as it follows that these fibres were 14:43
6 in contact with the TPU whilst it was being assembled,
7 rather than resulting from contact after assembly."
8
9 So, that's what the Peer Review Panel Report discerned
10 in 2004. Now, you've had the benefit of going back and 14:43
11 looking through all of the material that is available
12 to you until that point, and was that the essential
13 focus of the fibres investigation in the Omagh bombing
14 investigation?
15 A. It was, yes. 14:44
16 501 Q. And from your perspective, as an eminent fibres expert,
17 focusing on fibres that are within the glue of the TPU,
18 is that an intelligence strategy to your way of
19 thinking?
20 A. Very much so. So, we know the glue would take time to 14:44
21 set and anything found adhered or embedded within that
22 glue would have only got there during the time of
23 manufacture.
24 502 Q. And when you say manufacture, you're talking about
25 the -- 14:44
26 A. Piecing it together.
27 503 Q. The piecing together of the bomb, effectively?
28 A. Yeah.
29 504 Q. Or a key component in it?

1 A. Yeah.

2 505 Q. Just help us to understand why it might not have been
3 such a good idea to be looking at fibres that might be
4 resting on or not embedded in the glue?

5 A. Quite simply, you wouldn't know if those fibres had 14:45
6 arrived prior, so as the components were being pulled
7 together, or indeed once the glue had dried they'd got
8 there through other means afterwards. It doesn't mean
9 to say they might not be of importance, but not as
10 important as though that are within the glue itself. 14:45

11 506 Q. That was really the point that I was seeking to tease
12 out with you, so let's just examine that for a moment.
13 Obviously, the most compelling evidence would be fibres
14 which were embedded within the glue, because they could
15 only have got there as the glue was setting, so in 14:45
16 other words, during the period of the manufacture of
17 the bomb, but you will know from your vast experience
18 that police investigations aren't necessarily concerned
19 with solely with who might manufacture the bomb, but
20 who might transport the bomb, who might handle the bomb 14:46
21 and so, fibres that are in contact with recovered
22 pieces that aren't embedded in the glue could still
23 have value?

24 A. Yes.

25 507 Q. And did you see any evidence of that particular line of 14:46
26 reasoning being applied to the Omagh bombing
27 investigation?

28 A. No.

29 508 Q. And is that a surprise to you and would you be critical

1 of that absence?

2 A. I think it's something I would have considered towards
3 the end, particularly when the fibre numbers recovered
4 within the glue were low.

5 509 Q. So, again, that might be counterintuitive to the 14:46
6 layperson, rather than starting outside and working
7 inwards, your view is the correct strategy would be to
8 start with your best potential source of evidence and
9 only as you were exhausting that, that you would
10 consider whether there were other opportunities? 14:47

11 A. That's correct.

12 510 Q. And did you see any evidence of those wider
13 opportunities being considered at that latter stage?

14 A. I haven't found evidence of that, no.

15 511 Q. And bearing in mind that your view is that that is 14:47
16 something would you consider as part of a forensic
17 strategy, do you think that's something that ought to
18 have formed part of that fibre strategy, at that later
19 stage?

20 A. At a much later stage, yes. 14:47

21 512 Q. Now, we don't need to go over much of the detail of
22 your report because it is going to be published in due
23 course, but, I'd just like to invite you to just take a
24 step back about the topic of forensic strategy, we've
25 talked about what it was. We've talked about when it 14:47
26 was set into writing, and what it didn't include. Was
27 there any other aspect of the forensic strategy that
28 you've seen that you think is in some way comment
29 worthy or do you think that hits the main take away

1 points from what you've identified within the
2 materials?

3 A. I think at 7.14 of my report, page 67, I've provided a
4 list from a letter from Dr Griffin, that's the kind of
5 approach would I have taken as well, which is quite an 14:48
6 ambitious strategy to look at all those different
7 aspects from people's workplaces, and people's homes,
8 the cars that they travel in.

9 513 Q. Let's just pause there for a moment, because not
10 everybody has it in front of them. We've talked very 14:48
11 much about the TPU being the focus of the strategy?

12 A. Mm-hmm.

13 514 Q. That it was that from an early stage and the starting
14 point was embedded within the glue, we'll come to what
15 that discovered in a moment. Staying with that device, 14:49
16 you think that there may have been a forensic
17 opportunity in relation to fibres that weren't embedded
18 in the glue, but is here, on the 1st July 2000, an
19 example of where a much more expansive forensic
20 strategy is being proposed? 14:49

21 A. Yes.

22 515 Q. And we're here moving away from the device itself, but
23 considering a number of environments, effectively,
24 which might produce fibres?

25 A. Exactly. 14:49

26 516 Q. And the phrase you use was, "very ambitious strategy?"

27 A. Yes.

28 517 Q. What, if anything, came of that strategy that you could
29 see from the materials?

1 A. That's difficult to give an accurate comment on because
2 I struggle to understand the number of suspects' houses
3 and workplaces and cars that were actually examined,
4 although I think there's a reference somewhere of
5 material 600 exhibits, that's quite a significant 14:50
6 number to be searching for textile fibres, picking
7 individual fibres off every time and doing the
8 comparisons. So, it's a very lengthy process.

9 518 Q. Did you see evidence that there were those examinations
10 being conducted in relation to all of those items? 14:50

11 A. I certainly saw lots of examinations, it wasn't that
12 easy from the notes to understand which exhibits
13 related to what.

14 519 Q. And is that simply a product of the passage of time or
15 would you have expected, by the standards of the time, 14:50
16 that there would have been better record-keeping to
17 allow you to discern that, or is it that you have an
18 incomplete picture?

19 A. I would say it's more an understanding of the actual
20 files and the structure of the files themselves, it 14:51
21 wasn't the easiest task to drill down to exactly what I
22 was looking for.

23 520 Q. So, we've been clear about it, you aren't implying
24 criticism by saying that you couldn't discern it, that
25 may just be a product of where you're sitting in the 14:51
26 history of all of this?

27 A. That's correct.

28 CHAIRMAN: Prof. Robson, could I make sure I follow
29 something before we move away from it. I'm trying to

1 understand a little bit more about this very ambitious
2 strategy you mentioned. Is that a strategy to see if
3 it's possible to recover fibre evidence from a range of
4 different locations that might be associated with
5 suspects?

14:51

6 THE WITNESS: It is, yes. So, the fibres were found
7 within the TPU that they felt were of value and the
8 next stage was to try and determine where those fibres
9 have come from.

10 CHAIRMAN: Yes. You're always going to have to have
11 something that was found at the scene to go back and
12 conduct a comparison with.

14:52

13 THE WITNESS: Yeah.

14 CHAIRMAN: In this case is it limited to the fibres
15 found in the TPU?

14:52

16 THE WITNESS: I'm not aware of what else was looked for
17 within the TPU, I know one of my colleagues was looking
18 at that. But it's kind of building up a picture of
19 what's been left behind. And in terms of fibres,
20 because fibres are everywhere and they're left
21 inadvertently, it's trying to work backwards to
22 understand how the fibres originated from a suspect's
23 house? Are they particularly prevalent in a vehicle?
24 It's literally trying to track down the source, if
25 possible, and then you've got some sort of association.
26 Does that make sense?

14:52

14:53

27 CHAIRMAN: But in the end, are you always looking for
28 something that might be comparable with the fibres
29 recovered in the TPU?

1 THE WITNESS: Ideally. You don't always find the
2 actual garment that they came from but you may find an
3 association through another link. So, if the garment
4 had been destroyed, the fibres from that garment might
5 still be in the suspect's car. So, you can still find 14:53
6 a link back to an individual. On this occasion,
7 Dr. Griffin suggested that the fibres could have come
8 from a jumper or a mask or a pair of gloves, all of
9 that dark navy colour.

10 CHAIRMAN: You're looking for something from any of 14:54
11 these other locations that might be comparable or
12 similar to the fibres that you found at the scene?

13 THE WITNESS: Yes. You're always trying to find -- if
14 you can find the source you might then be able to link
15 it to the individual. 14:54

16 CHAIRMAN: Thank you.

17 521 Q. MR. DE LA POER: If I can just reflect back to you my
18 understanding, because I think, if I may say so, that's
19 a very important additional clarification. In the
20 Omagh bombing investigation, is this right that in 14:54
21 terms of the incriminating evidence, so in other words
22 the evidence tending to suggest involvement, as far as
23 fibres is concerned we're focused on what was recovered
24 from embedded within the glue on the TPU, is that
25 right? 14:54

26 A. Yes, correct.

27 522 Q. All of the searches for fibres are not looking for
28 further incriminating evidence in the sense that they
29 directly prove guilt in and of themselves, but because

1 they might match the incriminating evidence?

2 A. Correct.

3 523 Q. So, have I understood that correctly?

4 A. You have.

5 524 Q. So, I suppose, just the final bit of clarification 14:55

6 there, just to nail this point down; was there any

7 other incriminating fibre evidence identified, in other

8 words, evidence which of itself directly suggested

9 guilt?

10 A. No. 14:55

11 525 Q. And so, the ambitious strategy was to maximise the

12 opportunities for finding a match to the TPU fibres?

13 A. Yes.

14 526 Q. Now, we now need to consider what the outcome of those

15 tests were. And I think you start to deal with this at 14:55

16 7.20 and following, where you deal with which tests

17 were carried out. We don't need to be exhaustive about

18 this, but instead consider the conclusion. Did the

19 collection of comparison material and subsequent

20 analysis and comparison lead the scientists to conclude 14:56

21 that they or may have found a match for the TPU fibres?

22 A. Initially, yes.

23 527 Q. When you say "initially," what sort of time period are

24 we considering? So when, in relation to August 1998,

25 does it first appear to emerge that scientists are 14:56

26 saying we think we have a match?

27 A. So, Mr. Logan referred to it verbally in October '98, I

28 believe, and then in his statement of 2000, June 2000.

29 However, the finding seems to diminish over the

1 forthcoming years to the point that, I've seen in a
2 recent report from Dr. Griffin, that she considered
3 that the jumper that they were purported to come from,
4 had a wider range of colour.

5 528 Q. Let's just take that step by step. So, we start with 14:57
6 Mr. Logan and he is raising in October 1998, the
7 possibility at least, that an item seized by the
8 investigators may match the TPU fibres?

9 A. Correct.

10 529 Q. And that item is given a particular exhibit number, 14:57
11 PC3, and it was a jumper?

12 A. Yes.

13 530 Q. And it was a jumper that was recovered from an address
14 associated with Shane and Michael Broderick?

15 A. Correct. 14:58

16 531 Q. So, that's where we start. What sort of language was
17 Mr. Logan initially using about his confidence level as
18 to whether they did or did not match, the jumper on the
19 one hand and TPU fibres on the other?

20 A. I'll paraphrase because I don't have his statement in 14:58
21 front of me. He considered the evidence weak,
22 primarily because, in his opinion, that particular
23 fibre type was, in his words, popular.

24 532 Q. So, the high point, because we're going to see a
25 diminishing level of confidence, is weak support for 14:58
26 the proposition that the fibres from the TPU emanated
27 from the jumper?

28 A. Yes.

29 533 Q. Now, the confidence level drops as you've described,

1 and the resting position within the investigation was
2 that in fact the colours didn't even match?

3 A. It appears as though extensive further testing took
4 place, I haven't been able to find out exactly when the
5 decision was made that the fibres no longer matched the 14:59
6 jumper, but that's certainly the inference from the
7 reports from Dr. Griffin and Dr. Davidson.

8 534 Q. What sort of time period are we talking about when that
9 conclusion was being voiced in writing?

10 A. I think it's some four, five years later. 14:59

11 535 Q. So, that's our range within the material that you have
12 seen. Now, just help us, you've described the
13 microscopic work that one might do, you've also
14 described the analytical tests; were all of those tests
15 carried out, firstly, by Mr. Logan? 14:59

16 A. According to his statement, yes.

17 536 Q. And so his weak support was based as a result of having
18 done the tests that we've seen in your slideshow?

19 A. Correct.

20 537 Q. Was any additional testing done by any of the 15:00
21 subsequent forensic scientists?

22 A. So, it looks to me, from what I can ascertain, that
23 more testing was done some years later, particularly
24 when they were looking at other linking offences where
25 further tests took place on the jumper and the 15:00
26 fibroacrylics.

27 538 Q. And are they different tests or are they a repetition
28 of the tests that have already been done?

29 A. I think it's a closer look involving more

1 microspectrophotometry, MSP, and perhaps additional
2 TLC.

3 539 Q. Now, we're dealing with a time period here so let's
4 start with Mr. Logan. Were there any tests available
5 to Mr. Logan that he didn't use? 15:01

6 A. That he didn't use? Not that -- no, he used the tests
7 that were available, in '98.

8 540 Q. But by the time we get to the later phase were there
9 any tests available to those later scientists that they
10 didn't use? 15:01

11 A. Yes, there were two tests that they could have used but
12 might not have been available at the Belfast
13 laboratory. They were certainly available in the
14 Forensic Science Service.

15 541 Q. When you say they aren't available in the laboratory, 15:01
16 was your experience that if a particular laboratory
17 couldn't do a test that the matter would rest there, or
18 was there a relationship of collaboration between
19 laboratories?

20 A. No, the relationship was there between the two. Yeah. 15:01

21 542 Q. And the test that was available to the Forensic Science
22 Service, was it a test that they kept to themselves and
23 was part of the service that they offered or was it a
24 test that they made it known within the scientific
25 community that they had available to them? 15:02

26 A. That's a difficult question. Certainly, the scientists
27 in Belfast would be aware of the other tests elsewhere.

28 543 Q. Now, Mr. Davidson, who's part of the cohort with the
29 reinvigoration of the forensic investigation, he had

1 come from the Forensic Science Service, hadn't he?

2 A. Yes, that's right.

3 544 Q. You would expect him to be aware of the tests?

4 A. would you.

5 545 Q. And was the same position true of miss Griffin as well? 15:02

6 A. So, Dr. Griffin was a member of the European Fibres

7 Group, so she would be aware of the tests.

8 546 Q. But it would appear that whatever their state of

9 knowledge at the time, that test wasn't proposed or

10 those additional tests weren't available? 15:02

11 A. Not that I'm aware of, no.

12 547 Q. Do you want to just tell us, in very simple terms, what

13 those tests are and how they are different from what

14 was conducted?

15 A. So, the first test would be -- when I talked about 15:03

16 microspectrophotometry, the MSP test, that test was in

17 white light originally in 1998, probably the results

18 that John Logan relied on. But by 2002 the Forensic

19 Science Service and other providers had the capability

20 of analysing the ultraviolet reach as well which 15:03

21 obviously provided more information for the comparison.

22 In addition to that, it's also possible to look at the

23 line graphs and use what's called first derivative,

24 which is a closer look at the changing slope of each of

25 the peaks produced on the graph. 15:04

26 548 Q. Are these destructive tests in the sense that you need

27 to take a piece of whatever fibre you have extracted

28 from within the glue in order to test it?

29 A. No, they're non-destructive.

1 549 Q. So, could you retest that same part of the fibre for
2 other tests as well?

3 A. Yes, if the fibres are still available, you could
4 retest.

5 550 Q. Now, I'd just like to deal, please, before we come to 15:04
6 your slideshow which will conclude my questioning for
7 you, just to understand, from your perspective as an
8 expert in this field, about the assessment at its
9 highest of there only being weak support for the
10 proposition that the fibres from the TPU came from the 15:04
11 jumper, PC3. Now, from your perspective is that a
12 judgment that you would think that you would be bound
13 to agree with or do you think there may be some reason
14 for disagreement about that assessment?

15 A. Currently I haven't seen enough information to reach 15:05
16 the same conclusion.

17 551 Q. And what further information would you need and what
18 factors would you be having in mind which might lead
19 you to a different conclusion?

20 A. I think I would prefer to have undertaken the other two 15:05
21 tests, at minimum, and that would help either way. It
22 might support the fact that the exclusion was correct
23 but it might also bring back to bear that that jumper
24 was potentially the source.

25 552 Q. Now, what you say at your paragraph 7.39, applying your 15:05
26 experience and expertise, this is page 73:
27
28 "Perhaps the fibre team considered this type of fibre
29 to be so prevalent locally as to reduce the evidential

1 value of any association specifically with the jumper,
2 or perhaps the decision was made to exclude the jumper
3 as a potential source because the TLC results appear to
4 show an extra band in the jumper fibres as against the
5 one from the TPU."

15:06

6
7 So, you're there trying to walk in the footsteps of the
8 scientists using your enormous experience to understand
9 why they were taking the approach that they were, is
10 that right?

15:06

11 A. Correct.

12 553 Q. And how important is it that a person in your
13 discipline has a complete understanding of the
14 prevalence of a particular set of fibres or a
15 particular garment before being able to make an
16 assessment of the value of any features in common?

15:06

17 A. Sorry, can you rephrase?

18 554 Q. Of course, it would be a bad question from me. The
19 fibres team, you posit, may have thought that fibres of
20 that type were so prevalent as to reduce the value of
21 potential areas in common?

15:07

22 A. Yes.

23 555 Q. So, we're here talking about the prevalence of a
24 particular garment. From your perspective as an expert
25 in fibres, is it necessary to know about the prevalence
26 of a particular garment before you can reach meaningful
27 conclusions about the value of any features in common?

15:07

28 A. Yes, it is. So, the phrase that three of the
29 scientists agreed that the fibres were popular locally,

1 I would want to test that to assure myself that they
2 were all very similar to each other if I was going to
3 eliminate that for that reason. And they may have done
4 that. They may have had their own internal databases,
5 it's just not part of what I've examined. 15:08

6 556 Q. Well, we're going to touch back on this in a moment,
7 let's look at your final three slides please, I think
8 this will be page 6, please, Ms. Montgomery. So, here
9 we see the detail; 400 fibres recovered from 800+
10 exhibits, including populations. And then you list 15:08
11 different fibres. So, here we're talking about
12 potentials for comparison with the TPU fibres, is that
13 right?

14 A. That's correct.

15 557 Q. So, there they've got their sample for comparison, 15:08
16 they've got, as I have described it, inculpatory
17 material from the TPU. We can see the conclusion
18 there:

19

20 "The scientist involved considered the finding of the 15:09
21 five blue-green acrylic fibres to be weak evidence and
22 further testing, TLC, appeared to suggest they no
23 longer matched."

24

25 A. Yes, I've put TLC with a question mark because I 15:09
26 couldn't quite determine if that was the technique that
27 was used to eliminate the fibres.

28 558 Q. And just help us, we've got scientists who are
29 reviewing the work of those that went before them in

1 the investigation excluding a match, do you have any
2 reason to doubt that exclusion?

3 A. I'd be surprised if they excluded purely on TLC. So,
4 in the Forensic Science Service when the upgrades in
5 the technology came out, the MSP in particular was a 15:09
6 particularly-sensitive technique and we showed that TLC
7 didn't actually provide extra discrimination. If it
8 did, it was on very, very deeply dyed, usually jet
9 black fibres. These, in fact, as you can see in the
10 images are a blue-green colour. 15:10

11 559 Q. And are these the fibres that were recovered from
12 within the glue that we can see at a greater degree of
13 magnification?

14 A. That, I can't say. These are images taken from
15 Dr. Griffin's file but certainly fall into the group of 15:10
16 the blue-green acrylic fibres.

17 560 Q. So, if not those fibres then to the naked eye at this
18 magnification, of that general appearance?

19 A. Yes.

20 561 Q. Let's move on to your penultimate slide, please. So, 15:10
21 here I think you are dealing with the tests that you've
22 told us you can't see any evidence for having been
23 undertaken?

24 A. Correct.

25 562 Q. And they may be capable of resolving the issue in a 15:11
26 sense that they conclusively exclude, is that fair?

27 A. It's impossible to say without carrying out the tests.

28 563 Q. I'm not suggesting that they would conclusively
29 exclude, but that is one possibility that would be a

1 result of the test?

2 A. Certainly.

3 564 Q. Or, alternatively, lend support to the proposition that
4 they are from the same?

5 A. Absolutely. 15:11

6 565 Q. That's what those tests could do, they could say this
7 matter is beyond doubt now, it's not a match. But,
8 equally, they might say there are features in common
9 that mean that there's further support from a different
10 test that tends to suggest the proposition that the 15:11
11 jumper that was the source of the TPU fibres?

12 A. Yes.

13 566 Q. Let's just go to your final slide, please. So, I'll
14 just read this out and we'll deal what it:
15 15:12

16 "Until I satisfy myself with the parameters for the
17 exclusion of the jumper PC3 being the source of the
18 five blue-green acrylic fibres recovered from the Omagh
19 bomb TPU, I am currently unable to agree with this
20 original finding on the ground that: 15:12

21

22 1. Testing the potential source garment could require
23 extensive sampling in line with improved analytical
24 techniques that were introduced during this period; and
25 15:12

26 2. The application of UV-Vis MSP and first derivative
27 may have assisted with additional exclusion/inclusion
28 of the jumper being the potential source."
29

1 A. Yes, that's correct.

2 567 Q. So, just help us with the first of your reasons for not
3 unequivocally agreeing with the findings of the
4 investigation, what is it that you are getting at
5 there, please? 15:12

6 A. So, the jumper in question, PC3, potentially, you don't
7 know until you test it, but may have varied across the
8 garment. So, you get more and wear and tear on the
9 cuffs. And depending if that was the jumper at the
10 time being worn when the TPU was being put together and 15:13
11 if the individual was stood up, it could be from the
12 cuff, it could be from the lower part of the jumper if
13 it was very close. Potentially, those fibres would be
14 a lot different, for example, from the lower inside
15 back that's got far less wear and tear, less 15:13
16 environmental UV light on it and that's how sensitive
17 the technique is in terms of being able discriminate
18 different areas of a garment. So, you would want to
19 test the garment very thoroughly before you were
20 convinced that it didn't match. 15:13

21 568 Q. You have seen any evidence of that very thorough
22 testing of the garment?

23 A. I've seen nothing in the notes.

24 569 Q. Just to develop that a little bit, because the concern
25 that seems to be addressed, or which you impute to the 15:14
26 investigative team is perhaps, and this is my number
27 but it's illustrate the point, that there are a
28 thousand of these jumpers in circulation, or more even,
29 and that until you know how many jumpers like this are

1 in circulation the match certainty is much lower, that
2 seems to be the reasoning that you were imputing them,
3 is that right?

4 A. Yes, yes.

5 570 Q. But I think what you're saying there is, never mind the 15:14
6 other garments, within that one garment there may be
7 unique parts in terms of the fibres because of the way
8 in which they wear and are exposed to the sun?

9 A. Yes, correct.

10 571 Q. And so, where does that leave us with the need to know 15:14
11 how many jumpers like that are in circulation? Is
12 that, in fact, a central fact to know, or is your line
13 of reasoning let's have a look at this garment and see
14 what variation there is within it because there may be
15 unique patches even within the garment? 15:15

16 A. Exactly. And until you do the testing you don't really
17 know. So, perhaps if I can just relate to a case I
18 worked on a few years ago where I was presented with a
19 dozen pair of gloves that all looked the same, not only
20 could I distinguish between each pair of gloves, I 15:15
21 could actually say which was the right glove and which
22 was the left glove, because the manufacturer isn't
23 interested in the microscopy and the analytical
24 capabilities of forensic sciences, they just want the
25 gloves to look the same to the naked eye. So, there's 15:16
26 lots of variation goes on into the manufacture,
27 particularly when they're manufactured in The Far East,
28 cheaper garments, even the dyes can change but to us
29 they look the same. It isn't until you actually start

1 testing it that you realise there's so much variation.
2 And there's a lot of published research to back that
3 up. The chances of finding fibres that match by chance
4 are extremely low.

5 572 Q. Your second point I think you've probably dealt with in 15:16
6 sufficient detail already, but is that your point where
7 there are further tests that are available to us now
8 and indeed became available in the course of the Omagh
9 bombing investigation that could be used to provide
10 further data to feed into the assessment? 15:16

11 A. Yes, I think they would assist.

12 MR. DE LE POER: Prof. Robson, thank you very much
13 indeed. Those are the questions that I have for you.
14 I think the position is that just the PSNI have
15 permission for Rule 10 questions. I look to Mr. Henry, 15:17
16 I think he has some questions for you.

17 CHAIRMAN: Mr. Henry, just before you begin, would you
18 mind if I just asked Prof. Robson a couple of questions
19 first?

20 MR. HENRY: Of course. 15:17

21
22 PROF, ROGER ROBSON WAS QUESTIONED BY THE CHAIRMAN AS
23 FOLLOWS:
24

25 573 Q. CHAIRMAN: Professor, my own experience of cases in 15:17
26 which recovered fibres have comprised important
27 evidence is fairly limited but I have encountered it in
28 a few cases, albeit a long time ago now. So, my own
29 understanding of this field is pretty limited and I'd

1 be really grateful to you if I could seek your
2 assistance with one or two other things.

3 A. Mm-hmm.

4 574 Q. I'd like to start just by going back to Mr. Logan's
5 original assessment and trying to understand just what 15:18
6 that means. When Mr. de la Poer was asking you about
7 it, he described it as a match, I don't know myself
8 whether that's the term that was used by Mr. Logan or
9 not. Did he use the term "match?"

10 A. I would have thought he probably did at that stage, 15:18
11 yes. So, the word "match" doesn't actually mean
12 they're identical.

13 575 Q. Well, that's what I was wondering about. So, the first
14 thought that I had was did that mean, for example, that
15 the recovered fibres were consistent with the fibres 15:18
16 found in the jumper in the sense that they were of the
17 same type; or did it mean that they were fibres which
18 came from that jumper?

19 A. No, it means they're of the same type and that
20 Mr. Logan couldn't distinguish them using the tests 15:19
21 that he applied. You can't categorically say they came
22 from that jumper.

23 576 Q. No.

24 A. 100%.

25 577 Q. But if I follow what you were explaining correctly, if 15:19
26 you were to carry out the exercise now, you would want
27 to examine the whole of the garment itself to determine
28 whether there were individual areas of wear that were
29 discernible and you might then look back to the

1 recovered fibres to see if those fibres demonstrated
2 signs of similar wear. Is that the sort of process?
3 A. Not so much similar wear but behaved similarly in terms
4 of the tests that were applied. So, I'd apply more
5 tests but ensure that the garment had been sampled 15:20
6 extensively so you had a full range of fibres that are
7 likely to shed.
8 578 Q. You would take a larger sample of fibres from the item
9 to be compared with?
10 A. Yes. 15:20
11 579 Q. And then you would compare those back with the
12 recovered items?
13 A. Correct.
14 580 Q. And would that ever allow you to come to the view that
15 the recovered fibres came from that garment or would 15:20
16 they simply enhance the finding that they --
17 A. It would enhance the finding, so it would, in my
18 terminology it would be stronger evidence than saying
19 weak. But I would also extend that ability at seeing
20 what else was on that garment. If the garment's been 15:21
21 preserved it may have other things on the garment that
22 we're currently not aware of. As an example, it might
23 have tiny samples of red paint from a till box. And do
24 we then find tiny fragments of red paint within the
25 TPU? And if we do, we're then finding a greater 15:21
26 association. It might not be red pint, it might be
27 other fibres that are related to some other item that
28 was seized from that particular house, and those
29 fibres, or just one or two of them, are found within

1 the TPU, then the evidence obviously does enhance.

2 581 Q. So, there's perhaps nothing wrong with coming to the
3 view that the evidential value of recovered fibres,
4 which are consistent with fibres in a jumper, being
5 measured by the extent to which those jumpers are 15:22
6 prevalent, nothing necessarily wrong with that?

7 A. No.

8 582 Q. But there's more that you could do?

9 A. I think so.

10 CHAIRMAN: Right, thank you. 15:22
11

12 PROF. ROGER ROBSON WAS QUESTIONED BY MR. HENRY AS
13 FOLLOWS:
14

15 583 Q. MR. HENRY: Thank you, my Lord. Now, Prof. Robson, I 15:22
16 just want to ask you briefly about the two additional
17 tests that you've helpfully described in the latter
18 stages of your evidence. And in terms of giving them a
19 label, I think you referred to one of them as UV-Vis
20 MSP, or that being a new piece of equipment that was 15:22
21 purchased by FSS in and around 2000?

22 A. Correct.

23 584 Q. And is that the beginning of the use of that particular
24 equipment?

25 A. The UV area was in use, particularly in the German 15:23
26 State forensic labs going back to the mid-'90s.

27 585 Q. And you helpfully described this in paragraph 7.42 of
28 your report but you go on to say that it already being
29 established in the German State laboratories, it was

1 relatively new to the UK and the impression one got
2 from your report was that its use in labs in UK began
3 in 2000?

4 A. Around that time, yes.

5 586 Q. And your knowledge is that it was limited to FSS and, 15:23
6 potentially, I think at one stage you might have said
7 one other laboratory?

8 A. It was certainly available in the FSS.

9 587 Q. Okay. You're not sure if it was available anywhere
10 else? 15:24

11 A. I'm not sure, no.

12 588 Q. Okay. The second additional type of test that you
13 mentioned then was, and was more analytical than a
14 physical test, as it were, first derivative analysis?

15 A. Correct. 15:24

16 589 Q. I'm going to refer you to paragraph 7.41 of your report
17 to assist with this because within that, just
18 summarising that paragraph of your report, you talk
19 about some interest in that technique, analytical
20 technique beginning to show in 1996 for the first time. 15:24
21 Towards the end of the paragraph you go on to say that
22 the technique was tested more thoroughly between 2000
23 and 2002 when the work was presented to the ENFSI, and
24 followed up by published paper from experts within FSS
25 in 2007. So, that's just to give you a little bit of 15:25
26 context to the question that follows. The query I have
27 for you is, would first derivative analysis have been a
28 widely known technique that could have been used in
29 August 1998, or before, by the textile specialist in

1 Northern Ireland?

2 A. Certainly, Dr. Griffin would have been aware of the
3 technique, she was a member of the European Network of
4 Forensic Science Institutes, and the scientists from
5 Germany were presenting on the value of the technique 15:25
6 by the late 1990s, I would say. We were using it in
7 the Forensic Science Service I would say around '98 to
8 2000. And it wasn't until scientists in Forensic
9 Alliance decided that something really needed to be
10 published from the UK on its value that that came out 15:26
11 in 2000 and then the FSS followed it with a more
12 extensive analysis that they published in 2007.

13 MR. HENRY: Okay. That's very helpful Professor, thank
14 you.

15 MR. DE LA POER: Sir, I have no further questions, do 15:26
16 you have any more questions for the Professor?

17 CHAIRMAN: Nothing.

18 MR. DE LA POER: In those circumstances I wonder
19 whether he may be released and whether this would also
20 be a convenient moment for a break. 15:26

21 CHAIRMAN: Yes, it would. Thank you very much,
22 Prof. Robson.

23 MR. DE LA POER: Looking at the time, would twenty to
24 be convenient?

25 CHAIRMAN: Yes. 15:27
26

27 THE INQUIRY ADJOURNED BRIEFLY AND RESUMED AS FOLLOWS:
28

29 MS. BRIGGS: Chair, in the witness box is Ms. Melanie

1 Pugh, her contribution to the Forensic Science 2A
2 reports can be found at pages 90 through to 95. If she
3 can be sworn please, Chair.

4 CHAIRMAN: Good afternoon, Ms. Pugh.

5 THE WITNESS: Thank you. Good afternoon, Chair.

15:39

6
7 MS. MELANIE PUGH, HAVING BEEN SWORN, WAS QUESTIONED BY
8 MS. BRIGGS AS FOLLOWS:
9

10 590 Q. MS. BRIGGS: we'll start with your full name please?

15:40

11 A. Thank you, it's Ms. Melanie Pugh.

12 591 Q. Thank you, Ms. Pugh. We'll begin with your
13 professional background and experience. We've heard a
14 little from Prof. Gallop about this already but can you
15 tell us in your own words, please?

15:40

16 A. Yes. I joined the Home Office Forensic Science Service
17 in 1998, initially as an analyst and I moved into the
18 Department, which is called "Questioned Documents
19 Examination" in 2001, and I trained within the FSS.
20 Since its closure in 2012 I've been a private
21 practitioner still specialising in questioned documents
22 examinations. I specialise in expert witness evidence
23 for the police, Government departments such as Customs
24 and Excise, Trading Standards, other Government bodies,
25 and give evidence in courts across the UK and also
26 internationally.

15:40

15:41

27 592 Q. Thank you very much, Ms. Pugh. By way of some
28 housekeeping then, you've contributed to the forensic
29 science enquiries led by Prof. Gallop?

1 A. Yes, I have.

2 593 Q. And you, like the rest of those within your team, were
3 not carrying out an investigation of your own but you
4 were reviewing what had been done by others at the
5 time? 15:41

6 A. That's correct, yes.

7 594 Q. And your speciality is in questioned documents, for
8 those who may not know what that is, and we have heard
9 a little bit about this already from Prof. Gallop, but
10 can you help the Inquiry to understand what a 15:41
11 questioned document is?

12 A. Yes. So, a questioned document is a document which is
13 in dispute in some way. So, that could be a document
14 where its origins are known or that it needs some input
15 into its origins in terms of who's produced the 15:42
16 document. It's quite a varied sort of area of forensic
17 science in that it touches upon handwriting and
18 signatures analysis, inks, examination of office
19 printers, typewriters, stamp impressions and also
20 looking for sort of like more intelligence-led areas of 15:42
21 science such as indented impressions.

22 595 Q. Okay. And those are things that we will turn to in due
23 course, but for the sake of brevity, is it fair to say
24 that sometimes a questioned document is called QD?

25 A. Yes. 15:43

26 596 Q. That's how we'll refer to it going forward?

27 A. Yes.

28 597 Q. Okay. Can you help us understand where QD examination
29 fits in the context of a forensic investigation of a

1 bombing incident, in particular where one might expect
2 that initial focus might be on what's there at the
3 scene, debris, explosive material and so on?

4 A. Yes, so in my experience of counterterrorism and sort
5 of bombing inquiries, questioned document examination 15:43
6 may come in the second tranche of investigations. The
7 first sort of initial response may be sort of physical
8 methods, identification of the source of the bomb or
9 the type of bomb, and maybe victim identification and
10 sort of investigations of a more sort of qualitative 15:43
11 type. Whereas question document examination very often
12 will come in the second tranche of investigations when
13 they're looking for links to individuals responsible,
14 or they're trying to link addresses to people and so,
15 it's not uncommon that questioned documents will come 15:44
16 after the direct investigation has begun rather than at
17 the beginning.

18 598 Q. And indeed, it's that pattern that you saw in relation
19 to the Omagh bomb investigation, is that fair to say?

20 A. Yes, it is. 15:44

21 599 Q. So, you, like the rest of the team that contributed to
22 this report, focused you had your review on two periods
23 of time, isn't that right?

24 A. Yes, that's correct.

25 600 Q. And that was the period 1998 through to 2001? 15:44

26 A. Yes.

27 601 Q. And then December 2001, I should say, onwards?

28 A. Yes.

29 602 Q. And that time marker is marked by the Police

1 Ombudsman's Report, isn't that right?

2 A. That's correct.

3 603 Q. And we'll go back to the significance of that report or
4 otherwise later on. But if we look at the early stages
5 immediately after the Omagh bomb we know from the 15:45
6 evidence we've heard today that Mr. McAuley of FSANI,
7 was leading the forensic investigation?

8 A. Yes.

9 604 Q. And when Mr. McAuley and others examined the scene, and
10 you say this in your report, you say that 87 items were 15:45
11 submitted to the lab between 18th to 24th August 1998?

12 A. Yes.

13 605 Q. But none of those seemed to go for questioned document
14 examination, is that right?

15 A. From the records, I understand none of the initial 15:45
16 document -- the initial items as seized from the scene
17 of the crime made it to the QD department.

18 606 Q. You consider that, you say, in your report to be
19 unsurprising, can you tell us why that is?

20 A. Referring back to my previous comment, I think the 15:46
21 initial response at the scene is to try to identify
22 bomb type, any sort of victim identification they can
23 do or any markers that will sort of help with the bomb
24 itself, whereas questioned documents is a great linking
25 tool for investigations somewhat down the line. 15:46

26 607 Q. Thank you for that. And you say - I'm at 9.2 of your
27 report for anyone following along - that in the initial
28 stage, this very early stage, there was limited
29 evidence of coordinated multidisciplinary examination

1 which involved questioned documents?

2 A. Yes.

3 608 Q. And you say in your report that liaison might have
4 taken place informally?

5 A. Yes, it's very common for examination, or discussions 15:46
6 to be carried out verbally at this stage. Especially
7 with such a fast-moving investigation, conversations
8 will be discussed sort of on the floor, as it were,
9 rather than sort of noted down. So, there didn't seem
10 to be any evidence of a strategy between the 15:47
11 investigation team and the Questioned Documents
12 Department, although that's not to say that there
13 wasn't a strategy, there just wasn't one that was
14 clearly identifiable.

15 609 Q. And you do refer in your statement to a 2025 statement 15:47
16 of Mr. McAuley --

17 A. Yes.

18 610 Q. -- prepared for the Inquiry, where there was perhaps
19 some mention of liaison with QD?

20 A. Yes. There was certainly discussions to be had but 15:47
21 there was nothing more than that at this stage.

22 611 Q. Can we then look at strategy and coordination and
23 structure of QD examinations later on?

24 A. Yes.

25 612 Q. You make the distinction between the December 2001 15:48
26 period onwards?

27 A. Yes.

28 613 Q. Because you're asked about that and your report refers
29 to a QD search strategy being implemented in and around

1 the 2001 period?

2 A. Yeah, it seemed to become a little bit more structured
3 at the stage. So, there was some direction given to
4 scenes of crime officers or investigative officers to
5 search specifically for questioned document-related 15:48
6 items such as notebooks, diaries, even I think office
7 equipment and Post-it notes were mentioned, so there
8 was, obviously, a more targeted approach post 2001.

9 614 Q. And could you yourself understand why that shift might
10 have occurred, was it the PONI Report or was it 15:48
11 something else?

12 A. It could possibly have been the report and also at that
13 stage they brought on a specialist adviser whose role
14 was to sort of target what forensic evidence could be
15 brought out of the case. And so I think the two things 15:49
16 combined meant that there was a little bit more focus.

17 615 Q. And the specialist adviser, that's Mr. Davidson?

18 A. Yes, that's correct.

19 616 Q. And we know from earlier evidence that he was put in
20 place as a result of the PSNI's internal investigation? 15:49
21 A. Right, yes.

22 617 Q. And you describe how QD activity in this 2001 period
23 onwards became more structured?

24 A. Yes.

25 618 Q. And you're asked in your report, or you comment in your 15:49
26 report whether such structuring should have occurred
27 earlier, I'm referring to paragraph 9.5 of your report?

28 A. Yes.

29 619 Q. What can you tell us about that?

1 A. There wasn't really -- although it wasn't evident that
2 there was a structured strategy in place, there wasn't
3 the evidence to determine whether it would have helped
4 in the case because at the time they were looking for
5 sort of more investigative evidence rather than 15:50
6 evidential evidence. It would be difficult to know,
7 without seeing the records, whether it would have made
8 a difference or not.

9 620 Q. And just to unpack that, can we understand the
10 difference between investigative evidence and 15:50
11 evidential evidence from your own point of view?

12 A. Yes. So, evidential evidence is, basically evidence
13 that you're providing for the Court, whereas
14 investigative evidence may be sort of before that, it
15 might be trying to find a route, a source of an 15:50
16 enquiry. So, it may be looking for individuals, it may
17 be looking for locations, it might be trying to provide
18 links between places.

19 621 Q. I want to turn now to look at some of the QD
20 examinations conducted in the documents that you found 15:51
21 were submitted for examination and, again, I think
22 we'll look at this through the lens of the pre-December
23 2001 period and the post-December 2001 period?

24 A. Yes.

25 622 Q. I'm at 9.3 of the report. You told us earlier in that 15:51
26 very early period up to 24th August 1998 you didn't
27 find any questioned documents being submitted for
28 examination and that was unsurprising to you?

29 A. Yes, that's correct.

1 623 Q. But you did find evidence of some examination and
2 admission for examination of questioned documents in
3 the 1998 to 2001 period?
4 A. Yes. So, initially there were -- there was an
5 envelope, or rather two envelopes and a letter sent to 15:51
6 the Tyrone and Fermanagh Hospital in Omagh, and that
7 was in August '98.

8 624 Q. Thank you very much. We can get that on to the screen,
9 you prepared a table as part of your report, it's at
10 pages 90 through to 91. And it's split across two 15:52
11 pages here but what we're going to do is bring up the
12 first part of the table. These are exhibit numbers and
13 you can see those on your screen?

14 A. Yes.

15 625 Q. And they're MEH3, MEH2, and MEH1. 15:52

16 A. Yes.

17 626 Q. So, these were particular types of questioned documents
18 that were submitted in this phase?

19 A. Yes. So, these were submitted into the laboratory late
20 August '98 and it comprised a letter which was within 15:52
21 an envelope which was subsequently inside another
22 envelope. There was a postmark on the outer envelope.
23 The letter contained some writing but it was in the
24 form of stencilled writing, so it highly disguised
25 rather than handwritten writing, as it were. And it 15:53
26 was anonymous. So, there was no source for the
27 identifying of the sender of the letter.

28 627 Q. And we can see, similarly, an anonymous letter over the
29 page on the same table. And this was a document that

1 was submitted for examination a bit later on, isn't
2 that right?

3 A. Yes, so, this was submitted, it was addressed to the
4 "people of Omagh" and this was received by the
5 laboratory in October of '98. 15:53

6 628 Q. What was the investigative purpose behind looking at
7 these particular documents, can you say?

8 A. Essentially, they were submitted to the laboratory as
9 to give any ideas or clues to the sender of the letters
10 to see if there was any evidence that the person who 15:54
11 sent or the people who sent these had any links to the
12 bombing itself.

13 629 Q. And you were able to find out what testing was done on
14 these documents, isn't that right?

15 A. Yes, yes, I did. 15:54

16 630 Q. Later on in your evidence - and we'll come to a table
17 that you have produced - but it was ESDA testing that
18 was done, isn't that right?

19 A. Yes, that's correct.

20 631 Q. Can you explain to us what ESDA testing is, what that 15:54
21 techniques involves?

22 A. Yes, so ESDA is acronym is stands electrostatic
23 detection apparatus and it's a piece of equipment, very
24 commonplace in questioned document laboratories
25 worldwide, for enhancing indented writing on a sheet of 15:55
26 paper. So, indented writing is, essentially, if you
27 make a mark or you write on a sheet of paper the
28 underlying piece of paper will have slight indentations
29 on it. And what we're trying to establish, using the

1 ESDA technique, is we're trying to enhance those slight
2 indentations into the paper which are, they're not
3 visible to the naked eye or they're very difficult to
4 see to the naked eye.

5 632 Q. And the outcome of those particular investigations 15:55
6 involving these documents, there wasn't anything of
7 significance found, isn't that fair to say?

8 A. That's true.

9 633 Q. If we turn then to the period from December 2001
10 onwards, you tell us in your report that most 15:56
11 questioned documents were submitted during this later
12 period?

13 A. Yes.

14 634 Q. And if we bring up the table at the top of page 93,
15 what we can see there, the first two items on that 15:56
16 table, Ms. Pugh, they're items that we had looked at
17 already?

18 A. Yes, that's correct.

19 635 Q. And the subsequent four items, four exhibit numbers
20 divided into a number of items, five items, they relate 15:56
21 to the post-December 2001 period?

22 A. Yes, that's right.

23 636 Q. Can you talk us through what documents were submitted
24 for QD investigation at that stage?

25 A. So, at this stage they had submitted some more 15:57
26 documents, the first set which I've listed there as
27 Items 542 to 548, were documents related to named
28 individuals. It's unclear from the notes that I could
29 ascertain from the material available to me where, in

1 fact, these documents originated from, they were
2 just -- they said they were related to named
3 individuals. There was a piece of paper from a toolbox
4 which, again, I was unclear of where the toolbox
5 originated from. There was an anonymous letter and 15:57
6 envelope, sent to a Mr. Barker, an anonymous letter and
7 envelope sent to Omagh Police, and another anonymous
8 letter with a newspaper clipping attached to it, and
9 that was sent, again, to the police station.

10 637 Q. Again, these types of investigations, are they towards 15:58
11 finding individuals that may be associated with a bomb,
12 involved in a bomb, what are the particular aims?

13 A. We're trying to -- at this stage we're just trying to
14 find sources for names, addresses, any information
15 which would give a lead to anybody responsible or 15:58
16 linked to the bomb.

17 638 Q. If we go on to the table at the top of page 94, and
18 this is outcomes of the investigation in terms of QD
19 examination --

20 A. Yeah. 15:59

21 639 Q. -- on the items that we've gone through already, isn't
22 that right?

23 A. That is correct, yes.

24 640 Q. That's from both the pre-December 2001 and
25 post-December 2001 period? 15:59

26 A. Yes.

27 641 Q. And we've already dealt with the outcome of the first
28 two, that there was no findings of evidential value or
29 no significant findings in relation to those?

1 A. Yes.

2 642 Q. And then the remaining items are the ones that we have
3 just looked at and there were some findings in relation
4 to those, could you perhaps, Ms. Pugh, just talk us
5 through that, please? 15:59

6 A. Yes. So, in relation to the documents linked to named
7 individuals, there was five individuals listed and in
8 one of the instances there were documents received from
9 an individual by the name of Mr. Fee, and the results
10 of the indented impression testing, the ESDA results 15:59
11 revealed his name and some numbers which may or may not
12 be associated with telephone numbers associated with
13 the documents in his name.

14 643 Q. I can pause you there and we can look to the bottom of
15 this same page. If we look to the two boxes. 16:00

16 A. Thank you.

17 644 Q. This is what was found in relation to those documents,
18 and this is an extract, isn't it, from a report --

19 A. Yes.

20 645 Q. -- written by Mr. FSANI's Mr. Maxwell to the RUC? 16:00

21 A. Yes. So, these are some of the interpretation of the
22 indented impressions found. So, we can see the top box
23 and halfway down the second box, impressions found in
24 relation to item BWM12. These were from documents from
25 Mr. Fee and as you can see his name is part of the 16:01
26 indented impression.

27 646 Q. Indeed, a mobile, perhaps, for an individual but we're
28 not clear who, was found there, is that right?

29 A. I'm sorry?

1 647 Q. A mobile telephone number we can see was found?
2 A. Yes. So, this information would, of course, have been
3 given back to the investigative officers to then look
4 at further.

5 648 Q. The documents that this was taken from that Mr. Maxwell 16:01
6 looked at, you haven't seen those yourself, you have?
7 A. No, I have not.

8 649 Q. And you do comment in your report that the significance
9 of these particular findings, it wasn't evident to you?
10 A. No. 16:01

11 650 Q. If we go back to the table then at the top of the page,
12 and if we go on to Item 371, "Receipt and paper from
13 toolbox"?
14 A. Yes.

15 651 Q. Can you talk us through that please? 16:02
16 A. So from my understanding of the examination notes of
17 Mr. Maxwell, there was a piece of paper found in a
18 toolbox and this was reported as unsuitable for ESDA
19 testing. Now, ESDA is a quite sensitive technique, it
20 needs quite a smooth surface because it is essentially 16:02
21 looking at the difference between very slight
22 indentations in paper. From my understanding the paper
23 from the toolbox was scrunched up, it was wrinkled and
24 so Mr. Maxwell deemed it unsuitable for ESDA testing.

25 652 Q. Then we move onto the anonymous letter you mentioned 16:02
26 earlier?
27 A. The anonymous letter to Mr Baker was examined and
28 within this item it comprised of an envelope and two
29 pages of a letter and ESDA testing was performed on the

1 letter and a partial set of numbers which was reported
2 as a partial telephone number were detected.

3 653 Q. Were you able to look at that letter yourself?

4 A. No.

5 654 Q. But Mr. Maxwell, of course, he did -- 16:03

6 A. Yes.

7 655 Q. -- in FSANI, and he said, you reviewed his document to
8 say that nothing of significance was found that would
9 have led to the identity of the sender of the letter to
10 Mr Baker? 16:03

11 A. Yes.

12 656 Q. It wasn't clear to him, was it, exactly what the
13 telephone number was?

14 A. No, initially I think it wasn't clear it was a
15 telephone number so Mr. Maxwell I think he re-examined 16:04
16 the ESDA lift and over a couple of weeks period he then
17 could sort of almost decipher a little bit more of the
18 indented writing.

19 657 Q. And finally then, we have an anonymous letter to Omagh
20 police. Can you tell us what was carried out and what 16:04
21 was found in relation to that item?

22 A. So again, this was a letter sent to Omagh police within
23 an envelope. The envelope and the letter gave no
24 significant findings in relation to the indented
25 impressions investigation, however, Mr. Maxwell found a 16:04
26 link between the handwriting and the letter sent to
27 Mr Baker and the letter to Superintendent Baxter of
28 Omagh police.

29 658 Q. And what link was found in relation to the handwriting?

1 A. He said it was likely it was written by the same
2 person.

3 659 Q. And the techniques that we can see used, ESDA and we
4 can see handwriting comparison, were those standard
5 techniques used at the time? 16:05

6 A. Yes, very much so.

7 660 Q. We can bring the table off the screen now. As a result
8 of your review of the statements and the documents at
9 the time, can you say what the overall evidential
10 significance of the QD examinations were to the 16:05
11 investigation overall?

12 A. Yeah, I think the examinations that were carried out
13 were fit for purpose. I think there was limited
14 evidential value at this stage in relation to the
15 indented impressions work. There was a link between 16:06
16 two anonymous letters in terms of the handwritten
17 evidence. But, there was no, or very limited, evidence
18 of a multidisciplinary approach as well in terms of
19 other areas of forensic science and QD.

20 661 Q. And overall you say this in your report, there was no 16:06
21 direct forensic link established between any individual
22 and the Omagh bomb that was established by QD
23 examination?

24 A. That is correct, yes.

25 662 Q. And you've said already the tests conducted by FSANI 16:06
26 were fit for purpose?

27 A. They were.

28 663 Q. And they were in alignment with QD examinations at the
29 time across the UK?

1 A. Yes.

2 664 Q. So, would it be fair to say that with a 2026 lens there
3 is no issue with reliability as such, of the
4 conclusions?

5 A. No, they seemed to follow procedures that were in place 16:07
6 at the time. The examination notes were clear, they
7 appear to be peer reviewed and so there were no obvious
8 issues in relation to the reliability of the testing
9 carried out.

10 665 Q. And are there any further tests or examinations, to 16:07
11 your mind, that might be carried out on any document of
12 interest that hasn't been carried out already?

13 A. No, I don't think so.

14 666 Q. And by way of conclusion then, if we can just draw all 16:07
15 of your evidence together. Prof. Gallop's slides
16 helpfully do give us a summary of your evidence, and if
17 we could bring that onto the screen, and for the record
18 INQ 049716, and it is page 14.

19

20 And as far as I understand it, you and Prof. Gallop put 16:08
21 together this slide between you both?

22 A. Yes.

23 667 Q. And can you then just talk us through what appears on
24 the slide?

25 A. Yes. So there was no evidence of a questioned 16:08
26 documents strategy in the immediate aftermath of the
27 bombing in 1998, but this wasn't surprising to me
28 considering the focus was on the scene, identification
29 of the explosive device and any victim identification.

1 There seemed to be limited evidence of coordinated
2 examinations involving QD or questioned documents early
3 on but these may have been achieved through informal
4 liaison or verbal discussions.

5
6 Then in 2001 there seemed to be a more structured
7 documents strategy, so this reflected sort of like the
8 developments in other areas, the advisor brought into
9 have a look at forensic strategy across the board.

10
11 As I said there, the standard reliable techniques were
12 used, ESDA, handwriting examination, so there was no
13 issue with the work that was carried out in the
14 laboratory at the time. And although there was
15 identified links between anonymous documents, there
16 were no direct links to individuals and the bombing

17 668 Q. Just on the third point, just to draw that out a bit
18 further?

19 A. Yes.

20 669 Q. You would say, and you can disagree with me certainly,
21 but it was the involvement of Mr. Davidson rather than
22 the Police Ombudsman's report that, in your view,
23 seemed to lead to a more structured approach to QD?

24 A. I believe so, yes.

25 MS. BRIGGS: Thank you very much for answering my
26 questions, Ms. Pugh. Mr. Henry has kindly acknowledged
27 he has no questions for Ms. Pugh, and, Sir do you have
28 any questions for Ms. Pugh?

29 CHAIRMAN: No, thank you.

1 MS. BRIGGS: Sir, that concludes today's evidence and
2 tomorrow we will continue our questioning of the
3 forensic experts starting with Mr. Kershaw at 10:00
4 a.m.

5 CHAIRMAN: Thank you very much for your evidence.
6 Ms. Pugh.

16:10

7 THE WITNESS: Thank you very much.

8
9 THE INQUIRY ADJOURNED UNTIL TUESDAY, 6TH OCTOBER 2026
10 AT 10:00 A.M.

16:10

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