

1 TRANSCRIPT OF THE INQUIRY

2 Thursday 8 December 2022

3 (10.17 am)

4 LORD BRACADALE: Good morning. Before we hear from the next
5 witness I wish to say something about the schedule of
6 the Inquiry today.

7 This afternoon the Inquiry was scheduled to hear the
8 playback of the further examination of Alan Paton by
9 Senior Counsel to the Inquiry, in an examination
10 I appointed in order to deal with the oral applications
11 under Rule 9 of the Inquiry's rules.

12 Yesterday the legal representative of Mr Paton made
13 representations in relation to the conditions in which
14 the tape should be played. In order properly to
15 consider these and bearing in mind the importance of
16 this witness to the Inquiry, I would require a written
17 application, together with supporting evidence.

18 In these circumstances I have continued the playback
19 of the examination until a later date in order that
20 I may consider any such application.

21 I acknowledge that the late change may cause
22 inconvenience to members of the public who wanted to

1 watch the evidence, but sometimes changes do have to be
2 made at short notice.

3 Could we have the witness, please.

4 MS MITCHELL: (Mic turned off).

5 LORD BRACADALE: Yes, certainly.

6 (10.20 am)

7 (Short Break)

8 (10.41 am)

9 LORD BRACADALE: Mr Ryder, I'm sorry you have been kept
10 waiting.

11 MR PAUL RYDER (sworn)

12 LORD BRACADALE: Ms Grahame.

13 Questions from MS GRAHAME

14 MS GRAHAME: Thank you.

15 Good morning. You are Paul Ryder.

16 A. That's correct, yes.

17 Q. And what age are you, Mr Ryder?

18 A. I'm 54.

19 Q. You are a reporting scientist with Cellmark Forensic
20 Services?

21 A. I am, yes.

22 Q. And you are based in their premises in Chorley in
23 England?

- 1 A. That's correct, yes.
- 2 Q. Thank you. I was watching a documentary recently on the
3 TV and it showed Cellmark's premises and it said they
4 had been involved in the World's End murders, looking at
5 DNA and at the forefront of forensic science and
6 improvements. Is that the place that you work?
- 7 A. It is, yes.
- 8 Q. And tell us a little bit about Cellmark, please.
- 9 A. Cellmark is a privately owned company that started off
10 as a specialist DNA company and has expanded into doing
11 a whole range of forensic science. It is contracted to
12 a number of police forces across the United Kingdom and
13 around the world to carry out forensic work on their
14 behalf.
- 15 Q. And it's not just police forces that you work for, or do
16 work for, it's the Crown Prosecution Service?
- 17 A. Well, we serve the criminal justice system, so we will
18 then do work on behalf of the Crown Prosecution Service.
- 19 We can be asked to undertake independent reviews on
20 behalf of the defence in criminal trials, or -- and we
21 undertake work sometimes in civil cases as well.
- 22 Q. So it's the whole justice system really.
- 23 A. Yes.

1 Q. Thank you. Before I take you through your evidence
2 today, you will see that there is a blue folder in front
3 of you.

4 A. Yes.

5 Q. And if you please feel free to open that up and what
6 seems to be in it is a letter of instruction that you
7 were sent, an appendix of documents you were sent and
8 a report that you prepared on behalf of the Inquiry.

9 A. Yes.

10 Q. So as we go through things today you will see on the
11 computer screen in front of you that we maybe put things
12 onto the screen so that they can be viewed around the
13 room and more widely by the public, but in addition you
14 will always have your hard copies there, so if you need
15 to look at anything, if you want another paragraph
16 shown, please just let me know and we can have that
17 brought up on the screen.

18 A. Okay.

19 Q. Okay. Can we talk first about your own CV --

20 A. Okay.

21 Q. -- and a good place to start might be your report which
22 is SBPI00171 and if we can bring that up on the screen
23 and you will see the front page:

1 "Cellmark Forensic Services.

2 "Tread analysis report, Sheku Bayoh Inquiry." An.

3 And then that's your name and "Reporting Scientist,
4 Cellmark...", and it is dated 6 October this year.

5 A. Yes.

6 Q. And if we could turn to page 3 please we should see your
7 qualifications and experience.

8 Now, I won't go through this line by line. The
9 Chair will have that available to him to consider at his
10 leisure, but am I right in saying you've got a first
11 class honours degree in chemistry?

12 A. I have, yes.

13 Q. And you're a chartered chemist.

14 A. Yes.

15 Q. What does that mean?

16 A. I'm a member of the professional body, the Royal Society
17 of Chemistry, and as a result of that I have
18 professional qualifications as a chartered chemist.

19 Q. Right. So is that an additional qualification that you
20 have achieved?

21 A. Yes, it's in recognition of ongoing professional work in
22 the field of chemistry.

23 Q. Thank you. And you have been employed as a forensic

1 scientist for over 33 years.

2 A. That's correct, yes.

3 Q. Initially by the Forensic Science Service and latterly
4 by Cellmark, since August of 2008.

5 A. That's right, yes.

6 Q. And although you are here today as a skilled witness, as
7 an expert witness on our behalf, you are still
8 practising as a forensic scientist.

9 A. I am, yes.

10 Q. So you're doing the analysis and the work as well as
11 being an expert.

12 A. Yes.

13 Q. And it says here on page 3 you also hold the role of
14 forensic science manager at the Chorley lab of Cellmark
15 forensic science.

16 A. That's correct, yes.

17 Q. What does that involve?

18 A. It's an overseeing role in terms of the quality of the
19 science that we undertake, balanced against operational
20 needs, so it's looking after the quality of the work
21 that's done, making sure that we comply with the
22 relevant accreditation and regulations and making sure
23 that all the staff are appropriately trained and

1 competent to undertake their work and maintain that
2 competence.

3 Q. And do you have a responsibility to check the work of
4 more junior members of staff and make sure they're doing
5 things to a suitable standard?

6 A. All our work that we undertake is peer-reviewed, so my
7 work would be peer-reviewed by a second individual, so
8 it's not necessarily someone that's more junior, it's
9 someone that carries out the same type of work that you
10 do and you carry out an independent review of that work
11 before any reports are issued.

12 Q. And for members of the public that may be listening to
13 you that aren't familiar with the term "peer review",
14 can you explain a little bit more what that is.

15 A. Effectively, your work is checked by another expert in
16 your area of expertise and all your findings will be
17 critically checked, your statement will be reviewed --
18 not just for spelling errors and the like, but to make
19 sure that interpretation is correct and all the details
20 are correct before the statement is issued.

21 Q. And does that provide a level of reassurance that the
22 work has been done properly and accurately?

23 A. Yes.

1 Q. Thank you. We heard some evidence on Tuesday from
2 a Professor Lorna Dawson. Are you familiar with
3 Professor Dawson?

4 A. I met her when we were undertaking examinations, yes.

5 Q. She said that in Chorley they have a number of sterile
6 labs and different labs to carry out work to ensure that
7 there's no cross-contamination, is that correct?

8 A. That's correct, yes. We do a lot of trace evidence work
9 and depending on the nature of the work we have
10 different anti-contamination procedures, so we will have
11 GSR -- sorry, gunshot residue clean laboratories, we
12 have DNA clean laboratories and then we have protocols
13 in all the other laboratories to prevent contamination
14 occurring.

15 Q. So are there a lot of safeguards in place to make sure
16 that everything is sterile and there's no
17 cross-contamination from one item to another?

18 A. That's correct, yes.

19 Q. And those safeguards were in place when you did the work
20 for the Inquiry?

21 A. Yes.

22 Q. Thank you. And your CV also mentions that you are
23 responsible for defining and maintaining in the lab

1 standard operating procedures for Cellmark and
2 overseeing the validation of those methods, resulting in
3 their accreditation by the forensic regulator.

4 A. That's correct, yes.

5 Q. What does that mean?

6 A. The forensic regulator has a code of conduct, practice
7 and conduct, which all forensic science providers in
8 England and Wales are expected to adhere to, which
9 requires us to have UCAS accreditation, so as part of
10 that, any methods that we use have to be suitably
11 validated and the evidence provided, so it can be
12 independently reviewed by UCAS and as part of that we
13 have training plans, we have training and competency
14 monitoring systems, we have standard operating
15 procedures, all of which are reviewed regularly to keep
16 them up-to-date and to make sure that there is a process
17 of continuous improvement.

18 Q. And so everything is checked and double-checked really?

19 A. Yes.

20 Q. And then it also says:

21 "As well as undertaking work for law enforcement
22 agencies, I have also been instructed as an expert in
23 a number of civil cases and undertaken defence reviews

1 of forensic evidence."

2 Can you tell us a little bit more about your work as
3 an expert witness.

4 A. It involves on some occasions going out to scenes,
5 helping to gather evidence at scenes before it is
6 actually submitted to the lab. It involves managing the
7 examinations, making sure that all the essential
8 evidence is captured and that there is no possible
9 contamination of that as part of the processes because
10 some of the examinations we might undertake might impact
11 on other people's work and the recovery of their
12 evidence, so a strategy is evolved. The examinations
13 are done, the findings are then interpreted, then
14 they're critically checked and then a report is issued,
15 and then ultimately, if required, we attend court to
16 give evidence as an impartial expert witness to
17 the court.

18 Q. And you have given evidence before court or Inquiry
19 proceedings before, haven't you?

20 A. Many times, yes.

21 Q. And am I right in saying the other thing that you
22 mention in your CV is that recently you have given
23 evidence in the investigation of the Manchester Arena

1 bombing?

2 A. I did, yes.

3 Q. And you had to present evidence at the Inquiry and you
4 have also presented evidence at the criminal trial?

5 A. I did, yes.

6 Q. Thank you. And you mentioned the word "impartial" and
7 is it correct to say that as an expert witness you
8 understand your obligations are to the Chair --

9 A. Yes.

10 Q. -- and the Assessors --

11 A. Yes.

12 Q. -- and that you have to be impartial and objective in
13 your approach?

14 A. Yes.

15 Q. Thank you. I would like to move on to your involvement
16 with the Inquiry, if I may. The Inquiry, I believe,
17 contacted you earlier this year to see if you would be
18 able to carry out some work for us in relation to the
19 Sheku Bayoh Inquiry?

20 A. That's right, yes.

21 Q. And we checked to see whether you were conflicted in any
22 way, so to see if you had been involved in any
23 connection with Sheku Bayoh's death at any time?

1 A. That's right, yes.

2 Q. And there was no conflict.

3 A. There was no conflict, no.

4 Q. Can we look at your letter of instruction please,
5 SBPI00161. So this is dated 27 July 2022. You will see
6 it on the screen and you've got your hard copy in front
7 of you and without going through this in too much
8 detail, as we go through the letter -- if we could maybe
9 go up, that's fine. You were given some background
10 about the circumstances of the death of Mr Bayoh --

11 A. I was, yes.

12 Q. -- and the Terms of Reference of the Inquiry.

13 A. Yes.

14 Q. And you were -- it was explained to you that any report
15 that you did produce would be made available to core
16 participants and their lawyers.

17 A. Yes.

18 Q. And that you would be asked to give oral evidence at
19 this hearing.

20 A. That's correct, yes.

21 Q. And you were sent documents and productions and we will
22 actually see those on -- in your report, which we will
23 come back to in a moment, and was it explained to you --

1 if we can move down the page please. We will see the
2 documents mentioned and then the instructions come up
3 and we will just leave those on the screen for a moment.

4 Was it explained to you that the Chair of this
5 Inquiry would have to be considering evidence about
6 whether or not Mr Bayoh had stamped on the back of
7 a female officer as she lay on the ground and there were
8 issues in relation to that and your report would be
9 sought to assist the Chair in making that decision?

10 A. That's right, yes.

11 Q. And you were asked to examine a vest --

12 A. Yes.

13 Q. -- and some boots that had been taken from Mr Bayoh.

14 A. Yes.

15 Q. And some boots that had been taken from a PC Walker.

16 A. I was, yes.

17 Q. And you were also sent some photographs of these items.

18 A. Yes.

19 Q. And you were asked to compare the tread on the boots, or
20 the sole, the tread --

21 A. Yes.

22 Q. -- underneath the boots and look at some marks that were
23 said to be on the vest.

1 A. That's right.

2 Q. Lovely. Can I have a look at the appendix that was
3 sent, along with the letter -- or shortly after the
4 letter, SBPI00163.

5 And if we just very quickly look at that, we can see
6 the physical items listed: the boots, the vest and
7 something called "Left Boot Lift" and a "Right Boot
8 Lift"?

9 A. Yes.

10 Q. Were those acetates of -- or lifts?

11 A. From what I can recollect, they were photocopies of
12 them.

13 Q. Photocopies.

14 A. So they would have originally been an acetate lift, as
15 I understand it, but I was presented with a photocopy
16 from what I can recollect.

17 Q. Okay, and then we see that you were also given notes of
18 an examination that had been carried out of the items by
19 the Scottish Police Authority Forensic Services.

20 A. I was, yes.

21 Q. And you were sent their report as well.

22 A. Yes.

23 Q. And photographs of the items and then also statements

1 and transcripts from Laura MacPhie, Shirley Chin and
2 Alison Marven.

3 A. I was, yes.

4 Q. And then we have heard reference with other expert
5 witnesses to Part 35 and is that a summary of the
6 obligations on experts comes from England?

7 A. Yes, it is.

8 Q. And if we could just move up slightly, can I ask you to
9 look at some items please, which will be held in
10 a drawer. I would like to begin with Mr Bayoh's boots
11 and I would really just like you to confirm that those
12 are the items that you have looked at. So we've got
13 Mr Bayoh's boots, PC Walker's boots and the vest.

14 A. These are the items I examined, yes.

15 Q. And the vest as well?

16 (Pause).

17 Was that --

18 A. Those were the boots of PC Walker.

19 Q. The boots of Walker.

20 MS WILDGOOSE: The vest as well?

21 MS GRAHAME: Yes, please.

22 A. Yes, that's the item I examined.

23 Q. So that's the vest, Mr Bayoh's boots and PC Walker's

1 boots.

2 A. That's correct, yes.

3 Q. Thank you. Thank you very much. Sorry, I should have
4 done that more slowly, it might have been easier.

5 Can we look back at your report, please, which is
6 SBPI00171. Is it fair to say, before we go to the
7 detail, Mr Ryder, that this is an accurate summary, your
8 summary of everything you have done for the Inquiry?

9 A. It is, yes.

10 Q. Yes, and if the Chair wishes, he can read further detail
11 within the body of this report.

12 A. Yes.

13 Q. Thank you. If we could move to page 6 please. We will
14 see that there's a heading "Technical Notes" and there
15 are eight paragraphs that explain the basis on which you
16 proceeded and it covers a couple of pages, pages 6 and
17 7, and I'm going to take you through these in turn, if
18 I may.

19 So, we will begin with paragraph 8 and you say that:

20 "When an item of footwear comes into contact with
21 a surface a mark is often left. This may be in the form
22 of material transferred from the under surface of the
23 shoe or as a result of the shoe removing material from

1 that surface. If there is sufficient contrast between
2 the surface and the material deposited or removed, then
3 the mark produced may be readily visible."

4 Tell us what you mean by "sufficient contrast"?

5 A. It basically means that there is a difference in the
6 material that's deposited and the background,
7 effectively if you walked across a black floor and left
8 a black deposit, it would be very difficult to see,
9 whereas if you walked across a black floor and left
10 white deposits, they would stand out and be readily
11 visible.

12 Q. Thank you. You then go on to say:

13 "If there is limited or no contrast then processes
14 or treatments are required to assist in visualising any
15 marks that might be present."

16 Explain what you mean by that.

17 A. We consider -- we can consider a surface -- for example,
18 if we were to go to a scene of an incident and we were
19 asked to examine a floor for footwear marks we would
20 first do a visual examination to see if there was
21 anything obvious that was standing out and then we would
22 process those and we would then go through a systematic
23 process of examining the floor using, initially,

1 lighting techniques, using lighting from different
2 directions to see whether that introduces contrast
3 because you can have a floor where you can't actually
4 see a footwear mark because it is dusty on a floor,
5 whereas if the lighting was to be changed and you then
6 shone a light at an angle, a very low angle across it,
7 it would highlight dusty marks really well, even on
8 a floor that you couldn't see previously.

9 There was -- going back to an incident I worked on
10 in Manchester, we had been looking at marks throughout
11 an address and it had gone dark and we were going to
12 come back to do the kitchen the following day and we
13 hadn't seen any visible marks, but because it had gone
14 dark and we shone a torch across the floor, the whole
15 floor lit up with dusty footwear marks, so we knew we
16 had a big job the next day.

17 Q. Right. So even marks that are not visible to the naked
18 eye, you have techniques that allow you to see those.

19 A. Yes.

20 Q. And that would allow you to see both any marks that are
21 visible and those invisible to the naked eye marks.

22 A. Yes.

23 Q. Thank you. And when you're carrying out your

1 assessments, you are looking for both, the visible and
2 the invisible?

3 A. Yes.

4 Q. Thank you.

5 A. Quite often the marks that you can't actually see are
6 the ones that will contain the most detail that will
7 then provide you with the strongest conclusion in
8 relation to linking an item of footwear.

9 Q. Thank you. And then if we can move on to paragraph 9,
10 you comment there about the many different types of
11 footwear. How does that help you in your job?

12 A. Well, there are many different shoe manufacturers that
13 produce a whole range of different patterns. I mean if
14 you consider Nike and Adidas shoes, they produce
15 thousands of different tread patterns over the years,
16 which are all distinguishable from each other, so you've
17 got a basis on which to do an initial basic comparison,
18 in that you can look at a pattern and you can say that
19 it is a mark of a particular brand, or a particular
20 pattern from that brand.

21 Q. And then in paragraph 10 you mention the significance of
22 changes when shoes or footwear are worn and become worn
23 in areas. Could you explain that?

1 A. Well, a shoe, from the minute it comes out of the box to
2 when it's eventually thrown away, is going to be
3 continually changing on its undersurface because the
4 process of walking erodes the soles and that introduces
5 character to the undersurface of the shoes in terms of
6 the pattern, of the wear, the amount of tread that
7 remains on it, whether it's -- the tread's been worn
8 away completely. It also introduces features of
9 characteristic damage as a result of the shoe becoming
10 cut from sharp stones. You can get highly
11 characteristic wear patterns as the rubber abrades at
12 a microscopic level, so as the shoe alters it takes on a
13 unique character.

14 Q. How does that help you in your work?

15 A. Well, we consider -- we consider the class
16 characteristics, which are basically whether the shoe is
17 of the right pattern, is it of the right size. We then
18 look at the general wear to see whether it's worn to
19 a similar general extent and then we will look to see if
20 there are any features in the mark which we consider to
21 be characteristic and specific to that shoe, which would
22 then allow us to form a strong, if not conclusive,
23 conclusion in relation to whether that shoe has made the

1 mark or not.

2 Q. Can we look on to page 7 and paragraph 12. You talk
3 about when it is just not possible to exclude an item of
4 footwear from having made a mark and a conclusive link
5 hasn't been established. Maybe I could read this out
6 and then ask you some questions about it:

7 "When it is not possible to exclude an item of
8 footwear from having made a mark and a conclusive link
9 has not been established it is possible to assess the
10 significance of the findings to form an opinion as to
11 how likely it is that the shoe in question has or has
12 not made the mark."

13 Could you explain that in a little more detail?

14 A. Well, if we have a conclusive link that shoe has
15 definitely made the mark. If we haven't got sufficient
16 character within the mark to allow us to form that
17 opinion, we then consider the likelihood it was that
18 shoe that made the mark as opposed to it being made by
19 another shoe, so we take into account the size,
20 factors -- the wear factors, how much discrimination can
21 be achieved based on those features that we're seeing
22 and whether there are any features there that are
23 detracting from the significance of the findings which

1 might tend to suggest it's not that shoe, as opposed to
2 pointing to the conclusion that the support for the view
3 that it has made that mark.

4 Q. So if someone has worn shoes for a while and you talked
5 about standing on stones, maybe a stone has left a hole,
6 that character could provide a conclusive link?

7 A. Yes, if it's sufficient character, yes.

8 Q. In the absence of that, if it's simply a new pair of
9 shoes then it could be the same as a number of new pair
10 of shoes from a particular brand?

11 A. Yes.

12 Q. And you won't be able to provide a conclusive link?

13 A. Not a conclusive link, but there are features that you
14 can observe that will allow you to distinguish between
15 two shoes that look effectively the same. You could
16 have two shoes produced by the same manufacturer with
17 the same pattern and be of the same size, but the
18 footwear has actually come out of a different mold and
19 would have different characteristics that would manifest
20 itself in the mark that relates to the mold, but it
21 still could be that any other shoe that came out of that
22 specific mold, could have made that mark as well.

23 Q. So even very small fine differences of detail will be

1 observed by you and noted.

2 A. They can be if it's in the mark, yes.

3 Q. So if there are those details, you will note them down?

4 A. Yes.

5 Q. Thank you. Then you say:

6 "In assessing the significance of any
7 correspondences or differences found between a shoe and
8 a mark resulting from a comparison, the likelihood of
9 obtaining the observed correspondences or differences
10 are considered against two alternative propositions ..."

11 I would quite like you to explain this, please, so
12 that people can understand what you're saying.

13 A. What we're doing is we're considering the likelihood of
14 our observations and findings, given one proposition
15 that the shoe had made the mark, so we consider all the
16 findings against that proposition. We also then
17 consider the findings against an alternative,
18 effectively completely opposite proposition that the
19 findings have arisen as a result of the shoe not having
20 made that mark and you weigh those up based on your
21 experience and knowledge and the information available
22 to you to see which you, as an expert, think is the more
23 likely to explain the findings that you have.

1 Q. And so that's the propositions that you list in
2 paragraph 12.

3 A. That's correct, yes.

4 Q. First of all, (a):

5 "The shoe in question has made the mark it has been
6 compared with."

7 A. Yes.

8 Q. And you're looking for similarities or areas where you
9 can see there's a consistency.

10 A. Yes.

11 Q. And (b):

12 "The shoe has not made the mark."

13 And that's the other proposition, you say "This shoe
14 hasn't made this mark, what are the differences?"

15 A. It's not necessarily the differences, it's also the
16 likelihood of a coincidental correspondence, if there
17 may be another shoe that shares the same
18 characteristics. What's the likelihood of another shoe
19 sharing the same characteristics that you're seeing in
20 that particular mark as well.

21 Q. Right, thank you.

22 Then paragraph 13:

23 "The strength of the assessment of the footwear mark

1 evidence is normally expressed as a level of support for
2 one or other of the above two propositions."

3 Could you explain that?

4 A. We have a verbal scale which we apply to that in terms
5 of there is: weak support, moderate support, moderately
6 strong support, strong support and then it goes up
7 through very strong and extremely strong support and
8 it's an approach which attempts to introduce some
9 consistency into which way people express their
10 conclusions.

11 Q. Thank you. And:

12 "The assessment is based on the observations made
13 during the comparison and the experience of the examiner
14 and any data that may be available to compliment the
15 assessment of the findings."

16 A. That's correct, yes.

17 Q. And when you say that at the end, "the data that's
18 available", is that information that's provided to you
19 or gathered in by you at a scene?

20 A. And it goes beyond that in the wider information in
21 terms of information we know about the manufacture of
22 shoes, those particular shoes that we're considering,
23 how frequently that type of shoe is encountered. It may

1 be that we get sales information from manufacturers that
2 help us to say how common a particular shoe might be
3 amongst the market and it's all the background
4 information around that, plus the experience of the
5 actual examiner from carrying out these examinations.

6 Q. And are you gathering in that information from
7 manufacturers or sellers and such-like?

8 A. We collect information about the frequency of occurrence
9 that we encounter footwear generally, but on occasions
10 we may go beyond that, depending on the nature of the
11 case. There may be occasions where we actually go and
12 do the enquiries, or the police would do that on our
13 behalf.

14 Q. Thank you. Then in paragraph 14:

15 "In order to form a view the examiner of the mark
16 ... must have confidence that the pattern elements that
17 they are considering can be attributed to footwear of
18 the pattern type in question and relies on any
19 correspondences or differences in the spatial
20 arrangement and definition of other parts of the mark
21 surrounding each considered feature. In instances where
22 the considered mark is so poorly defined that it cannot
23 be established that the mark relates to an item of

1 footwear of that pattern type and/or it is not possible
2 to discern whether it has been made by an alternative
3 item, the mark(s) are considered to be unsuitable for
4 comparison."

5 Now, I wonder if we can just go through this
6 paragraph. You say that:

7 "In order to form a view the examiner of the marks
8 must have confidence that the pattern elements that they
9 are considering can be attributed to footwear of the
10 type in question."

11 What do you mean "must have confidence"?

- 12 A. It's your observation in that you -- it needs to be
13 clearly defined, or sufficiently defined, for those
14 features to be discerned and to be seen. If the mark is
15 very poorly defined you may not have that character
16 showing through. You can have a mark that's been made
17 by a shoe, that's been deposited on a surface and
18 because it's so smudged you can't actually see the
19 pattern elements that are present on the shoe that had
20 made the mark. You can be confident it's been made by
21 a shoe because of the shape of it, but there's nothing
22 there which would allow you to say "Well, it's an Adidas
23 shoe, or it's a Nike shoe, or it's a Doc Marten" or

1 something like that because there's just no features
2 within the mark that would allow you to form that
3 opinion.

4 Q. And what can cause a mark to be poorly defined?

5 A. It can be the way that it's made, the nature of the
6 substrate it has been deposited on.

7 Q. Sorry, the nature of what?

8 A. The substrate that it's been deposited on.

9 Q. Is that the substance?

10 A. Yes, if it's a smooth surface it would be expected to
11 take an impression with more detail, whereas if it's
12 a textured surface there's obviously raised parts of the
13 surface and those are the parts that will only come into
14 contact with the shoe.

15 There's also how much the shoe would move at the
16 time it is making the mark, whether it slips as it
17 deposits it, the nature of the material and the amount
18 of material that might be on the shoe at the time. All
19 these things are factors which could influence how well
20 defined a mark might be, or how poorly defined it might
21 be.

22 Q. And could it also be the force with which the contact is
23 made?

1 A. That can also -- the way -- the appearance of the mark.
2 It can impart features which look like the shoe is
3 actually more worn than it actually is, because you have
4 increased the amount of pressure that's applied. Plus
5 because it's a dynamic process the shoe can move as
6 a result and smudge and smear as a result of that and
7 obscure any detail that might otherwise have been there.

8 Q. Thank you. And then you go on to say -- sorry, in the
9 same paragraph, 14, that this:

10 "... relies on correspondences or differences in the
11 spatial arrangement and definition of other parts of the
12 mark surrounding each considered feature."

13 I wonder if you could explain what that means.

14 What's a spatial arrangement?

15 A. Well, each undersurface pattern has a number of pattern
16 elements and they are spaced out at set margins and that
17 will be dependent on the size of the shoe, but what you
18 would consider is that if you've got part of one feature
19 here that relates to a particular shoe, is the next
20 pattern element in the right place next to it, or is it
21 further away, or is it present at all, or is it not? So
22 you're not just considering one feature, you're
23 considering whether there's all the surrounding features

1 appearing in there as well, or indications of those
2 features, or an absence of them, so you're sort of
3 taking a whole picture. I'm not sure I have explained
4 that very well, but --

5 Q. No, but if, for example, you had a shoe with diamonds or
6 pyramid shapes on it in an even pattern, would you be
7 looking for a consistency among that, as a spatial
8 arrangement?

9 A. You would be looking to recognise the rest of the
10 pattern. You wouldn't just be identifying single
11 features. You would be looking at the pattern as an
12 entirety and then once you have identified that there is
13 a pattern there that you're considering, whether the
14 pattern elements are the right spacing, or whether
15 they're the right shape and features like that.

16 Q. So if the tread of the shoe had, for example, eight
17 shapes on it and you could only see one, would that
18 cause you a difficulty in your job?

19 A. If you could be satisfied that it was that particular
20 shape and it had a well-defined outline and there was
21 detail within it, such as a unique characteristic
22 feature, you could form an opinion that was conclusive
23 based on a relatively small area of a mark, but if you

1 can only see such an element, or what might be
2 an element and there's nothing surrounding it and you
3 can't be 100% certain that you've got definite outlines
4 and it's a definite shape, you have to be much more
5 cautious in your approach to the opinions you might
6 draw.

7 Q. So would this impact on the confidence that you mention
8 in line 1 of paragraph 14?

9 A. Yes. I mean, if you can see it's definitely a square
10 and it's a square block you can say it's definitely
11 a square block. If it's just a smudge with no character
12 and perhaps one straight line associated with it and
13 a bit of a smudge around it, you can't be satisfied that
14 that's a square block.

15 Q. So you wouldn't be saying it's definitely not the same,
16 you just can't --

17 A. There's just no --

18 Q. -- be confident?

19 A. There's just insufficient character for us to undertake
20 a meaningful comparison and to take the examination
21 forward.

22 Q. Thank you. And so at the end of this paragraph where
23 you said "unsuitable for comparison", let me just read

1 that sentence again:

2 "In instances where the considered mark is so poorly
3 defined that it cannot be established that the mark
4 relates to an item of footwear of that pattern type
5 and/or it is not possible to discern whether it has been
6 made by an alternative item the marks are considered to
7 be unsuitable for comparison."

8 And is that when you simply can't carry out that
9 comparison with confidence?

10 A. That's right, yes. You look at the mark and there's no
11 indication or information in there to say is it
12 a shoe -- is it this shoe, is it another shoe, is it
13 a shoe at all? You know, so if you're presented with
14 that situation there's just nothing for you to compare
15 as an expert and to give an opinion on.

16 Q. So there may be all sorts of possibilities, but in your
17 role as an expert you wouldn't want to speculate on
18 those?

19 A. No.

20 Q. Thank you. Can we move on please to the next page,
21 page 8. We see here that it says:

22 "Examination and Results.

23 "Examination of the boots of Sheku Bayoh."

1 And this is covered in paragraphs 15 to 19 of your
2 report. I wonder if you could just give a summary of
3 how you carried out your examination of the boots.

4 A. Okay. Well, initially we set a strategy to ensure that
5 our examination didn't impact on the other examinations
6 that were going to be undertaken, namely those
7 undertaken by Dr Lorna Dawson, so those were initially
8 undertaken under her direction, to recover all the trace
9 evidence from the boots before I even examined them.

10 Following that process, we produced -- or we
11 examined the boots to identify the pattern type, the
12 size of the shoes, the condition of them. We then
13 produced what we would call "test marks", which is
14 effectively producing footprints with the shoes and
15 developed those and then used those to form and make
16 transparencies which we would then use as part of the
17 comparison process with any marks we might have.

18 Q. I would like to take you through this a little bit more
19 slowly, if that's possible.

20 A. Yes.

21 Q. So you have mentioned Professor Dawson. We heard from
22 her on Tuesday.

23 A. Yes.

1 Q. And she said that:

2 "In any investigation where [that] involves multiple
3 forensic sciences then it's very important that they're
4 done in the most appropriate sequence of analysis."

5 From her part, in the recovery of soil, she said:

6 "... the part that I would take to recover the
7 samples that I was to look at, involves removing [that]
8 ... , so removing soil or any other trace material from
9 the vest [and] that would mean that any potential mark
10 would be affected by the removal of the soil, so -- on
11 the other hand, it wouldn't affect my recovery at all,
12 [but] the work that would be done to examine the trace.
13 So the priority order was the examination of the marks
14 and then [the] recovery of the soil."

15 And it was asked:

16 "Question: If you had done your work first is there
17 a possibility that it might have got in the way of
18 Cellmark's own analysis?"

19 And she said:

20 "Answer: It might have affected the quality of the
21 marks that they were to examine."

22 Do you understand --

23 A. In relation to the vest that is true because if you're

1 removing material, you're removing material that is
2 forming part of the marks, so in relation to the marks
3 we did the examination first and made sure we got a full
4 record of anything that was present on the vest before
5 Dr Dawson did her examination of the vest, but in
6 relation to the boots, because we had to make test
7 impressions with the boots that could potentially remove
8 the evidence that she wanted to look at from the boots
9 themselves during that process, so in that case we set
10 the strategy to recover that material before we made the
11 test marks.

12 Q. So Professor Dawson recovered her material from the
13 boots first --

14 A. Yes.

15 Q. -- to give her the best results of what she was doing --

16 A. Yes.

17 Q. -- and, in relation to the vest, she delayed recovering
18 the substance until you had had your opportunity to
19 consider it.

20 A. That's correct, yes.

21 Q. Thank you. And it was done that way because the order
22 in which things can be done can have an impact on the
23 people coming after you.

1 A. It can, yes.

2 Q. Thank you. Were you aware that the Scottish Police
3 Authority Forensic Services had carried out examinations
4 prior to you and Professor Dawson?

5 A. I was, from the documents that have been provided, yes.

6 Q. Yes.

7 We also asked Professor Dawson about the period of
8 time between the events, which was 2015, 3 May, and her
9 examination and I would be interested in any comments
10 you have, Mr Ryder, about the period of time between
11 3 May 2015 and when you carried out your examinations
12 for the purposes of this report.

13 Professor Dawson said the minimum time period for
14 the integrity of the item is the shortest period at all
15 possible and to have that being witnessed so the least
16 could have occurred to that questioned item in the
17 intervening time, that's the ideal situation. Would you
18 agree that the minimum period of time between the events
19 and the examination is the ideal situation?

20 A. Yes, in an ideal world you would want to be doing your
21 examinations as soon as you can, but you have to
22 prioritise according to the strategy in relation to
23 everything else, so it comes at the point where it needs

1 to come.

2 Q. Right. So then can we move on, please, to paragraph 18.

3 When you examined the boots you noted that:

4 "The under surfaces or soles of the boots bore
5 a complex pattern comprising a central arrangement of
6 pairs of triangle surrounded by chevron shaped blocks."

7 And:

8 "The under surfaces were relatively well worn with
9 some areas of the soles being worn to the extent that
10 the lattice of the mid-sole was visible in the copies of
11 the marks provided to me that had been prepared by
12 Scottish Police Authority Forensic Services."

13 I wonder if I could ask you to look at some items
14 please, SPA00024 and SPA00025. So we have heard
15 evidence about these items -- sorry. So, this is
16 SPA00024. This is a right boot acetate that we have
17 heard evidence about previously and I just wonder if, as
18 we look at that picture, if you could maybe point out
19 the areas that you're describing in paragraph 18, so the
20 "complex pattern with the central arrangement of pairs
21 of triangles surrounded by chevron shaped blocks".

22 A. Yes.

23 Q. And I should say -- and I wasn't planning on doing this

1 with you, but it may be easier, if you touch the screen
2 at any point a red circle can appear, if that makes life
3 easier in terms of describing.

4 A. Okay.

5 Q. If you get it in the wrong place you can put your finger
6 back on it and drag it, or we can have Ms Wildgoose
7 remove it if that's easier.

8 A. That is one of the pairs of central triangular blocks
9 (indicating) which are across the sole and there are
10 also two further pairs in the heel.

11 These (indicating) --

12 Q. Those are the chevron shaped blocks that you mentioned.

13 A. Chevron shaped blocks, yes.

14 Q. And you mention triangles, are they made up of two
15 triangles?

16 A. Yes, that's circle number 1.

17 Q. And what's 2?

18 A. 2 is the chevron blocks or -- well, it's covering part
19 of the chevron block, but each of those up the inner and
20 outside are what I'm describing as chevron shaped
21 blocks.

22 Q. Oh. So, the pairs of triangles are number 1?

23 A. Yes.

- 1 Q. And 2 are the chevron shaped blocks?
- 2 A. Yes, it's a representation of one of them, yes.
- 3 Q. And it says:
- 4 "The under surfaces were relatively well worn with
5 some areas of the soles being worn to the extent that
6 the lattice of the mid-sole was visible in the copies of
7 the marks provided to me."
- 8 Could you explain what you're describing there?
9 What's the "lattice of the mid-sole"?
- 10 A. Well, the outside of the sole has the pattern on it, but
11 there's actually an inner part which is basically
12 a lattice pattern which the inserts, or the insole, will
13 sit on top of within the shoe, so if you were to peel
14 the insole up you would be able to see the top of the
15 sole itself and quite often that will have a lattice
16 pattern on it and if we just -- sorry, I'm putting
17 circles --
- 18 Q. We can take those away or we can --
- 19 A. If you can take 3 and 4 away.
- 20 Q. I think we will have to take them all away -- the three
21 of those away and you can start again.
- 22 A. Okay, I will try again.
- 23 Q. You can drag that number 3.

1 A. Right, that is showing what would have originally been
2 a chevron block, but there are -- there is a white cross
3 effectively across the mark and that is the lattice
4 underneath the sole actually influencing part of that
5 mark and the sole, because of the pressure, has worn
6 away that part of the shoe more, so if you don't have
7 sufficient pressure to make that bit still make contact
8 with the ground it will appear as a void within the mark
9 and that's basically a void created by the lattice.

10 Q. And is that what you described earlier in your evidence
11 as the wear and tear of worn areas providing the
12 character that you're looking for?

13 A. Yes. And if you look at the actual chevron blocks, the
14 ones in number 2 have a surface texture pattern on them,
15 whereas the ones on the outer side of the shoe, there at
16 number 4, don't have that texture on because that
17 texture has been completely worn away and then it's been
18 worn to the extent where again you're starting to see
19 the voids coming through from the lattice underneath.

20 Q. So we can see a comparison on -- in red circle 2 we can
21 see the pattern on the chevron --

22 A. Yes.

23 Q. -- on the left on the outside of the sole, but on 4 it

1 looks like a darker -- the pattern isn't visible.

2 A. That's correct. That pattern would have been on all of
3 those blocks when that shoe had been new.

4 Q. So it's wear and tear that's caused that variation.

5 A. Yes.

6 Q. And that's the sort of character that you were talking
7 about earlier.

8 A. Yes.

9 Q. Thank you. And then at paragraph 19, if we could for
10 a moment go back to your report. Sorry, this is on
11 page 8, paragraph 19:

12 "Further test impressions were made with these boots
13 by myself and it was from these impressions that
14 transparent overlays were produced for the purpose of
15 comparison with mark(s) on the submitted police vest as
16 per the instructions ..."

17 And again I wonder if you could look for me please
18 at SBPI00209. Do you recognise this?

19 A. Yes.

20 Q. Is this the item that you describe, the test impression
21 that was made by yourself?

22 A. It is, yes.

23 Q. And so these were carried out separately and we can see

1 the details on the left-hand side at the bottom.

2 A. Yes.

3 Q. And these are of Mr Bayoh's -- or one of Mr Bayoh's

4 shoes.

5 A. That's correct, yes.

6 Q. And again, can you show us the chevron, please?

7 A. The chevron is there (indicating).

8 Q. And the triangles?

9 A. The triangles are there (indicating).

10 Q. And the worn area on the heel area which shows the --

11 thank you.

12 A. (Indicating).

13 Q. Thank you very much. Why did you do your own?

14 A. The test impressions I was provided with were

15 photocopies, but they didn't actually contain a scale,

16 so I couldn't reproduce them to actual size, so to

17 undertake a comparison and to be satisfied that they

18 were actual size, I produced my own test prints.

19 Q. How does it help you if you are having them made to

20 actual size?

21 A. Well, part of the comparison is to see whether the shoe

22 that you're considering is the same size as the shoe

23 that has deposited the mark, so they both have to be

1 reproduced as exactly as possible to the same scale so
2 that you can do a like-for-like comparison.

3 Q. And that is what you were attempting to do with your
4 work?

5 A. Yes.

6 MS GRAHAME: Thank you.

7 I'm conscious of the time. I know we started later
8 but --

9 LORD BRACADALE: I think what we will do, Ms Grahame, since
10 we started later, is carry on until 11.45 and then we
11 will take a 15-minute break.

12 MS GRAHAME: Thank you.

13 Can I move back to your report for a moment, please
14 and if we could look at paragraph 20 on page 8. And
15 this now turns on to the examination of the boots of
16 PC Craig Walker which you have already identified for us
17 and again, was there any difference between the way you
18 examined these boots and the way you examined the
19 previous boots from Mr Bayoh?

20 A. No, there wasn't.

21 Q. And did you also carry out some impressions, or test
22 impressions, in the same way you had previously?

23 A. I did, yes.

1 Q. Thank you. And you prepared transparent overlays from
2 them also.

3 A. Yes.

4 Q. And then can we move on, please, to page 9. Do we also
5 see that you then did an examination of the police vest
6 of PC Nicole Short?

7 A. Yes.

8 Q. And can you explain to us how you went about examining
9 the vest?

10 A. Undertook a visual examination of the vest and used --
11 well, we recorded what we could see visually using
12 cameras and scales and then we used a range of different
13 lighting techniques to try to enhance any marks that
14 might be present and recorded that and used a range of
15 filters within -- with the lighting techniques and
16 within the software that we have for printing the marks
17 to actual size to try to maximise the amount of detail
18 that we could see on the vest.

19 Q. So you looked at the front and back and the inside of
20 the vest?

21 A. Yes.

22 Q. Around the arm holes?

23 A. Yes.

1 Q. And you described earlier how you're looking for things
2 that are visible to the naked eye, but then you're also
3 looking for things that might not be visible to the
4 naked eye.

5 A. That's correct, yes.

6 Q. And you did all of that when you looked at the vest?

7 A. Yes.

8 Q. And we have heard evidence that the vest contains an
9 inside black portion and then a high visibility yellow
10 with silver strip overvest, if you like, on top. Is
11 that what you found?

12 A. Yes. Well, when it was presented to us at Cellmark the
13 items had been separated out. The black vest was within
14 the bag and the yellow vest was within a separate
15 polythene bag within the item itself, so they had been
16 separated.

17 Q. Right. Thank you. And in paragraph 25 you mention:

18 "[The] black protective police vest, a torch,
19 a leather strap and a sheet of brown paper that
20 I understand was the sheet of paper that this item had
21 been examined on prior to submission for my
22 consideration."

23 And did you examine the bit of paper as well?

1 A. No, we didn't examine that. I understand that was just
2 what would have been used to collect anything that had
3 fallen from the item when it was previously examined and
4 therefore it wasn't relevant to the examinations I was
5 undertaking.

6 Q. Thank you. And you also say:

7 "[The] yellow high visibility fluorescent police
8 vest [was] ... in a further polythene bag."

9 A. Yes.

10 Q. You note that no marks were on the black vest.

11 A. That's correct.

12 Q. Visible or not visible to the naked eye.

13 A. Yes, from the examinations undertaken we didn't see any.

14 Q. Were you looking for footwear marks only, or were you
15 just looking for marks?

16 A. We were looking for footwear marks, marks that could be
17 identified as footwear.

18 Q. All right.

19 Then at 27 -- I would like to go through this
20 paragraph in some detail:

21 "The fluorescent vest was examined."

22 So, the yellow vest.

23 A. Yes.

1 Q. "A number of dark coloured deposits were observed on the
2 fluorescent fabric at the rear right of this vest to at
3 the juncture of the vertical and horizontal reflective
4 strips of the vest."

5 I wonder if we could, just for a moment, look at
6 some photographs and it may be easier to -- or let's
7 begin, first of all, with ones that you were sent in the
8 appendix to your letter of instruction, photos at PIRC
9 01176. And I'm interested in photographs 10 and 12 on
10 the PDF. So, this is photograph 10 I think, which is
11 "RES_0032.JPG", and then if we could move on to 12 and
12 this is "RES_0034". Those are two marks -- two
13 photographs.

14 A. Yes.

15 Q. Can we look at the first one, 10 please, and do you see
16 the marks there that are visible?

17 A. Yes.

18 Q. And would you point those out to us with the red circle?

19 A. Well, they cover quite an area, but that's part of it.
20 There are other marks round here and here (indicating).

21 Q. So you were examining all of those marks?

22 A. Yes.

23 Q. And is photograph 12 a close-up of that area, if we

1 could go back to photograph 12?

2 A. It is, yes.

3 Q. Thank you. So we can see the marks a little more
4 clearly in that photograph 12.

5 A. Yes.

6 Q. And what I will do is I will read out part of the report
7 and then we can go back to those photographs if we need
8 to. So this is on page 9, paragraph 12 -- sorry, 27.

9 So:

10 "A number of dark coloured deposits were observed on
11 the fluorescent fabric at the rear right of [the] vest
12 to at the juncture of the vertical and horizontal
13 reflective strips of the vest. These deposits continued
14 on to the fabric part of the horizontal reflective
15 strip. There was black staining to the plastic-coated
16 aspects of the reflective strips and to the police badge
17 on the rear of the vest."

18 Now, I would like to move on to two other
19 photographs, please, before I ask you to explain this.
20 These are taken from a PowerPoint presentation that we
21 looked at on Tuesday with Professor Dawson, which is
22 SBPI191, and it is slide 13 that I'm interested in. And
23 this is a photograph -- when we heard from

1 Professor Dawson on Tuesday she showed us a picture of
2 the 1995 [sic] photographs that were taken and she
3 showed us a picture of this, which we heard from her was
4 taken in 2022 and showed the results of the vest after
5 fingerprint staining had been applied to the vest.

6 Is this the black staining that you're talking about
7 in this paragraph?

8 A. It is, yes.

9 Q. So we heard from Professor Dawson that photographs were
10 looked at by her that were taken in 1995 [sic] before
11 any forensic tests had been carried out --

12 A. Yes.

13 Q. -- and that was the -- if I can say cleaner looking
14 version of the vest, the one we just looked at,
15 photographs 10 and 12 --

16 A. Yes.

17 Q. -- with the black marks quite visible on the right side
18 of the vest, beside the strip, and then this photograph
19 shows how it arrived in your premises at Cellmark in
20 2022.

21 A. That's correct, yes.

22 Q. So this was after a number of forensic tests had been
23 carried out.

1 A. Yes.

2 Q. So you recognise this photo as well?

3 A. Yes.

4 Q. So, thank you. If we can go back to paragraph 27 of
5 your report.

6 That's on page 9. And so where you say:

7 "There was black staining to the plastic-coated
8 aspects of the reflective strips and to the police badge
9 on the rear of the vest."

10 That's the black staining from the fingerprint
11 examination previously carried out by SPA, as you
12 understand it?

13 A. Yes, as I understand it, yes.

14 Q. Thank you. And you say there:

15 "I understand ... this staining was the result of
16 treating these parts of the vest with a black powder
17 suspension with a view to developing any fingerprints
18 that might be present. As a consequence of this
19 treatment being applied as a liquid and then having to
20 be removed by a washing process, parts of the yellow
21 fluorescent fabric adjacent to the treated areas have
22 been stained black. This includes the part of the vest
23 on which the dark deposits had been observed."

1 To what extent did that have an impact on your work,
2 Mr Ryder?

3 A. It obscured part of the detail that was originally
4 present and obviously made the comparison that I was
5 asked to undertake more difficult.

6 Q. To what extent would it have been easier if you had had
7 the opportunity to examine the vest before fingerprint
8 analysis was carried out?

9 A. Well, we would have been able to see the mark in its
10 original condition and to see it before any detail had
11 been lost or obscured as a result of the processes that
12 were undertaken.

13 Q. So, how did you work around that in your assessment of
14 the marks?

15 A. I reviewed the reports, the statements and notes that
16 had been provided in relation to the examinations that
17 had previously been undertaken to understand the
18 processes that had gone on and to look to see if there
19 was any records of the mark that were more detailed,
20 that showed the mark in its pristine condition, or as
21 near to it as we could get, and to request one of those
22 images to work with to carry out the comparison.

23 Q. And was that the 1995 [sic] photographs --

1 A. 2015, yes.

2 Q. Sorry.

3 Sorry, that was my mistake. It was 2015. So it was
4 those marks that showed the vest -- that gave a better
5 indication for you to use?

6 A. It was the clearest representation of those marks that
7 I could find that was available.

8 Q. Right. And did you rely on that photograph, those
9 images?

10 A. I did, yes.

11 Q. Right, and was that a better approach than looking at
12 the vest as it was in 2022?

13 A. There was more detail present to consider because not
14 only had part of the marks been obscured as a result of
15 that, it was evident from looking at that original
16 photograph and the vest itself that the deposits
17 appeared lighter in colour, or fainter at the time we
18 were given them and I took that to be that it was
19 because the deposits were so fragile that as a result of
20 the continued examination that part of those deposits
21 had been lost from the vest prior to it being examined
22 by me.

23 Q. And how, in your experience, can those items be lost

1 over time?

2 A. Because they're quite fragile and sitting on the surface
3 of the garment, any friction or contact with that would
4 result in those deposits being potentially removed, so,
5 for example, folding it up to put it back in the bag
6 after examination has been completed would be one way in
7 which such a process could damage the marks and
8 I understand that this had been examined by a number of
9 people over a number of different -- in a number of
10 different ways, so it would have been in and out of the
11 bag on a number of occasions and unavoidably that detail
12 has been lost as a result of those processes.

13 MS GRAHAME: Thank you.

14 Would now be a --

15 LORD BRACADALE: Yes, we will take a 15-minute break now.

16 (11.47 am)

17 (Short Break)

18 (12.07 pm)

19 LORD BRACADALE: Ms Grahame.

20 MS GRAHAME: We were talking about paragraph 27 of your
21 report, on page 9, and if we can look at that again for
22 a moment. Just below halfway down you will see that it
23 says:

1 "As a consequence of this treatment being
2 applied ..."

3 So you had been mentioning the staining with the
4 black powder suspension, the fingerprint analysis that
5 had been done previously:

6 "As a consequence of this treatment being applied as
7 a liquid and then having to be removed by a washing
8 process, parts of the yellow fluorescent fabric adjacent
9 to the treated areas have been stained black."

10 We looked at that in the photograph --

11 A. Yes.

12 Q. -- immediately before the break:

13 "This includes the part of the vest on which the
14 dark deposits had been observed."

15 A. Yes.

16 Q. I would like to ask you about the washing process. In
17 your experience, do you understand what that washing
18 process involves?

19 A. Well, the powder suspension process, as I understand it,
20 is basically it's a thick black sludge liquid which is
21 painted on to the surface they want to treat and then it
22 reacts with fingerprints. That's what they're trying to
23 develop. The powder within the suspension will stick to

1 the fingerprints and then when you wash it off, it
2 washes away the excess sludge or whatever you want --
3 the suspension, to leave behind or expose the
4 fingerprints that have reacted, but because it is
5 a liquid it's very difficult to control where that is
6 going to go when you're doing the washing process.

7 Q. So that can have an impact on the mark, can it?

8 A. Well, it has done in this case, yes.

9 Q. It has. And can I ask you to comment on some evidence
10 that we heard from Professor Dawson. Perhaps we could
11 look at SBPI00191, which was a PowerPoint presentation
12 that she gave us on Tuesday, and I would like to look
13 first of all at a number of slides starting with 14. So
14 you will see that this is a -- we heard that this was
15 a photograph of the vest, you will recognise it?

16 A. Yes.

17 Q. And you will see that there are three areas identified
18 there, 1, 2 and 3, with circles.

19 A. Yes.

20 Q. I'm going to be asking you some questions about area 1.
21 Can we look at 15. You will see that there are little
22 red markers that have been applied to the areas.

23 A. Yes.

1 Q. Again, 1 is at the bottom of the silver strip,
2 fluorescent strip on the vest.

3 A. Yes.

4 Q. And then 16, you will see samples that were recovered
5 from the vest and again, you can just see the little red
6 markers showing a close-up of these areas. Again,
7 area 1 at the bottom is the one I'm going to ask you
8 about. You will see the mark there.

9 Then if we can move on to slide 19, which is area 1,
10 and it's a close-up, so this is from the soil on the
11 silver strip, fluorescent strip on the vest that we have
12 looked at and you will see at the bottom -- now,
13 Professor Dawson talked about area 1 being at the lower
14 edge of the silver fluorescent strip. You can see
15 a little bit of the yellow fabric beneath it, just
16 between the marker and the strip. Do you see that?

17 A. Yes.

18 Q. And she said:

19 "Answer: ... it looked as if it had been wiped or
20 something."

21 And she was asked to give a description of
22 what had maybe caused that appearance and she
23 said:

1 "Answer: It's this sort of regular appearance at the
2 top, or there's a strip that is above the deposit that
3 appears like something has been there that is no longer
4 adhering to [the] fabric."

5 I just wondered if you could comment on whether this
6 washing process that you have described could cause
7 anything like this, or could it be some other --

8 A. It would depend what the deposits were that were there.
9 It could just be the friction that I referred to before
10 by folding it, or whether the fact that you have run
11 water over the item. You would expect the water to be
12 run over the areas where the suspension had been applied
13 and to try to avoid all the other areas that you're not
14 treating to try to preserve them as best you can, but
15 again, I wouldn't be able to say whether that was
16 a result of washing, or whether that was just the
17 mechanical removal as a result of repeated examinations.

18 Q. Thank you. I would like to move on to paragraph 29,
19 please, of your report, which is on page 10. I think
20 you have touched on this earlier today. You requested
21 further electronic copies and you have given the details
22 of those there --

23 A. Yes.

1 Q. -- of images, and you talk about the:

2 "... vest Photo copy has been reproduced at this
3 laboratory to actual size to represent the dark staining
4 at the time prior to the treatments that have
5 unavoidably impacted on the visualisation of these
6 deposits."

7 I'm interested in this photo that's been reproduced
8 to actual size. Could you explain what you did?

9 A. Well, the image itself has got a scale in it, so what we
10 do is, using the computer software that we use then to
11 print is we calculate the size of the image and we work
12 it out so that the image, when it's printed out, will be
13 one-to-one size and a centimetre on the scale would be
14 a centimetre in the print, so we calculate how to do
15 that and then print it out to actual size.

16 Q. So whatever size the item is, you have an image that is
17 actual size?

18 A. Yes.

19 Q. Thank you. And you say:

20 "Records of the deposits at the time of my
21 examination have also been made by photographing them
22 under a range of lighting conditions and using filters
23 to try to enhance the appearance of these deposits."

1 Describe what you were doing there?

2 A. It's basically, the vest as it was presented to me was
3 rephotographed and we experimented with different
4 lighting and different filters, trying to find the best
5 way to increase the contrast between the background and
6 the marks to make it as visible as we possibly could, to
7 try to create some detail -- sorry, not create, but to
8 show the detail that's there in its best way so that it
9 would assist our comparison the most.

10 Q. Right. Then you say:

11 "It was my opinion that the item [the photograph 34]
12 was the clearest representation of the deposits under
13 consideration."

14 And I think that's what you mentioned earlier.
15 I called them photographs 10 and 12, but the
16 photograph 12 was the closer-up photograph. You thought
17 that was the clearest representation of the deposits?

18 A. It was, yes.

19 Q. Thank you. And you say:

20 "No detail was observed beyond that recorded in this
21 image that would in my view further assist in addressing
22 the matters subject to my instructions."

23 A. Yes.

1 Q. Thank you. If we move on to paragraph 30, you say:

2 "I have considered the recorded deposits to
3 determine whether there is any pattern to them that
4 I consider could relate to a pattern element from an
5 item of footwear. No features were present that I can
6 be satisfied are geometric shapes that I would expect to
7 see if they were related to an item of footwear being
8 brought down in forceful contact with this vest."

9 Could you explain that in a little more detail,
10 please.

11 A. What we're looking for is to see if there is any pattern
12 to them -- the marks themselves, to those deposits. If
13 there is anything in there which is pointing towards it
14 being a footwear mark -- are there any geometric shapes,
15 is there an arrangement of the square blocks,
16 an arrangement of triangles, an arrangement of hexagons,
17 whatever the tread pattern might have been, or anything
18 that you might recognise from experience of looking at
19 other footwear that looks like a footwear mark and
20 that's what we were looking for in that instance.

21 Q. And you say that no features were present that satisfied
22 you that there were those geometric shapes?

23 A. That's correct, yes.

1 Q. And you say:

2 "I have explored the arrangement of deposits further
3 by positioning actual size transparent representations
4 of the footwear patterns in multiple positions over the
5 marks to determine if there is any spatial
6 correspondence between the features in the marks on the
7 vest and those on the respective pairs of footwear."

8 Can you explain what you were doing?

9 A. The impressions that we have seen previously, that we
10 had actually produced, you can transfer them onto
11 a clear acetate sheet, so you have actually got
12 a transparency of the footprint -- I've got one here if
13 it would assist.

14 Q. Is this from your own folder of materials?

15 A. Yes. Are you happy to --

16 LORD BRACADALE: (Mic turned off).

17 MS GRAHAME: Yes, yes.

18 A. So that is effectively what's produced, so you can then
19 put that down on top of the photograph and move it
20 around to try to find whether there's any correspondence
21 that you can see between that and the deposits on the
22 actual photograph.

23 Q. And that's an actual size --

1 A. It is actual size, yes.

2 Q. -- of the transparency and you had the actual size of
3 the photograph --

4 A. Yes.

5 Q. -- of the original images.

6 A. Yes.

7 Q. And you did a comparison by visually moving them about
8 and checking to see?

9 A. Yes.

10 Q. And you say that:

11 "No such correlation was found that I would consider
12 to be indicative of these deposits having resulted from
13 a contact with the sole of either of these pairs of
14 boots."

15 A. That's correct, yes.

16 Q. And was that the boots of Mr Bayoh?

17 A. Yes.

18 Q. And PC Walker?

19 A. Yes.

20 Q. Thank you. So you couldn't find any items in the
21 transparency and from the sole of the boots that
22 corresponded with the vest?

23 A. I couldn't find a correspondence, no.

1 Q. Thank you. And you have also mentioned there that -- to
2 go back to the second line:

3 "No features were present that I can be satisfied
4 are geometric shapes that I would expect to see if they
5 were related to an item of footwear being brought down
6 in forceful contact with this vest."

7 I'm interested in the use of that "in forceful
8 contact". What were you thinking of when you described
9 "in forceful contact"?

10 A. Well, I understand that -- from the instruction
11 provided -- that we were investigating the potential
12 that someone had stamped on this vest, so I understand
13 a stamp to be someone bringing down the undersurface of
14 their shoe in a forceful way, which increases the amount
15 of pressure that is applied when the shoe makes contact
16 with the surface it's coming into contact with.

17 Q. If there had not been a forceful contact between the
18 sole of the shoe and the vest, such as a stamp, but
19 perhaps a less forceful movement, or a less clearly
20 defined movement of some sort between the shoe and the
21 vest, could that have caused any of the marks that you
22 saw on the vest?

23 A. It will depend on the extent of the contact and the

1 extent of contact with the part of it. The deposits
2 cover quite a large area, so if it was a single contact
3 and they have all been put down at the same time, there
4 is no correlation between any of the footwear that
5 I have seen and those shoes and that mark, and there was
6 no features in the entirety as a whole which would
7 support the view that it is a footprint, in my opinion,
8 but if you were to take one particular element of it
9 then I wouldn't be able to rule out that it could have
10 been caused by part of that shoe, but it would have to
11 be deposited in a way that it leaves a mark that isn't
12 recognisable as being left by that shoe.

13 Q. Right. Thank you. Then if we can look at paragraph 31:

14 "As part of my examination I have taken into account
15 that the deposits have been left on a textured fabric
16 surface which has the potential to impact on the clarity
17 and detail recorded in any impressions left."

18 Could you explain a little more about that?

19 A. In reaching the conclusion about whether it's a footwear
20 mark or not, you have to take into account the substrate
21 in which the mark has been deposited on and because it's
22 a textured surface, the expectation is there would be
23 less detail within the mark, so that said, an element of

1 caution was taken to -- against completely eliminating
2 the possibility that it was a shoe because you're not
3 dealing with an ideal situation.

4 Q. And then you go on to say:

5 "I have also been asked to consider whether the
6 marks are the consequence of a forceful dynamic
7 motion..."

8 Is this the stamp that you were talking about
9 a moment ago?

10 A. Yes.

11 Q. "... which in my experience would have the potential to
12 distort any impressions left."

13 In what way could a forceful dynamic motion distort
14 impressions left?

15 A. You can get a situation where the shoe moves as it
16 deposits the mark. It could ruck the fabric up and
17 crease it and alter the appearance of what deposits
18 might be left behind. It might alter the appearance of
19 the actual mark produced itself because of the
20 additional impact that's applied and change the features
21 slightly that you might expect from that particular
22 shoe.

23 Q. Then:

1 "Nonetheless, I have seen no detail during my
2 examinations that allow me to form a view that these
3 deposits have been left as a result of a contact with
4 the sole of an item of footwear and in particular,
5 either of the considered items of footwear."

6 And that included Mr Bayoh's boots?

7 A. Yes.

8 Q. And those from PC Walker?

9 A. That's correct, yes.

10 Q. So you had seen no detail during your examinations that
11 allowed you to express the view that the deposits were
12 left as a result of contact with the soles of those
13 boots?

14 A. That's correct, yes.

15 Q. Thank you. Now, you have mentioned the forceful dynamic
16 motion. Again, if the marks were caused not by
17 a forceful dynamic motion such as a stamp, but perhaps
18 a less forceful dynamic motion, would that cause you to
19 alter any of the views you expressed?

20 A. You would take it into account, but it doesn't alter the
21 opinion that there's nothing within those marks that
22 I can see that would allow me to form a view that they
23 have been made by either of those pairs of shoes, or

1 indeed that it's a footwear mark.

2 Q. Thank you. Then in paragraph 32 you say:

3 "Given the nature of the marks it is also my view
4 that I'm not able to exclude the possibility that either
5 of the submitted pairs of footwear could have
6 contributed to this deposited material in some way but
7 that contribution is so indistinct that it is not
8 recognisable as having been made by an item of
9 footwear."

10 And so can you just tell us what that means?

11 A. It means that the marks are so indistinct that I can't
12 rule out the possibility that a shoe could have made
13 that mark but left a deposit that is so indistinct that
14 you can't recognise what you're seeing. It just isn't
15 recognisable as a footwear mark to me and I see no
16 elements in there that correlate with either of the
17 submitted pairs of shoes.

18 Q. And so if we have heard evidence that there was
19 a foot mark, a tread mark on the rear of this vest,
20 that's not your view as you have expressed in your
21 opinion?

22 A. There is nothing that I have seen that would assist
23 in -- scientifically assist in whether that is

1 a footprint, and/or whether it is either of these pairs
2 of shoes.

3 Q. Thank you. And then in paragraph 33 you say:

4 "Overall it is therefore my opinion there is
5 insufficient definition and detail within the marks on
6 the vest to be able to carry out a meaningful comparison
7 with the submitted footwear and/or to be able to offer
8 an opinion as to the nature of the surface these
9 deposits have been transferred from."

10 And does this go back to what you were saying
11 earlier in terms of a meaningful comparison and not
12 having the confidence to be able to say one way or the
13 other?

14 A. There's -- yes, it does go back to that and it's a case
15 of there's no character within the marks that would
16 allow me to see what might have caused it, whether it's
17 a shoe, whether it's contact with a pattern on a grid
18 from the floor, whether it's contact with a bench,
19 any -- it could be that there are many different things
20 that could have caused it and I wouldn't be able to
21 offer an opinion whether it was more likely any of those
22 items -- unless there was a correlation found with one
23 of those.

1 Q. Thank you. Can we look at paragraph 34, please, so this
2 is at the top of page 11. I would like to ask you some
3 questions about this paragraph. Let's start to go
4 through it:

5 "Had the mark(s) or part of it been produced by an
6 item of footwear making forceful contact with
7 PC Nicole Short whilst she lay on the ground, there is
8 in my opinion a further expectation of a possible
9 transfer of material to the parts of her vest that were
10 in contact with the ground, particularly if the ground
11 was wet."

12 Could you explain what you mean by that?

13 A. In terms of that it's sort of equal and opposite forces,
14 in that if someone was to be laying on the ground and
15 a mark was to be deposited on top of them on the
16 opposite side to where they were laying on the ground,
17 you would expect deposits from the shoe but you would
18 also expect deposits from the ground at the same time if
19 they were in contact with it.

20 Q. So when you're talking about forceful contact, are you
21 envisaging a stamp?

22 A. Yes, in terms of forcibly being put down, yes.

23 Q. So if a stamp or multiple stamps had been applied to the

1 rear of the vest, you would expect something on the
2 front?

3 A. There's certainly a potential for that, if it was in
4 contact with the ground, yes.

5 Q. And then you say:

6 "This would most likely be to the front or left side
7 of the vest if the mark on the right side was a result
8 of someone stamping on her."

9 Could you explain what you mean by that?

10 A. In terms of that, it envisages that you're bringing your
11 foot directly down, so given the position of the marks
12 on the vest on the rear right side, the opposite side of
13 the vest would be the left side, so that would be the
14 bit that is in contact with the ground, if it were to
15 come directly down on top of the vest at that point.

16 Q. So if you were wearing a vest now, Mr Ryder, and the
17 mark was on the rear, on the right of the rear as you
18 looked at it, so perhaps underneath your right arm,
19 where would you have expected a corresponding mark to be
20 on the vest?

21 A. You would expect some contact on this side (indicating),
22 so it's the opposite side to where the contact with the
23 shoe would make. If that is in contact with the ground

1 as a result of the stamp then you might expect to see
2 deposits on that side as well.

3 Q. If we were looking at -- if you were wearing a vest now
4 and we were looking at that, I would have said the left
5 of the vest would be on this side and the right would be
6 on this side, and you're pointing to the opposite of
7 what I would expect. I want to be clear I've got this
8 right.

9 A. When I refer to right and left, I always refer to it as
10 the right and left of the wearer.

11 Q. Right, okay. So if the mark -- if you were wearing the
12 vest that we have seen, where were the marks on that
13 vest, if you were wearing that vest?

14 A. It would be on my right side here.

15 Q. Your right side. You're pointing to your side rather
16 than the rear, rather than your back?

17 A. I will refer to the image again.

18 Q. Would you like to look at one of the images again?

19 A. Please.

20 Q. We have 10 and 12 which might help. So that's -- let's
21 have a look at image 10. I don't want to get confused
22 about this. This is the rear of the police vest that we
23 have been talking about?

- 1 A. Yes.
- 2 Q. Now, as I look at that I see marks on the right-hand
3 side?
- 4 A. Yes.
- 5 Q. Besides the right arm hole?
- 6 A. Yes.
- 7 Q. And if we turned that vest around where would we see
8 the -- I don't know if we have a photo of the front of
9 the vest actually in this -- oh yes, here we are.
10 Perfect. So we look at this -- we have turned the vest
11 around now, we're looking at the front. Where would you
12 have expected marks to be?
- 13 A. The bit that's on the opposite side as I would consider
14 it would be around this area (indicating).
- 15 Q. Right. So let's go back to the previous photograph of
16 the rear, which is photo 10. Sorry. So that's -- the
17 rear of the vest besides the arm and you would expect it
18 to be -- if it was a stamp straight down, you would
19 expect it to be on that point where you added the red
20 circle?
- 21 A. Round about there, yes.
- 22 Q. Do you have an understanding of the position in which
23 the officer who was wearing this vest was on the ground?

1 A. I haven't been provided with that in detail, but in
2 terms of -- if it was -- because it's been described as
3 a stamp, I have taken that to be a direct, downward
4 movement.

5 Q. Thank you. So if the Chair takes a different view, then
6 that might impact on where the front mark would be --

7 A. It would, yes.

8 Q. -- expected to be.

9 A. Yes.

10 Q. Thanks. Can we go back to your report, please,
11 paragraph 34. You have said:

12 "No significant deposits of dirt were observed
13 during my examination of the vest or from examination of
14 photographs of the vest provided to me."

15 And I think earlier you gave evidence that you had
16 examined the whole vest, front and back?

17 A. Yes.

18 Q. And so were you -- does what suggest no significant
19 deposits of dirt were observed, is that including on the
20 front of the vest?

21 A. Yes.

22 Q. Thank you:

23 "The absence of such deposits could, in my opinion,

1 be considered to support the view that she had not been
2 lying on the ground when the alleged stamp occurred,
3 resulting in the staining that has been the subject of
4 my examinations."

5 A. Yes.

6 Q. "I have, however, been made aware that items of police
7 equipment, including her radio and utility belt, were
8 also being worn with this vest."

9 A. Yes.

10 Q. "As such I am unable to rule out the possibility that
11 this equipment may have prevented a contact occurring
12 between the ground and the vest and therefore precluding
13 the transfer of material to it. This further
14 consideration therefore in my opinion also does not
15 assist in respect of whether the mark was a result of
16 a stamping action."

17 A. That's correct, yes.

18 Q. And this will be a matter for the Chair to decide.

19 A. Yes.

20 Q. But insofar as you are able, you have not been able to
21 find anything supportive of that?

22 A. No, I haven't.

23 Q. Thank you. Can I ask you when you're talking about the

1 transfer of material from the ground onto the vest,
2 again, would the passage of time impact on that, or the
3 existence of that transfer?

4 A. In this particular instance it is about the erosion of
5 the material that's been transferred through the
6 subsequent examinations. If that item had been
7 recovered and stored in conditions where it wasn't
8 impacted in terms of -- it wasn't abraded, it wasn't
9 lost through various examinations, or moving about in
10 the bag and that sort of thing, then those deposits
11 would have stayed there until the point of an
12 examination, but it's because of the nature of the
13 deposits being fragile and the movement and the friction
14 that's impacted on it, so if it had been packaged in
15 such a way that prevented that, you could come to it
16 many, many years later and still carry out the
17 examination you could have undertaken if you had done it
18 at day one.

19 Q. And where would one find such conditions? Would that be
20 assistance of forensic experts or...?

21 A. It's all about the preservation and packaging of the
22 item. If you preserve -- if you package a footwear mark
23 in the appropriate way, even a fragile one, it will be

1 preserved and prevented from deteriorating.

2 In this case it would be very difficult to have
3 preserved that mark on that item as it stood because of
4 the nature of it, with it being fabric and being placed
5 in a bag. The ideal thing would have been if it was
6 identified as a key mark at the absolute outset in the
7 beginning, if, for example, this was being undertaken at
8 a murder inquiry, for example, and this was on a victim
9 on the floor, to preserve that what you would do in the
10 ideal situation is cut that out and then take that away
11 and preserve it individually, if the significance of it
12 had been identified at that point.

13 Q. So if individuals had identified it as being of
14 considerable significance at an early stage, that's the
15 type of thing that could have been done?

16 A. It could have been done, yes.

17 Q. And that would have preserved the marks, or any marks
18 that were on the vest at the time?

19 A. It would, but then it's a balance about the other
20 examinations that need to be undertaken and the priority
21 of them and the likely significance, so it's all about
22 the original strategy that's set for the examination.

23 Q. So if that strategy had been developed, perhaps by

1 senior officers, that could have been done with the
2 assistance of forensic experts, could it?

3 A. It could have been done, yes. It is one of those
4 situations where I'm not sure that the significance of
5 that would be recognised at that point. It is
6 a difficult item to recover and set a strategy for.

7 Q. So it would depend when it was recognised as being
8 possibly significant?

9 A. Yes.

10 Q. But if that had been drawn to the attention of forensic
11 experts at any time, that could have been considered?

12 A. It could have been, yes.

13 Q. Thank you. And that would have perhaps avoided some of
14 the erosion -- possible erosion of the material?

15 A. It could, but if the strategy that was set record -- it
16 did record the image at an early stage, before all the
17 treatments were done, so there was a strategy in place
18 to try to record and maximise the detail that was there.
19 That was then set and then they went on to progress the
20 examination to do the more destructive things, which in
21 my view wasn't an unreasonable set of examinations to
22 do.

23 Q. Going back again to thinking about this transfer,

1 perhaps on the front of the vest from the ground with
2 a forceful dynamic motion being applied to the rear, has
3 the forensic test having been carried out caused
4 a potential impact to erosion?

5 A. I didn't see anything in the earlier photographs that
6 were taken that would suggest there was anything there
7 that could have been lost.

8 Q. Okay, thank you. We have talked about a scenario if
9 there was not that forceful dynamic motion such as
10 a stamp, or more than one stamp. What if there was
11 a less forceful dynamic motion, not a stamp, that caused
12 the shoe to come into contact with the vest? Again,
13 would you still expect a possible transfer of material
14 from the ground in that situation?

15 A. Not necessarily. It all depends on the circumstances
16 and the position. There may well have been indirect
17 contact with the ground. If they were in direct contact
18 with the ground at the time, regardless of how much
19 pressure was applied, then you probably expect
20 a transfer to have occurred, but again, we've got the
21 equipment in there that we mentioned which may prevent
22 that contact from taking place.

23 Q. And then looking at paragraph 35, please, you have set

1 out your conclusions in this section which the Chair can
2 consider. At paragraph 35 you say:

3 "It is my opinion that the mark(s) in the form of
4 deposits on the rear of the fluorescent police vest in
5 the vicinity of the police badge are poorly defined and
6 it is not possible to offer a view from examination of
7 the marks as to what may be the source of this mark(s)."

8 A. Yes.

9 Q. So does that open the possibility there could be many
10 different possible sources of this mark?

11 A. In my view, yes.

12 Q. 36:

13 "I do not recognise any features within this mark
14 that would allow me to offer an opinion that it had been
15 made by the under surface (sole) of an item of
16 footwear."

17 A. That's correct.

18 Q. And that would be any item of footwear?

19 A. Yes.

20 Q. 37:

21 "I have found no correspondence with the footwear
22 ... of [Mr] Bayoh or ... PC ... Walker that would allow
23 me to provide an opinion that either of these sets of

1 footwear could have produced this mark..."

2 A. That's correct, yes.

3 Q. 38:

4 "As a consequence of the poorly defined nature of
5 the mark(s) I am also unable to exclude the possibility
6 that either or both of these sets of footwear might have
7 contributed in some way to the mark(s) on the vest."

8 So you can't exclude that possibility either?

9 A. That's correct, yes.

10 Q. And then 39:

11 "Overall, it is my opinion that the mark(s)
12 considered in this instance are unsuitable to undertake
13 any meaningful comparison and hence do not provide any
14 opportunity to offer an expert opinion that would assist
15 in addressing whether or not the mark(s) on the
16 fluorescent police vest might have been made by the
17 footwear provided to me."

18 A. That's my opinion, yes.

19 Q. And so unfortunately you're not able to assist the Chair
20 in terms of the forensic examination in relation to
21 these marks?

22 A. That's correct.

23 Q. Thank you. I would like to just confirm one other

1 thing. We heard evidence previously in the earlier
2 hearing from an Alison Marven, and Alison Marven gave
3 evidence on 17 June this year. She was a forensic
4 scientist with the SPA in chemistry.

5 A. Yes.

6 Q. Now, we have a transcript of her evidence to this
7 hearing. I will summarise, if I may, what she said and
8 I would like to ask you if you agree with her
9 conclusions:

10 "The partial mark on the high visibility vest was
11 found to have insufficient detail for a meaningful
12 comparison to be carried out."

13 I think --

14 A. I agree with that, yes.

15 Q. -- you agree with that.

16 "Marks on the jacket possibly included a triangle.
17 It is possible that this is one of the elements from the
18 shoes of the deceased but there is really insufficient
19 detail/resolution of marks for any meaningful
20 comparison."

21 A. That's correct, yes. I agree with that.

22 Q. You agree. A meaningful comparison:

23 "So for one pattern element, just a triangle, it's

1 not a unique shape. To say that the triangle was from
2 a certain item, if you have only got one pattern
3 element, that would be quite misleading if you haven't
4 got any of the other pattern elements round about."

5 A. That's correct, and because we're talking about what is
6 potentially a triangle, it may not actually be
7 a triangle that's deposited it, it could be a partial
8 deposition of a four-sided block which has deposited
9 a triangle shape.

10 Q. You mean like a square or a rectangle?

11 A. Yes, it could be because it's a partial contact it might
12 not even be that although you've got a triangular shape
13 that it has actually been deposited by a triangle.

14 Q. Thank you.

15 "We've got a possible triangle but there was nothing
16 else of the pattern of the shoe soles roundabout it."

17 A. Yes.

18 Q. You agree with that as well?

19 A. Yes.

20 Q. And then:

21 "... if there has been a full contact -- contact
22 with the full sole against the item, depending on what
23 the substance the item is made of is, it may be unusual

1 to only get one pattern element and not have anything
2 else show up. If somebody, for example, stood on this
3 table and the table was dusted [she was referring to the
4 table in front of her at the time] I wouldn't expect to
5 only see one part -- if the full sole has come into
6 contact with the table, I wouldn't expect only to see
7 one part of the mark, or one pattern element there.
8 I would maybe expect to see more. You might not have
9 the full mark, but you would expect to see more than
10 just one piece.

11 "Obviously it depends on the shape, if there's
12 a curvature of the item that's been touched, maybe only
13 part of the item does come into contact with the sole of
14 the shoe, but for full sole contact ... -- you might
15 expect to see more than one, but again, it might depend
16 on what's on the sole of the shoe, or if there's been
17 something on the vest that's -- initially that's reacted
18 with something that the shoe has come into contact
19 with."

20 I appreciate that was a long passage. I can go
21 through it more slowly if that would help you. Overall,
22 do you agree with what she said there?

23 A. The expectation is that if a shoe comes into contact

1 with a particular surface, you would -- and it deposits
2 a mark you would expect to see a representation of more
3 than one pattern element. You would expect contact from
4 multiple ones that would be manifested in the mark. You
5 might not get the shoe in its entirety, you might only
6 get a few pattern elements, but you would expect to see
7 at least a few surrounding ones. I mean, there may be
8 an extreme situation whereby the deposit that's been put
9 down by the shoe has only been in contact with one
10 pattern element, so when the shoe comes into contact,
11 the only transfer that occurs is that contaminant from
12 that one block, but we've got a lot of the mark there in
13 terms of its extent and there is one possible triangular
14 shape in there, but that in my view doesn't correspond
15 particularly well with any of the shoes.

16 Q. Thank you. So from what you're saying it sounds like
17 largely you do agree with what Alison Marven said to the
18 Chair about these different issues?

19 A. My expectation would be there would be a mark of greater
20 extent than a single pattern element, yes.

21 MS GRAHAME: Thank you. Thank you very much. Could you
22 give me a moment please.

23 (Pause).

1 Thank you. I have no further questions.

2 LORD BRACADALE: Thank you.

3 Now, there were no Rule 9 written applications. Are
4 there any oral applications?

5 The dean of Faculty.

6 Mr Ryder, I wonder if you would withdraw to the
7 witness room while I hear a submission.

8 (The witness withdrew)

9 (Pause).

10 Yes, Dean of Faculty.

11 Application by THE DEAN OF FACULTY

12 DEAN OF FACULTY: My Lord, contrary to what your Lordship
13 just said we did submit a Rule 9 with regard to
14 Mr Ryder.

15 LORD BRACADALE: Did you?

16 DEAN OF FACULTY: Yes.

17 LORD BRACADALE: Sorry, I didn't realise that.

18 DEAN OF FACULTY: And as part of that we would like to
19 explore what the witness has just said with particular
20 regard to the photographs and the triangular mark there,
21 the photographs at PIRC 01176, as was heralded in the
22 latter parts of the Rule 9 application. I would
23 imagine, my Lord, I will be no more than five or

- 1 something?
- 2 A. Yes.
- 3 Q. Can we have the photographs again on screen please,
4 PIRC 00176 and -- now I think I have these slightly
5 differently, but can we find photograph RES32, which is
6 page -- I think it was page 48 of my PDF, but -- yes.
7 No, that's slightly different. If we go back up
8 a couple, please. I'm looking for the front of the
9 jacket, please. Yes, there we are. So that's the front
10 of the jacket. It's pretty clean: do you agree with me?
- 11 A. Yes.
- 12 Q. So in general it's not a dirty jacket?
- 13 A. No.
- 14 Q. And if we go to RES34, please, this is the close-up of
15 the mark, something has left this mark?
- 16 A. Yes.
- 17 Q. And just looking -- or these marks, I should say, and in
18 particular if you look immediately below the
19 intersection of the reflective strips, if you could
20 point, please, to what we have been talking about as the
21 triangle.
- 22 A. Sorry, it's just -- I should try again.
- 23 Q. Just to the right of the circle you just put on.

- 1 A. There (indicating) that's what I understand to be the
2 triangle referred to.
- 3 Q. What about to the right of that? You see a triangular
4 mark? I don't know if I can -- I don't think I can do
5 it, but --
- 6 A. Are you referring to that there? (indicating).
- 7 Q. Slightly to the left of that there's a mark that seems
8 to have three sides, do you see that?
- 9 A. That one? (indicating).
- 10 Q. Yes, that one.
- 11 A. It's got three sides but I wouldn't describe that as
12 being a triangle which I could definitively relate to an
13 item of footwear.
- 14 Q. How else would you describe a shape with three sides?
- 15 A. It's not regularly sided in terms of it's not got
16 straight edges to the triangle. It's not sharply
17 defined.
- 18 Q. No, but we have heard already that these things can be
19 blurred as a result of the way in which the foot comes
20 into contact, yes?
- 21 A. Yes.
- 22 Q. And that is a three-sided shape, is it not?
- 23 A. It is.

- 1 Q. If you look upwards in the photograph and then to the
2 right, there's, I think, three black lines, possibly
3 a fourth if you look to the reflective strip as well.
4 Can you identify those? Yes, certainly three black
5 marks. Would you agree with me that looks like
6 a geometric pattern of some sort?
- 7 A. There's three, four -- possibly four lines that have got
8 consistent spacing to them, but in terms of the
9 geometric element, I can't see what's caused those.
- 10 Q. Well, something with a geometric pattern has had to have
11 applied that mark, do you not agree, given the
12 regularity of the spacing between the lines?
- 13 A. Potentially, but it could also be a single contact and
14 they have separated and that is a result of creases in
15 the fabric. We just don't know.
- 16 Q. But there are three, possibly four lines effectively in
17 parallel with regular spacing?
- 18 A. Yes.
- 19 Q. And you will recall the acetates of Mr Bayoh's boots, we
20 looked at them earlier.
- 21 A. Yes.
- 22 Q. They contain on the outer aspect treads which contain
23 parallel lines, don't they? If we go to SPA00024. If

1 you look -- let's look at the left-hand side, if you --
2 there are parallel lines, are there not, there?

3 A. Are you referring to the chevrons?

4 Q. Yes. If you just look at the upward diagonal aspect of
5 each chevron, parallel lines?

6 A. Yes.

7 Q. And there are triangles?

8 A. There are.

9 Q. Now, as you say in your own report, you say:

10 "As a consequence of the poorly defined nature of
11 the marks, I am unable to exclude the possibility that
12 Mr Bayoh's boots might have contributed in some way to
13 the marks on the considered vest."

14 So you can't exclude it, can you?

15 A. I can't exclude it, no.

16 Q. But something left those marks on Nicole Short's vest?

17 A. It did.

18 Q. Something that she encountered since the last time that
19 vest was washed?

20 A. Yes.

21 Q. Yes? And if she put that vest on clean that day,
22 something that happened to her that day?

23 A. Yes.

- 1 Q. And it could have been a shoe, you can't exclude that?
- 2 A. I can't exclude that. In terms of the pattern elements
3 that you were referring to though, as part of the
4 examination that we undertook, we did consider whether
5 those could be part of the shoe. The process
6 I described for laying the overlay on the mark to try to
7 find things and the spacing of those elements, although
8 there is four regular spaced elements, don't correspond
9 with the pattern elements on the shoe.
- 10 Q. But again, that would depend the way in which a boot
11 interacted with that vest?
- 12 A. It would.
- 13 Q. Because there could be scuffing and movement and the
14 like?
- 15 A. Yes.
- 16 Q. And when you say you undertook that analysis, given that
17 you were unable to locate the triangle I'm talking about
18 first, do we understand you were looking at a different
19 triangle?
- 20 A. I was looking at the deposits in their entirety, looking
21 for areas of correspondence that I could see, looking
22 for elements that I could be satisfied could relate to
23 an item of footwear, so that I could form a view (a) it

1 had been formed by a shoe, and (b) whether it could have
2 been formed by either of these two pairs of shoes
3 specifically, and from my examination, I didn't see any
4 character in there that was sufficient to allow me to
5 form that opinion.

6 Q. But you do agree with me we see a three-sided shape mark
7 on the vest?

8 A. I agree there was a three-sided shape there, but from
9 that particular three-sided shape, I wouldn't attribute
10 to an item of footwear because it's not specific -- it's
11 not sufficiently defined to be satisfied that it's
12 a triangle because of the irregularities to it.

13 Q. Which could be down to scuffing?

14 A. Potentially.

15 Q. And we do see triangular shapes on the acetate of
16 Mr Bayoh's boots?

17 A. There are, but none of them correspond specifically with
18 the triangles that have been explored within that mark.

19 Q. This is really where I'm asking you to get to, Mr Ryder.
20 Something has happened to put that mark on PC Short's
21 vest?

22 A. I agree, yes.

23 Q. And you can't exclude the possibility it was that boot

1 or its companion?

2 A. I can't exclude the possibility it has contributed to
3 that mark in some way. If the entirety of that mark was
4 a single contact with that boot, or either of those
5 boots, what I'm seeing isn't what I would expect to see.

6 Q. But you can't exclude the possibility?

7 A. That it might have contributed to parts of that mark,
8 yes.

9 DEAN OF FACULTY: Thank you. I'm obliged, my Lord.

10 LORD BRACADALE: Mr Ryder, thank you very much for coming to
11 give evidence to the Inquiry. I'm going to adjourn in
12 a moment and then you will be free to go.

13 I will adjourn now until 10 o'clock tomorrow
14 morning.

15 MS MITCHELL: (Mic turned off).

16 LORD BRACADALE: Very well.

17 Mr Ryder, contrary to what I have just said, would
18 you return to the witness room and you are free to go.

19 (Pause).

20 Ms Mitchell.

21 MS MITCHELL: I'm obliged to the Chair for allowing this.

22 It is understood from what my Lord has said this morning
23 that an application is pending in respect of certain

1 evidence that is going to be heard which has already
2 been pre-recorded. Clearly that's been pre-recorded for
3 a long time and the date which it was supposed to be
4 heard has also been known for a long time.

5 The application is still, as I understand it, not
6 before the Inquiry and I would respectfully submit that
7 the Inquiry ensures that that is done promptly by
8 setting a time limit for later today for that
9 application to be in. That might allow the matter to be
10 dealt with overnight or tomorrow morning and for
11 a decision to be made on that matter and evidence led,
12 if necessary.

13 The Inquiry will of course understand that as it has
14 already expressed this morning, the evidence of this
15 witness is of some import to the Inquiry and
16 particularly the family of Mr Sheku Bayoh. Given that
17 the Inquiry is not sitting this afternoon, it would no
18 doubt provide ample time for such an application to be
19 before the Inquiry.

20 Unless that's done, my Lord, it does mean that this
21 matter would be carried over until the Inquiry next sits
22 and that's not due to sit until starting the last day,
23 I think, of January, and it really means that this

1 matter would be carried over until February and I would
2 respectfully submit that it is a matter that could and
3 should be dealt with before then.

4 LORD BRACADALE: Thank you, Ms Mitchell. I have noted what
5 you said.

6 I shall adjourn.

7 (1.01 pm)

8 (The Inquiry adjourned until 10.00 am on Friday,
9 9 December 2022)

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