

Coroner's Inquests into the London Bombings of 7 July 2005

Hearing transcripts - 31 January 2011 - Morning session

1 Monday, 31 January 2011

2 (10.15 am)

3 MR PAUL GIBSON (continued)

4 LADY JUSTICE HALLETT: Sorry you were kept waiting all
5 weekend, Mr Gibson.

6 MR KEITH: My Lady, I believe that my learned friend

7 Mr Coltart will now commence his examination:

8 LADY JUSTICE HALLETT: Mr Coltart?

9 Questions by MR COLTART

10 MR COLTART: Thank you, my Lady. Good morning, Mr Gibson.

11 A. Good morning.

12 Q. We were looking, at close of play on Friday, at the
13 timings of the dispatch of the ambulances at
14 Tavistock Square, and that's a theme I'd like to pick up
15 this morning, if we may.

16 Could we look, please, at one of the entries in the
17 log that we haven't yet considered, which was from
18 Mark Belkin at 10.11. It's page 59, please, of LAS565 [LAS565-59].
19 If you please enlarge the bottom part of that page,
20 and highlight the entry at 10.11.

21 Just to orientate ourselves, already by this time
22 Jessica Green and Nadene Conway have called in their
23 initial CHALET report at 9.57, and we've already looked
24 at that particular entry.

25 Mark Belkin was one of the Fast Response Units that

1 turned up on scene. He was there by about 10.10, and he
2 has this exchange with Central Ambulance Control, so he
3 calls in EC47 -- that was his call sign -- and he's told
4 this on his way to the incident by Central Ambulance
5 Control:
6 "Roger, information on your call you're attending,
7 you've got five priority 1 patients and seven priority 3
8 patients."
9 He replies -- and this is a theme that will repeat
10 itself throughout the morning, as we'll see:
11 "I'm sorry, you're getting through about strength
12 one. Say again, please."
13 The different receiving strengths of the London
14 Ambulance Service radio are measured, aren't they, from
15 one through to five, one being the weakest and five
16 being the strongest?
17 A. That's correct.
18 Q. "Roger. Are you receiving me now, over?"
19 "That's okay, go ahead."
20 He's told this by Central Ambulance Control:
21 "Roger, thank you. Information your call on
22 Tavistock Square, you'll be attending five priority 1
23 patients and seven priority 3 patients. EC53 [that was
24 Michael Cole] and N301 [which was Nadene Conway and
25 Jessica Green] already on scene.

1 "Received, thank you", says Mr Belkin. He continues
2 on his way and he arrives shortly thereafter. So we
3 know, don't we, without any shadow of doubt at this
4 stage, that Central Ambulance Control are aware of the
5 location of the incident, which is Tavistock Square;
6 correct?

7 A. Correct.

8 Q. And the number of seriously injured patients that people
9 can expect to be greeted with on their arrival?

10 A. From that message, yes.

11 Q. Could we then go to LAS750, please, page 1 [LAS750-1], and to the
12 middle of that page?

13 This is a document that has been prepared by the
14 London Ambulance Service and served on the coroner quite
15 recently. Are you familiar with this document? Have
16 you seen it before?

17 A. I have seen it before.

18 Q. If we look at the middle of that page:

19 "First ambulance activated.

20 "H301 at 09.48."

21 That's Green and Conway, who were actually
22 activated, weren't they, to attend at Russell Square but
23 who came across the bus as a running call. That's
24 correct, I think, isn't it?

25 A. I believe that to be correct.

1 Q. Then, next line down:

2 "A401 [and the other named ambulances there] were
3 the first ambulances activated electronically at 10.42."

4 So they are the first ambulances half an hour after
5 this message we've just been looking at with Mr Belkin
6 which were sent, electronically at least, to
7 Tavistock Square. Is that correct?

8 A. That's what we can evidence from the information that we
9 have.

10 Q. Those first three ambulances, as we'll see a little
11 later, had all, in fact, been in Leicester Square when
12 they were dispatched to Tavistock Square, and F202, that
13 was an ambulance driven by a lady called Janet Drew, and
14 she'd been sat on the forecourt of Fulham ambulance
15 station for about an hour when she received that message
16 and we'll look at that as well.

17 But you mentioned in evidence on Friday afternoon
18 the possibility that other ambulances had been
19 dispatched by different means to attend at
20 Tavistock Square earlier than these arrived, the first
21 of which was at about 10.50, okay? So I just want to
22 consider that particular issue with you.

23 For that purpose, please, could we get up
24 a different document which is INQ8975? If we could spin
25 that round the right way.

1 This is your incident report filed after the events
2 of 7 July. Can we go through, please, to page 10 [INQ8975-10] ?
3 Annexed to the back of your report, this is the log,
4 isn't it, that was maintained by Michael Cole on the
5 day; correct?

6 A. That's correct.

7 Q. Because he was designated at some point to stay in the
8 courtyard and to log events as they were unfolding,
9 including the arrival and subsequent dispatch of
10 ambulances to hospital?

11 A. That's correct.

12 Q. We can see that his first entry in the log is at 10.25,
13 triaging and scene management going on from G198 and
14 H301. Those are -- in fact, there's some confusion
15 about Mark Belkin's call sign, because on occasions he's
16 EC47 and on occasions he's G198, but in any event,
17 that's not an ambulance, is it?

18 A. No, definitely not. It's a team leader's call sign
19 at -- 98 is a team leader's call sign.

20 Q. Thank you. H301, Green and Conway; correct?

21 A. Yes.

22 Q. 10.26, "door to door", now that was the private
23 ambulance service, wasn't it, that happened to be in
24 Tavistock Square when the explosion happened?

25 A. I believe it was almost immediately behind the bus, out

1 of the picture in the shot that we've seen, but we
2 believe very close to the incident.

3 Q. You've got a Dr Biny on patient care and someone going
4 by the sign of 1312 on patient care. We don't know who
5 that was. DA33 at 10.37, that's Drs Harris and Teasdale
6 who had arrived via their HEMS service at this point,
7 correct?

8 A. That's a HEMS call sign, yes.

9 Q. LC704, we don't know who that was or what they were
10 doing at 10.37. It's not an ambulance call sign,
11 though, is it?

12 A. I believe that's a St John ambulance call sign.

13 Q. Ah, so that was another one of the peripheral services,
14 as it were. It wasn't a London Ambulance Service?

15 A. It doesn't look like an London Ambulance Service call
16 sign. I don't recognise it.

17 Q. EC47, as I say, there's confusion about that call sign.
18 On occasion, it's assigned to Peter Rhodes, but on
19 occasion Mark Belkin, but either way, again it's a Fast
20 Response Unit's call sign, isn't it, not an ambulance?

21 A. Peter Rhodes was definitely a fast-response vehicle that
22 day. It may have been his call sign.

23 Q. Then, at 10.46, we do have an ambulance call sign, so
24 this is about 4 minutes earlier than we had understood
25 the first of the electronically dispatched ambulances to

1 have arrived. G107. Now, that was an ambulance driven
2 on that day by David Rock and Gavin Carmichael.
3 The next entry, 10.49, E308, an ambulance driven by
4 Messrs Green and Daniels, and at 10.52, EC25, that's an
5 ambulance driven by a couple called Nicola Blanco and
6 Barry Mays.

7 Now, it's correct to say that none of those
8 ambulances were part of that second wave of ambulances
9 that was dispatched to the scene by Central Ambulance
10 Control at 10.40. All right?

11 A. I do know that Echo Charlie 25, Nicky Blanco, had
12 removed a patient very early on who was in the street,
13 who was seriously injured, and obviously arrived back at
14 the RVP in Burton Street by that time.

15 Q. Are you sure about that, Mr Gibson?

16 A. Very sure.

17 Q. Because didn't, in fact, that ambulance, EC25, in error,
18 go to Kentish Town from Woburn Place, where it had been
19 at about 10.30, in a mixup over the collection of
20 fluids? Does that ring any bells?

21 A. No, that doesn't ring any bells. I'm absolutely
22 certain, when I walked up the street on my first recce
23 up the street, there was Nicky Blanco. I recognised her
24 as an individual, I didn't recognise any of the others
25 in the crew, and they were attending, there was about

1 five people. I remember it specifically because there
2 were too many LAS staff attending one seriously ill
3 casualty when I knew that there were more seriously ill
4 casualties in the courtyard, and I asked them to split
5 up and attend to the casualties within the courtyard as
6 well.

7 Q. So is it your assumption that Nicky Blanco had taken
8 a patient to hospital because she had been there with
9 her ambulance when you had arrived there at about 10.30?

10 A. I arrived before that, about 10.20, and by the time
11 I walked up there, it would have been about 10.30. It
12 was certainly before the controlled explosion that this
13 happened, because I remember specifically they were out
14 of the area when that happened, and there was
15 a seriously injured male with bilateral leg injuries, as
16 I say, and my specific memory is that there was more
17 staff round that patient than physically needed to be.

18 Q. Let's just bottom this out. I was going to deal with it
19 in any event, but this is probably as good a time as
20 any.

21 Could we have LAS565 back on the screen, please?

22 We're going to start at page 68 [LAS565-68], bottom of that page,
23 please, the entry at 10.19, because I suggest that the
24 fortunes of Nicky Blanco and her ambulance that morning
25 were inextricably tied up with the fortunes of

1 Rachel Harris, who was the paramedic from Camden we've
2 heard something about already. Her call sign was E305,
3 which is the one that we've highlighted at the bottom of
4 the page.

5 So she calls in, Rachel Harris, at 10.19 to Central
6 Ambulance Control:

7 "Just in case you hadn't noticed, we are green,
8 mobile, we're available for any call, over."

9 To which she gets no reply.

10 Central Ambulance Control says:

11 "305, I understood you were going down to the
12 incident, over."

13 She says:

14 "That's not the information we received. We did
15 a call, Holloway Road patient, had been transported by
16 the Fast Response Unit. We have been green since 10.02.
17 We're now in the north-west 1 area and mobile, over.

18 "All received. Stand by one at present. We are
19 only activating on category A calls, so stand by ... [LAS565-69]

20 "Roger, ready and available [says Ms Harris]. We'll
21 hang around Camden Town High Street so that we're
22 available and you can send us where you like.

23 "Roger, thanks."

24 That's Ms Harris' position at around about 10.00.

25 She's available for dispatch but she's not being sent

1 anywhere at that point in time?

2 A. The continuation of that log entry shows them being
3 asked to go on to channel 9 which was the incident
4 control channel.

5 Q. Yes, absolutely. So, could she go on to channel 9?
6 "Yes", she says, "Thank you".

7 Now, then, if we move through, please, to page 75 [LAS565-75],
8 top of that page, please, if we could highlight that
9 first entry.

10 EC25, this is Nicky Blanco's ambulance. All right?
11 That's her call sign. This entry can be timed, doing
12 the best we can, at 10.27, because although it doesn't
13 have a timing of its own, the entries, both previous to
14 it and subsequent to it, are at 10.27. So this is about
15 the time that you're describing seeing her in
16 Tavistock Square.

17 She radios in:
18 "EC25: we're on scene at Woburn Place. Looks like
19 there's a bomb gone off there. Doctors are requesting
20 urgent more fluid please.
21 "Mobile calling, I haven't got your call sign [say
22 Central Ambulance Control].
23 "EC25: we're treating casualties at Woburn Place.
24 Doctors are on scene requiring urgent more fluids
25 please, we're running out", to which there's no reply.

1 Then E305, Rachel Harris, cuts across the radiowave,
2 doesn't she? She's listening, isn't she? She's
3 monitoring the radio traffic. She still hasn't been
4 deployed anywhere, and she says:
5 "E305: priority. Able to pick up fluids from Camden
6 station and take them to [the] scene, over."
7 We know -- were you in court when Ms Harris' witness
8 statement was read out, do you recall last week?
9 A. I don't believe I was, I think I left before then.
10 Q. Okay, well, she had told us in her witness statement
11 that she had gone to wait at Islington ambulance
12 station, that's where she was sitting listening to the
13 radio traffic. So she says she'll go to pick up fluids
14 from Camden station. Central Ambulance Control:
15 "E305, thank you very much, show you doing that."
16 Then radio interferences with the two crews talking
17 over each other, which may become significant, as we'll
18 see in a moment. Then Central Ambulance Control takes
19 a different call from somebody else.
20 If we could move, then, through, please, to page 78 [LAS565-78]
21 halfway down that page at 10.31 we get the next radio
22 contact with Nicky Blanco's ambulance, EC25:
23 "EC25 not related to incident. Going to
24 Kentish Town."
25 Camden ambulance station is very near Kentish Town,

1 isn't it, that's where it's situated; correct?

2 A. Yes.

3 Q. EC25, says Central Ambulance Control:

4 "Can I ask you to stand by? Can I ask you to assist

5 with major incident?"

6 Radio transmission is then broken. EC25:

7 "We're two-training officers from Hertford asked to

8 report to Camden, then allocated this call sign asked to

9 report 10 then channel 9.

10 "Roger."

11 Transmission is broken up again.

12 "Show you mobile on to channel 9, over."

13 Then page 86, please, because we get to the end of

14 this rather long saga and find out what actually is

15 going on.

16 At the top of page 86 [LAS565-86], that entry please at 10.41,

17 Rachel Harris, E305, is back on the airwaves:

18 "Sorry to call up on channel 10, now we should be on

19 channel 9 [the transmission is breaking up]. Oxygen and

20 bandages EC25. Not sure of their location. Can you

21 confirm on the mapping screen please?"

22 To which she's told by Central Ambulance Control

23 they can't hear anything because of the sirens.

24 E305:

25 "We are transporting urgent fluids and equipment to

1 assist EC25, we believe, in the WC1 area. Can you
2 confirm their location please?"
3 She's asked to confirm the call sign of the vehicle
4 she's trying to find. She says:
5 "It's EC25."
6 And she's told:
7 "EC25 is behind you on Kentish Town road, over."
8 She says:
9 "Apologise, we were led to believe they were on
10 Woburn Place with doctors asking for urgent fluids. Can
11 you confirm this?"
12 Central Ambulance Control:
13 "There are a number of vehicles in Woburn Place,
14 approximately about 15 ... down there, over."
15 Which in itself, as we know from Mr Cole's log, is
16 a misconception. She says:
17 "Roger, will continue. We're stuck in traffic.
18 We're transporting all this supply of fluids, oxygen and
19 cannula dressing from Camden station."
20 She's told:
21 "Roger, if you are going to Woburn Place, then
22 obviously avoid the bottom end of Pancras Road because
23 you'll hit St Pancras station."
24 "Thank you", she says, "that's much appreciated."
25 What has happened is, we can see, if we finally look

1 please at page 92 [LAS565-92], bottom of that page, EC25 calling in
2 at 10.52 and at the top, please, of the following page [LAS565-93]:
3 "EC25, go ahead", says Central Ambulance Control.
4 "Can't get through on channel 9."
5 Which is the dedicated major incident channel;
6 correct?
7 A. Yes.
8 Q. "We're an extra vehicle from Uni Hertfordshire trainers
9 on this call sign. We have been asked to report to
10 Kentish Town. There is no incident at Kentish Town.
11 Couldn't give some more information or advise please?
12 "Sorry [they are told], who asked you to go to
13 Kentish Town?
14 "Roger, Kentish Town, that's where we are.
15 "Yeah, Roger, who asked you to go to Kentish Town
16 over?
17 "Via landline from Camden was asked to report.
18 Don't have the initials.
19 "Negative [they are told], it's King's Cross, not
20 Kentish Town. It's King's Cross station, Euston
21 station, that area. All the vehicles you'll find by the
22 City Road Euston ..."
23 Now, that was a rather lengthy exploration of what
24 had happened, but is that not absolutely symptomatic of
25 what was happening that morning as a result of the

1 defunctive radios?

2 A. There are several things that happened within that chain
3 of events. There appears to be a confusion on call
4 signs and two different vehicles being allocated the
5 same call sign.

6 I find it unusual that an additional vehicle, two
7 trainers from Hertfordshire, would be given a core fleet
8 call sign, which is Echo Charlie 25, which is a regular
9 call sign. Normally, call signs that are additional are
10 allocated a station prefix which is usually the Bravo or
11 say, for example, Bravo 3, which would indicate Hanwell
12 station, and then an additional vehicle would be given
13 an 80 call sign on the end, and that's to indicate that
14 it's over and above our normal core provision.

15 So it seems that was the first level of confusion.

16 But multiple layers of confusion were put in because,
17 initially, the crews were asked to call up on channel 9
18 and channel 9 was being managed by the incident control
19 where the staff who were dedicated to manage the
20 incidents were all centred. Every time that they go
21 back and speak onto one of the normal sector channels --
22 for example, channel 10 -- they are then speaking to
23 EOC, or sorry CAC, as it was, Central Ambulance Control,
24 who are there managing the core business. So their
25 knowledge is then not of the incident, ie they all have

1 a broad feel of what's going on, ie there's an incident
2 going on, but they don't have the actual control of the
3 incident. So there was multiple layers of complexity
4 that added to the confusion.

5 Q. Just go back, please, Mr Gibson, to the document at
6 [INQ8975-10].

7 Halfway down the page, do you see the entry that
8 Michael Cole has made at 10.52 for EC25:

9 "Female multiple injuries to UCH at 11.10."

10 Correct?

11 A. Yes.

12 Q. Even though they had been on-site some 25 minutes before
13 that, they had left, hadn't they, Tavistock Square under
14 a confusion to go to Kentish Town, returning only some
15 25 minutes later when they finally took someone to
16 hospital?

17 A. Sorry, I'm not quite sure of your question. Are you
18 questioning that they left with a patient and then came
19 back?

20 Q. Forgive me, they did leave with a patient, didn't they?
21 But it wasn't, in fact, until 10.52, not, as you might
22 have thought, at 10.30, when they'd first been on scene
23 in Tavistock Square?

24 A. I don't believe so, because Michael Cole was based
25 within the BMA building at the back beside Burton Square

1 and he was logging vehicles who were arriving at Burton
2 Square at that point, and the vehicle Echo Charlie 25,
3 or certainly the vehicle with Nicky Blanco on, where
4 there was a confusion over her call sign, she definitely
5 left from the front -- it was almost the front of
6 County Hotel, that patient was that far up, it was
7 beyond the sort of bounds of BMA building.

8 Q. Where would she have taken that patient?

9 A. The nearest hospital I would presume she would have went
10 to would have been University College.

11 Q. Yes, which was about 400 yards round the corner, wasn't
12 it?

13 A. Yes.

14 Q. Could we have up on screen, please, LAS208-3 ? We're
15 going to look at this document in a little more detail
16 shortly, but this is the incident report of
17 Stephanie Adams, who was the Bronze liaison officer for
18 the London Ambulance Service based at University College
19 Hospital that morning. Right?

20 A. Yes.

21 Q. You'll see here she kept a log initially timed and she
22 gave up thereafter in circumstances which we'll look at,
23 but the first record she has of receiving any patient at
24 University College Hospital is at 10.58; yes?

25 If you look down that page, you see EC25. The first

1 record of any ambulance with that call sign attending at
2 University College Hospital was some time after 11.27
3 that morning.

4 A. Yes. The patient that Echo Charlie 25, or Nicky Blanco,
5 with the confusion over her call sign, took was a P1,
6 and there's no -- I can't see a time that Steph Adams
7 arrived, so we don't know what happened before that
8 time.

9 Q. She arrived at 10.20.

10 A. 10.20.

11 Q. Let's move on, for fear of getting bogged down in that
12 topic. I'm not going to go through each of the
13 individual log entries line by line, but to summarise,
14 in relation to -- if we have Michael Cole's log back on
15 the screen, please -- it's the INQ number. Thank you.

16 In relation to those ambulances that arrived,
17 starting at 10.46 with G107, through to the ambulances
18 which started arriving from Leicester Square at about
19 10.50 and thereafter, those ambulances had not been
20 employed, as far as we can ascertain, prior to their
21 arrival at Tavistock Square.

22 So by way of example, G107, which is the ambulance
23 driven by Carmichael and Rock that had initially been
24 sent to Euston station where it had picked up two
25 patients with minor injuries arising out of the

1 evacuation of that station, and had gone to UCH at
2 10.03, there is no record of it having done anything
3 between 10.03 and arriving at Tavistock Square at 10.46,
4 all right?

5 My Lady, just for your note, I'm not going to go
6 through all the entries, but it's pages 33, 53, 80 and
7 99 of the incident log.

8 E308, the next one, had been dispatched, on the face
9 of it, to Russell Square at 10.10, although there's no
10 evidence of it attending at that site. There's no
11 indication of what happened to that ambulance before it
12 arrived at 10.49.

13 F202, which is Janet Drew's ambulance, I've briefly
14 alluded already to the circumstances of her deployment,
15 but she's one of the very few ambulance drivers from
16 whom we have a witness statement and, again, for
17 my Lady's note, it's at INQ2429, and she says this, that
18 she'd started work that morning at 6.30, she's based at
19 the Fulham ambulance station:

20 "We dealt with a couple of calls, including a woman
21 with a pelvic injury who we took to
22 Chelsea & Westminster. Upon completion, a doctor told
23 us there had been a major incident but we had no idea
24 what it was. We were directed to stand by by
25 Ambulance Control and we remained in the area with

1 another ambulance from the Fulham station.
2 "One of the other people on the ambulance was
3 Julian Bedford, who was a team leader. We listened to
4 Capital Radio and our ambulance radio for about an hour.
5 We became aware that a number of major incidents had
6 taken place in London. Then we heard via Capital Radio
7 that a bomb had exploded on a bus in Tavistock Place
8 and, according to my records [she says], we were
9 dispatched to Tavistock Square at 10.42 and we responded
10 with lights and two-tones."

11 So there can be no suggestion, can there, Mr Gibson,
12 that the reason why it was taking so long to get
13 ambulances to Tavistock Square is because they were
14 employed already dealing with the transportation of
15 patients from other sites?

16 A. The vehicles that you've described, certainly that's the
17 case. From my impression of managing the scene, we
18 didn't have a delay in receiving vehicles. We had
19 patients available for vehicles or vehicles available
20 for patients when we needed vehicles to move patients,
21 and I think Dr Holden confirmed that as well. That's my
22 opinion on how the scene ran.

23 As I explained on Friday, there were two ways of
24 dispatching the vehicles and not every vehicle was
25 deployed electronically and, as you've already

1 identified, there were a number of incidents and some
2 vehicles were held back, as I've subsequently become
3 aware, to form cells and to be available in case there
4 were subsequent incidents.

5 Q. Just think about that, Mr Gibson, if you don't mind.
6 The first ambulance to arrive after Jessica Green and
7 Nadene Conway have arrived in Tavistock Square at 9.57
8 is 49 minutes later at 10.46. In the context of what
9 was happening that morning, do you agree that that was
10 totally unacceptable?

11 A. I don't believe that to be the case. As I've already
12 indicated, there was definitely another vehicle there
13 that removed a patient from Tavistock Square itself.

14 Q. Are you prepared to accept that the failure of Central
15 Ambulance Control to dispatch any ambulances to the
16 scene for half an hour after it was made aware of the
17 position was totally unacceptable?

18 A. That wasn't my experience of managing the incident.

19 Q. That's not my question. Are you prepared to accept that
20 that was unacceptable?

21 A. I can't understand -- explain why -- what decisions that
22 Ambulance Control made, because I wasn't there at the
23 time.

24 Q. Can we move on, please, just to look at two final
25 points, the first of which is the location and the

1 circumstances of those ambulances which were finally
2 dispatched by Central Ambulance Control at 10.40.
3 Now, we know that, other than Mrs Drew, whose
4 witness statement we've looked at, those ambulances were
5 sent from Leicester Square where they'd been together to
6 Tavistock Square. If we just have a look, please, at
7 page 57 of LAS565 [LAS565-57].

8 The top of that page, the entry at 10.08, this is
9 the first reference that we can find in the log to
10 anything to do with Leicester Square. All right?

11 Because we know, don't we, there was no incident in
12 Leicester Square, was there?

13 A. From my recollection of the Gold meeting very early on
14 that morning after I was dispatched to HQ, there were
15 reports of incidents at quite a few of the main rail
16 stations or main sites in London, and from what
17 I understand Paul Smith, who was Foxtrot 291, was
18 initially dispatched to Leicester Square with some
19 ambulances at the belief there was an incident.

20 You mentioned earlier on of Euston, Euston was
21 initially, we understood, to be a site as well because
22 it reported -- it was the first to report power outages
23 and power surges that caused problems.

24 So very early on, the scene that we had was
25 incidents at quite a few different locations, I believe

1 seven or eight locations. Clearly that's not what
2 transpired, but that was the understanding that we were
3 working under in the LAS.

4 Q. You didn't know, did you, when you were dispatched to
5 Russell Square -- because that was where you were sent,
6 wasn't it, bus explosion in Russell Square?

7 A. That's correct.

8 Q. You didn't know that there had been an incident
9 involving Russell Square at that stage?

10 A. Yes, I did.

11 Q. You say in your witness statement that you arrived in
12 Russell Square and you couldn't see anything going on in
13 Russell Square. Did you know that your colleagues were
14 in Russell Square desperately short of ambulances?

15 A. At that stage, I didn't know that.

16 Q. You did or didn't, sorry?

17 A. I didn't know they were "desperately short of
18 ambulances" to use your words. I was dispatched to --
19 my recollection of speaking to Mr Hopson was that he
20 dispatched me to Russell Square to a bus incident.
21 Prior to that, I'd been to a Gold meeting and they had
22 described an incident at Russell Square Tube,
23 King's Cross, Liverpool Street, Aldgate, Euston,
24 Edgware Road and there was one further, but they were
25 all ongoing prior to me being dispatched to the bus. We

1 were investigating incidents at all these sites.

2 Q. If we just go back to this entry briefly, please, we can
3 see that this is call sign N191:

4 "Been advised by police that a secondary device has
5 gone off in the tunnel at Russell Square Underground
6 station."

7 Someone starts to talk over him. He's told to stand
8 by:

9 "Having terrible interference. Just go again with
10 that. Russell Square or Leicester Square?

11 "Negative, Russell Square, Russell Square, secondary
12 device."

13 Then:

14 "Rog", before the radio cuts out.

15 Is it the case that the confusion arising out of the
16 proper location of these bombsites was due to the
17 terrible radio conditions which were having to be
18 endured both by the officers and by those at Central
19 Ambulance Control?

20 A. In my opinion, that was a report of the bus exploding
21 and they felt the vibration. By the time the crews
22 managed to get upstairs to report that, that was the
23 time delay from that -- from the actual bus exploding
24 and, as I explained before, that area is particularly
25 difficult for radio reception, so it's not surprising

1 that sometimes it is difficult to hear on the radio
2 there.

3 Q. We've heard from ambulance personnel during the course
4 of these inquests, who attended almost every part of
5 London on that day, and they've all reported the same
6 difficulties with their radio transmission. It didn't
7 have anything to do, did it, with difficulties in
8 receiving radio traffic at any particular part of
9 London?

10 A. My experience of that area, personal experience and
11 operational experience, there is radio difficulties
12 there. The other radio difficulties were the number of
13 vehicles, the number of incidents that we were dealing
14 with on a single radio channel.

15 Q. Let's move on and deal with the last topic, please, that
16 I wish to ask you questions about, which is the ability
17 or otherwise of the scene at Tavistock Square to
18 communicate with University College Hospital and
19 Stephanie Adams.

20 As we heard from Dr Holden on Friday of last week,
21 it perhaps stands to common sense as well that it's
22 vital, isn't it, to have a clear line of communication
23 between the casualty clearance area and the receiving
24 hospital? Could we just go back, please, to Ms Adams'
25 debrief form, which is at LAS208?

1 Is it possible to enlarge that a little for us? She
2 was one of those who was on duty at the conference at
3 Millwall first thing that morning. She was redirected
4 to go to Waterloo by Jon Berry, assistant chief
5 ambulance officer.

6 "Once at Waterloo, I was requested to go to
7 University College Hospital and act as hospital liaison
8 officer for the incidents. I collected a pack from
9 Central Ambulance Control, but there were no transpacs
10 available to take."

11 I am not sure, I have to confess, what a transpac
12 is?

13 A. A transpac is basically a mobile base radio. It's
14 a larger unit than you get in a car, it's a larger unit
15 than you get on a handheld. It comes in a little case
16 and you take it and plug it into an aerial site at the
17 hospital.

18 Q. Thank you:

19 "I also managed to obtain a handheld radio from
20 Central Ambulance Control, but this subsequently failed
21 after two transmissions.

22 "It took some time to get through traffic, not least
23 as I was unsure of the exact location of the hospital,
24 never having been there, and not being in possession of
25 satellite navigation. I had to stop on a number of

1 occasions to work out my route. This was made all the
2 more difficult by the tremendous amount of traffic
3 build-up, meaning that I had to change route constantly.
4 I eventually got to the hospital at approximately 10.20.
5 "I identified myself to the hospital staff ... [and
6 she] liaised with the local ambulance local transport
7 system manager.
8 "It was difficult to obtain access to the
9 communications room. A card key was needed and, until
10 one was arranged, I had to find people to allow me
11 access. The doors cannot be opened from either side
12 without a card -- there is no facility to overwrite.
13 This meant that, even though staff were near the doors,
14 they couldn't let me in.
15 "In the communications room, the phones had been
16 locked away in the cupboard with separate telephone
17 leads for each phone. There were no instructions on
18 which phone sockets to use, what the relevant telephone
19 numbers were and how to dial for an outside line. To be
20 fair [she says], no one had time to show me any of this.
21 "After much cajoling, I eventually got a card that
22 meant I could roam freely. This was particularly
23 important as I had no hand-portable radio and no
24 transpac and no one was answering any phones in Central
25 Ambulance Control. I had to move between my car radio

1 and the hospital in order to try and get any
2 communications at all. It was incredibly difficult to
3 get any air time on the radio. Messages were flying
4 between the various Silvers and Gold Control along with
5 vehicle movements. This was incredibly frustrating when
6 trying to pass information that could have helped staff.
7 "I kept a record of all crews arriving at UCH. At
8 times, I was asked to pass information on for 'blue
9 calls' that I duly did. I liaised with all ambulance
10 staff and ensured their welfare before releasing them
11 back to Central Ambulance Control for further work."
12 Then she sets out her log. As we can see the first
13 record of any patient received from either
14 Russell Square or Tavistock Square at the hospital just
15 round the corner was at 11.00 that morning. Correct?
16 A. From her log, yes.
17 Q. She says she files a report at 11.15, a report to
18 Central Ambulance Control:
19 "Can take all P3s, all P2s and 12 P1s."
20 We can't find a note of that message on the log
21 which the London Ambulance Service has compiled. She
22 had, in fact, radioed through an earlier message --
23 page 99, for my Lady's note -- that the hospital was
24 nearing its capacity for P1s. It appears that that
25 changed at about 11.15 and could take twelve P1s.

1 Whether that message got through or not, nobody knows.
2 Then her log continues with the remaining patients
3 taken to that hospital. She says:
4 "I did not record times after 11.27. Recording
5 times proved difficult, as I was constantly moving
6 between the ambulance bays, the hospital area and my car
7 radio.
8 "From the incident [the] hospital treated the
9 following numbers of patients", which she sets out there
10 on the face of the log:
11 "I reported on a number of occasions that UCH were
12 able to deal with more casualties. The hospital
13 remained on alert for some time after the sites were
14 cleared and I acted as liaison officer, trying to give
15 the staff as much information ... as possible."
16 She was stood down at about 3.30 where she went to
17 attend the debrief at Millwall.
18 But the fact is that patients were being sent
19 elsewhere from your scene and from Russell Square to
20 St Thomas's Hospital, which, although not that much
21 further away, is still considerably further than UCH,
22 isn't it?
23 A. It's a bit further away.
24 Q. Indeed, we can see, if we just look at a final entry,
25 please, on the log at page 133 of LAS565 -- in fact, 132 [LAS565-132]

1 we'll start at, if we may.

2 At the bottom of that page, this is E291, your call
3 sign I think, Mr Gibson:

4 "Gold control with an update of resources.

5 "Go ahead.

6 "I'm at the British Medical Association where the
7 bus blew up. We have now two AEU's, one that I can
8 probably release. I have six PTS vehicles also
9 available. I'm probably going to use two of them. So
10 I have four PTS vehicles and an ESV available, over.

11 "Roger, can you have two of the PTS vehicles to make
12 their way to the Royal London Hospital? We have fifteen
13 walking wounded that needs to be conveyed to the London
14 Chest, Roger."

15 You say:

16 "Yeah, Roger, I've also got these two vehicles that
17 I'm going to use for a more [LAS565-133] distant hospital because the
18 patients are all stable. Where would be an appropriate
19 place to dispatch the walking wounded from here?"

20 You're told:

21 "I believe the Royal Free is almost full. The next
22 one is going to be -- it's either Central Middlesex or
23 you could go -- actually, no, it would be Central
24 Middlesex. You're better off heading out of town to
25 there."

1 You say:
2 "Okay, Roger, I'll send my walking wounded to
3 central Middlesex [hospital]."
4 That's located, isn't it, at Park Royal?
5 A. That's correct.
6 Q. Somewhere west of Shepherds Bush, but in fact, on the
7 information that Ms Adams had at her disposal, it would
8 have been possible to send them just round the corner to
9 UCH?
10 A. From the information that we've seen today, yes.
11 Q. It was -- are you prepared to accept this -- a very poor
12 state of affairs, in terms of the level of communication
13 passing between the casualty clearing station and your
14 receiving hospital?
15 A. There were communication difficulties on the day.
16 MR COLTART: Thank you. I've no further questions.
17 LADY JUSTICE HALLETT: Ms Gallagher?
18 Questions by MS GALLAGHER
19 MS GALLAGHER: Mr Gibson, you've been asked, both today and
20 on Friday, a number of questions about the delay in the
21 deployment of ambulances and also the lack of
22 information provided to you at the outset. Indeed, you
23 told us on Friday and today that you were told the
24 incident was at Russell Square.
25 You were taken by Mr O'Connor, on Friday, to that

1 first message which came in from a member of the public.
2 It's Day 53, page 55 my Lady. You referred to the
3 confusion which was arising at that time.
4 I'm just going to take you to a number of other
5 messages. Could we go to [LAS565-40], please? It's the
6 entry at 09.48.58. This is the record of the call that
7 Mr O'Connor was referring to in a different document.
8 You can see there that there's specificity about
9 location, "outside the British Medical Association at
10 Tavistock Square", couldn't be more accurate.
11 "Loud explosion heard, bus blown up. Caller in
12 office. Lots of people screaming."
13 So great specificity there about both the location
14 and what occurred.
15 If you look at the second column, you can see the
16 word "public", which is the sender of the message.
17 That's a call which came in to Central Ambulance Control
18 from a member of the public. Is that right?
19 A. Yes, I believe the fourth column along indicates an AS1
20 call receipt, so that's Ambulance Service form 1 which
21 is a 999 call received.
22 Q. If we can go to page 42 [LAS565-42] of this document, please, from
23 9.50 onwards, over the next two minutes there's multiple
24 messages in double figures from various people.
25 If we could look at 09.50.40, please, again great

1 specificity, it refers to the National Westminster Bank
2 in Tavistock Square. It describes, apparently, a bomb
3 on a bus, "bus blown apart and injuries", so again,
4 great specificity there from members of the public.
5 On page 43 [LAS565-43], the very first entry on that page, it
6 describes again a member of the public, the roof having
7 come off the bus. So a huge amount of detail was going
8 through to Central Ambulance Control.
9 There's three of these messages in particular that
10 I want to look at. If we go back to page 42 [LAS565-42], please,
11 the entry at 09.50.39, if you look at the second column
12 there, Mr Gibson, it says "MPS" and then there's
13 a number. So this is a call that comes into Central
14 Ambulance Control from the Metropolitan Police Service,
15 is that right?
16 A. I believe so, yes.
17 Q. Unlike the other calls which were coming from public
18 callers?
19 A. Yes.
20 Q. You can see there the MPS describe it being at
21 Upper Woburn Place, Tavistock Square, reports of
22 explosion, it's within minutes of the bomb taking place.
23 Over the page, on page 43 [LAS565-43], please, there's two more
24 Metropolitan Police Service messages within the first
25 five minutes, 09.51.29, multiple injuries following

1 explosion, Upper Woburn Place, and 09.51.45, please,
2 "Upper Woburn Place at Tavistock Square, 10 injured
3 parties -- explosion."

4 So isn't it right, Mr Gibson, that as well as there
5 being calls within this first three-, four-minute
6 period, over ten calls from members of the public, in
7 fact there were also three calls from the Metropolitan
8 Police Service, not the public, providing that level of
9 detail?

10 So within the first five minutes, Central Ambulance
11 Control not only had multiple messages from the public
12 which were very specific, giving the location and
13 describing the incident, but also multiple messages from
14 the Metropolitan Police Service which weren't acted
15 upon.

16 A. There were calls received into the LAS.

17 Q. Mr Gibson, on Friday, it was put to you by Mr O'Connor
18 that there had been a serious failing, given the delay
19 in the deployment of ambulances, and your answer was
20 that there was a time lapse in the second wave of
21 ambulances. That was the phrase you used.

22 But isn't the reality that the first wave of
23 ambulances was entirely accidental because, of course,
24 the first ambulance which is on scene wasn't actually
25 sent there at all, it's Ms Green or Mrs Ashford,

1 Ms Conway, who arrived there accidentally. Apart from
2 them, the scene is essentially being managed by
3 volunteers from the BMA building and, again, by chance,
4 a number of private ambulances which happened to be in
5 the area.

6 So describing that failing that was put to you by
7 Mr O'Connor as a time lapse in the second wave of
8 ambulances isn't really quite accurate when the first
9 wave of ambulances was completely accidental and, in
10 fact, the scene was being managed by volunteers and
11 others not from the LAS?

12 A. I think, as I explained on Friday also, albeit that we
13 have an electronic method of dispatch, the electronic
14 method of dispatch was not available to the staff
15 operating within the Gold control environment. So it is
16 quite possible there was ambulances allocated without
17 using an electronic method which is more difficult for
18 us to evidence, and the evidence we can clearly
19 demonstrate, when we did manage to send vehicles, on an
20 electronic method is clearly easy to evidence.

21 Q. Mr Gibson, this may be one of the reasons why the
22 London Assembly raised concerns about record-keeping,
23 because your answer is "I don't know", in essence,
24 because of the manner in which this information was
25 gathered.

1 Could I just ask you about this issue, about the way
2 in which -- the two different types of dispatch?
3 My Lady, page 88 of Friday's transcript is the reference
4 that I have.

5 What you said was this, Mr Gibson, you said:

6 "For a major incident, we take our incident team
7 into a separate room, who is then called Gold Suite, and
8 the crews are then under the command of the team in
9 Gold Suite, but Gold Suite does not have the same --
10 didn't have, at the time, access to the same electronic
11 dispatch."

12 So can I just ensure that this is right? In
13 a usual, standard incident like a road traffic accident,
14 the individual deploying resources is going to be at
15 Central Ambulance Control?

16 A. That's correct.

17 Q. So the individual at Central Ambulance Control will have
18 the full information coming in from the public, the
19 Metropolitan Police Service, other crews and will then
20 be dispatching resources in response to that front line
21 information?

22 A. That's correct.

23 Q. But what you describe at page 88 of Friday's transcript
24 is that, when you've got a major incident, certainly
25 a major incident at the time, the Gold Suite system

1 means that those dispatching resources don't have that
2 front line information. Is that right?

3 A. No, that's not correct. There's access to the
4 electronic log and there's access to the information
5 that's coming in to Ambulance Control, and clearly, once
6 they've established a designated CAD that they allocate
7 as first or the primary log for the call, then they then
8 build the information on that log.

9 So it's not as cut and dried as not having access to
10 information. It still populates in an electronic log,
11 as long as the calls are joined together. A bit more
12 complex than simplistic, really, but it's --

13 Q. But, Mr Gibson, they're not getting it directly. So
14 they're not getting the direct, front line information
15 in the same way that someone at Central Ambulance
16 Control is receiving it.

17 A. In essence, the way the system works, as soon as you
18 generate a postcode with the call-taker taking the call,
19 it then populates that call to the desk that would be
20 geographically responsible for that area. As soon as
21 that person then links their CAD, the new CAD, to the
22 previous CAD, then Gold Suite can see that information.

23 Q. Mr Gibson, just, again, with your reference at page 88
24 of Friday's transcript, you started off by saying:
25 "Gold Suite doesn't have the same access to the same

1 electronic dispatch."

2 Then you corrected yourself to say they didn't have
3 it at the time. So has the system changed since 2005?

4 A. Very much so. The complete functionality is now
5 available in Gold Suite, we now call it incident control
6 room. It's a whole new setup, a whole new provision.
7 It's designed to manage multiple major incidents.

8 Q. So in fact, those very detailed messages "roof blown off
9 bus, multiple injuries", the specific phrasing that is
10 in the records that we've seen, that's now available in
11 Gold Suite and wasn't at the time?

12 A. That's correct.

13 Q. Mr Gibson, could we turn to your incident report? It's
14 [LAS698-4], please. Could we just ensure it focuses on
15 the top of the page, please? If we just go first to
16 "Personal learning", Mr Gibson, your first bullet point
17 says you:

18 "Allocated roles but did not issue actions cards,
19 despite having them in my pocket."

20 Do you recall when you issued those cards?

21 A. I didn't. That's the message that I've said there.

22 Q. You didn't at all. So it's not there was a delay, you
23 didn't issue them.

24 The second bullet point you refer to needing to
25 establish a series of runners early. We know from other

1 evidence, Mr Gibson -- I'm not sure if you were in court
2 for this -- that some runners from the British Transport
3 Police ended up being locked in a building, very
4 frustrated, couldn't return to the scene, and also we
5 know from LAS witnesses, your colleagues, that they
6 ended up being separated because of cordons and the
7 issue with a possible secondary device from their
8 ambulance, they couldn't return to their ambulance. Was
9 there any discussion at the debrief about difficulties
10 with runners in those circumstances?

11 A. I wasn't -- until the evidence on -- from Mr Williamson,
12 I wasn't aware that some runners had experienced
13 difficulties at cordons. Certainly the runners that
14 I dispatched didn't appear to have any difficulties in
15 moving between where I was and the staff that I was
16 sending them to communicate with.

17 Q. So during the debrief when you were discussing the role
18 of runners, you were completely unaware that other
19 services, particularly the BTP, had had this problem?

20 A. BTP weren't involved in the debrief that I was involved
21 in.

22 Q. No, of course not, but you didn't have that inter-agency
23 information?

24 A. Not an LAS internal debrief, no.

25 Q. Could we just go down then to the service-wide learning?

1 My Lady, given your dislike of acronyms, these

2 bullet points might require some translation from

3 Mr Gibson.

4 LADY JUSTICE HALLETT: It's not just acronyms, it's the

5 number.

6 MS GALLAGHER: Of course. I'm afraid there's rather a lot

7 in these bullet points. The first one says "no FCT",

8 that's the forward control team?

9 A. That's correct.

10 Q. The third one says "no DSO", that's a duty station

11 officer?

12 A. That's correct.

13 Q. Could we go back to page 3 [LAS698-3] of this document? It's eight

14 paragraphs down. It starts with "command tabards", can

15 you see that?

16 "Command tabards were not available as no duty

17 station officers were deployed to scene. Similarly, no

18 forward control team or emergency planning manager

19 arrived at this incident."

20 Just starting with the command tabards, how are you

21 able to identify yourself?

22 A. Because of my role, my role is part of the duty that we

23 perform between mine and my colleagues. There is always

24 someone of my level on duty to perform a Silver function

25 at an incident. As you've already heard, Mr Campbell

1 was the duty AOM on the day, Ambulance Operations
2 Manager, and within that role we're required to carry an
3 amount of equipment, and part of that equipment is
4 tabards to allow us to be identified at incidents ahead
5 of other equipment arriving.

6 Q. You did have a tabard yourself?

7 A. I did.

8 Q. Could we go back to page 4 [LAS698-4], please? Again, to the
9 service-wide lessons. The final point, there appears to
10 be a criticism of HEMS:

11 "HEMS team self-activated and did not report to
12 Silver for tasking."

13 The first thing obviously is not reporting to Silver
14 for tasking, but you were plainly identifiable, you're
15 saying, yet they failed to report to you for tasking?

16 A. Yes.

17 Q. So there's no issue about the lack of tabards because of
18 the duty station officer. That would affect others but
19 not you?

20 A. I had my tabard on.

21 Q. When you say "HEMS team self-activated" was that
22 intended to be a criticism of HEMS self-activating or --

23 A. Not at all.

24 Q. What's the service-wide learning for improvements to
25 take from the fact that HEMS self-activated?

1 A. Within our major incident plan, it states that HEMS
2 should not be deployed to a scene without discussion
3 with Silver. It's predominantly around an aircraft
4 arriving and making communications difficult or, indeed,
5 blowing away evidence for the police. And once
6 someone's on the ground and able to make the decision
7 whether the aircraft can land safely, and not disrupt
8 activities, that's generally the reason that it's in
9 there.

10 Q. HEMS obviously managed to make it to the right place
11 rather than to Russell Square, and plainly there could
12 have been difficulties if they'd been provided with some
13 of the information which was coming through to you from
14 LAS, Mr Gibson.

15 Just moving on -- I'm conscious of the time -- to
16 another issue. There's only two more issues, my Lady,
17 which I need to deal with. I just want to deal with the
18 lack of resources. We heard from Ms Green or
19 Mrs Ashford and Ms Conway, and we heard from Mrs Ashford
20 in oral evidence where she described making do,
21 essentially, making the best of a bad lot.

22 The reference, my Lady is, Day 52, page 120.

23 She described multiple casualties, but having to
24 share the kit on an ambulance which was designed for
25 only one or maximum two people and having to share that

1 between eight to ten casualties.
2 It's very difficult to square the evidence which we
3 heard from Mrs Ashford, about how difficult the
4 circumstances were and about how they were having to
5 make do, with what it says in your statement and with
6 what you've said in evidence about considering that you
7 were being managed adequately with sufficiently
8 resources. That's the way you phrase it at page 4 of
9 your statement when you talk about turning Dr Redhead
10 away and deciding he would be better used elsewhere.
11 Why do you think there's that discrepancy between
12 what you say in your statement and the oral evidence
13 that we heard from Mrs Ashford last week?

14 A. You're comparing apples and pears there. When I spoke
15 about sufficient resources I was speaking about
16 sufficient people and sufficient medical staff. I had
17 an excellent team, in that we had a HEMS team on-scene
18 who were able to provide advanced medical care, hospital
19 level care, at the roadside. I had Dr Holden, who was
20 a competent manager of an incident and who was managing
21 and corralling his resources. I also had a number of
22 LAS staff and adequate managers -- not a perfect amount,
23 but adequate managers for the compact scene that I had
24 and, as I said, Dr Redhead is a very experienced
25 ambulance incident manager, or medical incident manager,

1 and was able to see that his services were required
2 elsewhere.

3 So from a resources point of view, physical
4 resources point of view, from an equipment point of
5 view, as I explained on Friday, I released all the
6 equipment I had, we took the equipment off the RIUs that
7 were there and the ambulances that were there, and we
8 used what we had to stabilise the patients until we got
9 patients on ambulances, until the patients were fit to
10 travel on ambulances.

11 Q. You felt you'd sufficient, you'd made up the shortfall
12 referred to by Mrs Ashford?

13 A. By asking the police officers to help us and taking as
14 much ambulance equipment as we had, we dealt adequately
15 with the patients.

16 Q. If we could go to [LAS698-3] -- it's the second
17 paragraph -- you describe here:

18 "As an initial assessment, it appeared that we had
19 an incident that had readily accessible casualties with
20 rich medical resources ..."

21 By which, presumably, you mean the human resources
22 you've been referring to?

23 A. Yes.

24 Q. "... balanced by few LAS resources ..."

25 Is that few LAS resources in terms of equipment or

1 are you referring also to few LAS resources on arrival
2 in terms of personnel?

3 A. Personnel.

4 Q. Both?

5 "... [and] no officers."

6 You gave us evidence on Friday regarding fluids and
7 your incident report refers to fluids. Was there any
8 other particular equipment which you sought or secured
9 at that early stage?

10 A. Not using other sources, no.

11 Q. So there was no discussion about stretchers, for
12 example, given that table-tops were being used for
13 individuals in the courtyard?

14 A. I think the table-tops were a unique and excellent
15 solution to a problem of emergency evacuation when you
16 are considering a suspect -- a secondary device and,
17 given that that was done in the first few moments of the
18 incident, there was no need to replace the table-tops
19 for the purpose that they had been used, and the
20 patients that were next to be moved from casualty
21 clearing, where we had a point that ambulances could get
22 up close, so there was no need to replace these
23 table-tops.

24 Q. Again, they made do in the way Mrs Ashford described,
25 they were innovative with what they had?

1 A. It's not a case of making do. It's a case of being --
2 of using necessity.

3 Q. There's just one final issue, Mr Gibson, that I want to
4 take you to. Could we go to [LAS698-2], please? It's the
5 penultimate paragraph on this page, the final sentence.

6 You say:

7 "Two bodies lay immediately behind the bus covered
8 in blankets; other limbs and body tissue were spread
9 over a relatively wide area."

10 Mr Gibson, I'm not going to go into the detail, but
11 you describe in your statement what greeted you between
12 the bus and the BMA building on the pavement and so on
13 and how difficult that scene was. I just have some
14 questions about that. Could we have INQ10345 [not for publication] on
screen,

15 please, the hotel photograph?

16 Firstly, Mr Gibson, those two blanketed bodies that
17 you refer to, do you recall where you saw them? Were
18 they on the roadside or on the pavement? You may not
19 remember.

20 A. I don't remember physically. I mean, clearly I can see
21 two blanketed bodies to the left.

22 Q. Yes.

23 A. I don't -- I can't remember specifically if those were
24 the ones I was referring to at the time.

25 Q. The reason I'm asking, Mr Gibson, is that one of the

1 families that I represent at this scene, their daughter
2 died in the pavement alongside the bus beside the BMA
3 building, and she can be seen in the brown -- with the
4 brown blanket on the left. It's unclear from the
5 evidence when precisely she died.

6 There's evidence that there were signs of life in
7 the minutes after the blast. We've heard from two
8 witnesses who described dealing with her and her being
9 alive. They were then moved on, they were civilians and
10 they had to move out of the way for cordoning reasons,
11 and it appears what next happens is that she's covered
12 with a blanket by an individual from the BMA building on
13 the assumption that she was dead and he's not certain
14 that he checked her. He doesn't recall checking her
15 pulse or confirming life extinct and, Mr Gibson, there's
16 no evidence of any LAS crew or, indeed, any of the
17 people from the private ambulances on scene triaging her
18 at any point, checking her pulse or confirming life is
19 extinct.

20 The next step that we have in the chronology, after
21 this blanket being placed over her, is her body being
22 recovered the following morning on 8 July, and plainly
23 it's of great concern to the family that she wasn't
24 checked at any point.

25 So when you arrived on the scene, Mr Gibson, and you

1 saw this number of blanketed bodies, either these two
2 bodies here that we see in the brown and blue, or
3 others, because you're obviously arriving on the scene,
4 we think, a little later than this photograph, did you
5 at any time ascertain who had decided that those
6 blanketed bodies were, in fact, dead?

7 A. Both -- as I approached, both Michael Cole and David
8 from St John told me that the last live casualty to be
9 removed from outside the BMA was Mr Ly in the bus.
10 Unfortunately, my role wasn't then to go round and
11 subsequently check everyone. My role was for
12 coordination, so I did not carry out a further check
13 after that.

14 Q. The difficulty, Mr Gibson, is that this is a scene that
15 had multiple civilians assisting. So passers-by and
16 then doctors and non-medically qualified staff from the
17 BMA building, and a number of steps were taken in those
18 early stages when, as you say, you were very limited
19 with LAS human resources and, in fact, it appears that,
20 once the LAS arrive on the scene, it simply assumed that
21 any bodies that are covered must be dead and whoever
22 checked them must have been right.

23 So is it right that you also assumed, as your
24 colleagues did, that the blanketed bodies that you saw
25 near the bus must have been dead simply because they

1 were covered?

2 A. I think you heard from Dr -- sorry, Mr Williamson's
3 evidence that he had a view that there would be doctors
4 going forward to check for any further casualties and
5 basically pronounce life extinct, and that didn't
6 happen. My assumption was that that would happen
7 immediately after, but I don't remember asking for
8 anyone to do that.

9 MS GALLAGHER: I've nothing further, Mr Gibson, thank you.

10 LADY JUSTICE HALLETT: Any other questions? Mr Saunders?

11 Questions by MR SAUNDERS

12 MR SAUNDERS: The David you've just mentioned from St John's
13 ambulance is Mr Warman?

14 A. Yes.

15 Q. He was the gentleman -- Mr Smith's statement was read to
16 her Ladyship on Friday -- who dealt with
17 Shyanuja Parathasangary, yes, the lady on the lower deck
18 of the bus. You see nothing more of that part of the
19 scene, I think that's right, isn't it?

20 A. I did not.

21 Q. Can I just ask you to help her Ladyship with one matter?
22 You were dealing, when Mr Coltart was asking you
23 questions this morning, with Nicky Blanco, and you
24 explained that you came across her and a number of other
25 London Ambulance Service personnel. You said this:

1 "There were too many of them dealing with one
2 seriously ill casualty."

3 A. Yes.

4 Q. Her Ladyship has heard evidence -- and I think you've
5 been here throughout the other three scenes, Mr Gibson,
6 on and off -- where it appears that whoever was first on
7 scene, immediately after that somebody went into the
8 role of triage.

9 A. Yes.

10 Q. That's the position for each of the other three scenes,
11 but here you don't arrive yourself until 10.20.

12 A. That's correct.

13 Q. Had anybody from the Ambulance Service taken on the role
14 of triage following 9.47?

15 A. That wasn't the impression I had. It was a fairly
16 unusual scene in that the casualties, rather than being
17 in situ for the Ambulance Service to come and physically
18 rescue and take to a safe place to carry out a secondary
19 triage -- first triage, rescue, secondary triage for
20 treatment -- it was very unusual that all the casualties
21 had then been put in a make-ready casualty clearing
22 station. So that wasn't the impression I had.

23 Q. Did you, in fact, when you assumed your Silver role, put
24 in place somebody to become triage?

25 A. I did.

1 Q. Who was that?

2 A. It was initially Mark Belkin.

3 Q. Mr Belkin, yes, I've got both his and another official's
4 report. Mr Belkin in fact became -- he calls himself
5 Bronze forward.

6 A. Yes.

7 Q. Is there any difference between that and Bronze triage?

8 A. Yes, there was. I asked him to undertake a general
9 management role in the first instance, liaising with
10 Dr Holden, because we had so few people, but also to --
11 whilst he was forward and taking care of the --
12 effectively taking care of the activities at the front
13 end, and we had to conduct some sort of triage as well.

14 Q. When you say "front end", do you mean actually at the
15 bus and the vicinity?

16 A. The front end, once we moved into the BMA, the front end
17 was the courtyard in the BMA, so that was the actual
18 front end facing the patient.

19 Q. So what was the difference between his role and the
20 local that you appointed to Mr Challen?

21 A. Jason Challen, I asked him to take on a coordination
22 role of the casualty clearing station itself which
23 involved management of resources, and then, assuming
24 a secondary triage has taken place, to go more in depth
25 into the triage level.

1 Q. He says this: that, having reported to you, you having
2 identified yourself as Silver, he asked what role you
3 wanted him to undertake. You tasked him with triaging
4 the patients from the bus incident.

5 "I asked if I should assume the role of Bronze
6 triage but was informed not to, but instead to become
7 forward triage."

8 A. I've read that myself and I don't believe that that was
9 the instructions I gave him. I was fairly clear with
10 the instructions I gave him.

11 Q. Because Mr Belkin was already forward triage?

12 A. Yes.

13 Q. So there was some form of miscommunication?

14 A. Yes.

15 Q. But as soon as you arrive, you do put into place triage,
16 as we've heard, with the other scenes?

17 A. Yes, as my coordinating role, yes.

18 MR SAUNDERS: Thank you very much, Mr Gibson. Thank you,
19 my Lady.

20 LADY JUSTICE HALLETT: Any other questions?

21 Well, looking at the time, Mr Gibson, I'm glad
22 I didn't ask you to stay and answer questions on Friday
23 afternoon. Thank you very much for your assistance.

24 Those are all the questions that we have for you.

25 A. Thank you, my Lady.

1 LADY JUSTICE HALLETT: Shall we take a break now, Mr Keith?
2 MR KEITH: Certainly, my Lady.
3 (11.25 am)
4 (A short break)sp^ to here
5 (11.40 am)
6 LADY JUSTICE HALLETT: Mr Keith?
7 MR KEITH: As my Lady knows, the last witness in essence
8 completed the evidence relating to Tavistock Square. We
9 now turn to a different area of evidence: namely, the
10 question of survivability and the issues surrounding the
11 question of whether or not, in light of the injuries
12 that they sustained, some of the deceased would not have
13 survived, all other things being equal.
14 In that regard, may I invite you to call
15 Colonel Peter Mahoney.
16 COLONEL PETER FRANCIS MAHONEY (affirmed)
17 Questions by MR KEITH
18 LADY JUSTICE HALLETT: Sorry to keep you waiting,
19 Colonel Mahoney, the last witness took rather longer to
20 complete than we expected.
21 MR KEITH: Colonel, good morning.
22 A. Good morning.
23 Q. Could I invite to you commence by giving us your full
24 name, please?
25 A. Peter Francis Mahoney.

1 Q. Colonel, you are the lead author of the generic report
2 which is dated 6 October 2010 that my Lady has
3 commissioned for the purposes of these proceedings, are
4 you not?

5 A. I am.

6 Q. Are you also the lead author of the individual reports
7 on each of the 18 deceased upon whom you have also, by
8 my Lady, been requested to report?

9 A. I am.

10 Q. I say "lead author" because there were, in fact,
11 a number of experts utilised to assist you in the
12 preparation of these reports.

13 A. There were, in different areas of ballistic and blast
14 injury and science.

15 Q. Is that, in essence, for this reason: that the
16 complexity of the questions that were posed of you and
17 the complexity of the subject matter required a number
18 of different specialists?

19 A. Yes.

20 Q. Could we look, please, very briefly, at your
21 professional qualifications and at your expertise?
22 I think your CV is in our system at INQ10814 [INQ10814-1].

23 You are a full Colonel in the British Army, formerly
24 of the Royal Army Medical Corps?

25 A. That's correct.

1 LADY JUSTICE HALLETT: Can we ensure that the address isn't
2 published? I may be being overcautious, but I don't
3 want that published.

4 MR KEITH: By all means, my Lady. You joined the
5 Territorial Army in 1980 and the regular army in 2002,
6 and are you a consultant in anaesthesia and critical
7 care?

8 A. I am.

9 Q. You have a host of professional qualifications. You are
10 a Bachelor of Medicine, a Bachelor of Surgery, you have
11 a Master of Science degree in emergency planning, and
12 you are a fellow of a number of learned institutes and
13 a holder of a number of diplomas?

14 A. Yes.

15 Q. In short, are you an expert, both in terms of your
16 research and clinical management, in a number of
17 different areas, including the following: firstly, the
18 injuries sustained in the military arena from bombs,
19 such as improvised explosive devices, and ballistics,
20 such as bullets?

21 A. Yes.

22 Q. Secondly, also, the treatment of those who have suffered
23 such injuries, whether military or civilian, including
24 a number of subspecialties, such as fluid resuscitation,
25 blood clotting, blood volume and, as your consultancy

1 would indicate, anaesthesia?

2 A. Yes.

3 Q. Also, as a result of that, an expert in the prediction
4 of likely injuries and the outcome, in medical terms, of
5 such ballistic and explosive injuries?

6 A. Yes.

7 Q. Do you have extensive experience in the field?

8 A. I do.

9 Q. For some years now, have you been involved operationally
10 almost every year from, I think, 1997?

11 A. Yes, I have.

12 Q. Could you give us some idea, please, of the range of
13 practical experience that you've had in the field in
14 terms of whether it's battlefield or disasters of one
15 type or another?

16 A. Certainly. On the military side, I've been a member of
17 a field surgical team on a number of occasions, the
18 Balkans, Iraq, Afghanistan, and other operational areas.
19 I've also been a medical director for the hospital,
20 which means that I have the clinical responsibility for
21 overall patient triage and patient management within
22 that, within a field hospital, and I've been a member of
23 the emergency response team, variously called the ERT,
24 emergency response team, or the MERT, the medical
25 emergency response team, which is the helicopter-based

1 pre-hospital service, again within a number of arenas.
2 Within the Red Cross, before I joined the regular
3 army, I had a number of deployments as a member of
4 a surgical team in predominantly post-conflict
5 environments, and to the -- the area of the Tsunami,
6 when I was with the regular army, I was detached to the
7 Red Cross. That was a post-disaster environment.
8 In addition, I've undertaken pre-hospital care
9 regularly since -- from 1995, when I was on HEMS, up
10 until 2009, because, at the moment, my current
11 professorial duties preclude it.

12 Q. At the heart of all your areas of specialty lies the
13 recognition that management of ballistic trauma of the
14 injuries that result from the effects of bombs and
15 bullets has the highest priority in terms of research
16 and investigation in the defence medical arena.

17 A. It certainly does, and we've really been pushed down
18 that line with the intensity of the conflict, first of
19 all, in Iraq and now in Afghanistan.

20 Q. Differences between military and civilian care fall
21 outside the scope of these inquests and so I won't
22 linger on the topic, but is it fair to say that trauma
23 care -- and it's relevant to your experience -- trauma
24 care in the army and the military field has advanced
25 hugely in recent years on account of the operational

1 requirements that have faced our army?

2 A. It certainly has. That's particularly in the arena of
3 blast and ballistic injury.

4 Q. Some of the differences, because, again, they highlight
5 your experience, are set out in the individual reports
6 that were prepared for us in early January of this year,
7 or certainly concluded in early January of this year.

8 Could I invite, please, the system to have on the
9 screen by way of one example [INQ11065-43]? My Lady, many
10 of -- well, in fact, all of the individual reports have
11 certain aspects to them which are identical. As my Lady
12 knows, the generic report sets out the general issues
13 and that was received in October. By way of
14 illustration, I'll refer at times to one of the
15 individual reports. It happens to be that report in
16 relation to Mr Ellery, because Mr Ellery,
17 alphabetically, was the first person that we will
18 consider in due course in relation to Aldgate, and that
19 is why I will concentrate on him for the purposes of
20 these generic issues. But there is no other
21 significance in the fact that I refer to him.

22 This is an extract from the individual report
23 relating to Mr Ellery and, on that page, we will see, at
24 paragraph 6.3, a reference to the importance or the
25 significance of damage control surgery.

1 Is that because in the military arena great emphasis
2 is placed on the need to control and prevent damage or
3 further damage to a body prior to surgery?

4 A. It is, and these are lessons that do move across to the
5 Health Service as well. We're a very different service.
6 We wake up in the morning, on deployment, expecting to
7 deal with people who have been injured by shootings or
8 explosions, and our military experience in the recent
9 conflicts has emphasised how different the wounding
10 mechanisms are in our environment compared to most
11 civilian environments.

12 So, for us, in our young population, we are -- we
13 put control of catastrophic bleeding very, very high on
14 the list and the subsequent surgical management of that,
15 controlling bleeding, and the sort of integration of all
16 the teams, both pre-hospital and in hospital, to achieve
17 that.

18 Q. Is that why, as we can see at paragraph C6.4, by
19 contrast to the well-known priorities set out in the
20 acronym ABC in civilian life -- airway, breathing and
21 circulation -- in the military world there is a variant
22 on that acronym and that approach, insofar as the first
23 priority now is C, so it runs CABC, where C denotes
24 control of catastrophic haemorrhage?

25 A. That's right. ABC is entirely appropriate for the

1 civilian environment in most circumstances, with a few
2 exceptions, because, on the whole, the civilian
3 environment, looking at people who have had heart
4 attacks or other issues, for us, focused on ballistic
5 injury, we changed this paradigm in around, I believe,
6 2005, reflecting the number of gun shots we were getting
7 to big blood vessels within arms and legs, the number of
8 amputations we were starting to see from improvised
9 explosive devices, both -- at that stage, it was within
10 Iraq, and making our people understand how important it
11 was to control the bleeding to allow us to have
12 a survivor arriving at hospital.

13 Q. It is obvious, is it not, that in the civilian world,
14 fortunately, despite the terrible circumstances of these
15 inquests and the facts that underpin them, explosions
16 and IEDs, improvised explosive devices, are relatively
17 rare?

18 A. Extremely rare and, all my time doing pre-hospital care,
19 the only explosions I attended were domestic gas-type
20 explosions, nothing like this, and the shootings tended
21 to be shotgun-related as opposed to military grade
22 weaponry, and I only ever had to use tourniquets on,
23 I think, two or maybe three occasions for an industrial
24 accident and, also, I believe, a motor -- some
25 motorcycling accidents. So it's a very different

1 experience.

2 Q. Research appears to indicate -- and I think common
3 experience also dictates -- that a very large percentage
4 of incidents confronted by the National Health Service
5 and by the Ambulance Service, in particular, concern
6 such things arising out of day-to-day events as a car
7 crash.

8 Is the type of trauma associated with ballistic and
9 explosive devices very different from the sort of trauma
10 that one would ordinarily encounter in, for example,
11 a car crash?

12 A. It is, and our experience is, both by the severity of
13 the injury, the complexity of the injury and the number
14 of injuries that you can get in a single patient, it is
15 different.

16 That's not to say that there are car crash victims
17 who have -- don't have complex injury. They certainly
18 do. But what you're presented with, in terms of what
19 you're expecting to see with your patient and how they
20 subsequently behave -- and I use that as a physiological
21 term as opposed to behavioural -- when you're managing
22 them both pre-hospital and in the hospital, there are
23 different ranges of clinical effect that you'll see in
24 a blast and ballistic patient than you'll see in someone
25 in a road accident, although there are common paradigms,

1 such as the need for surgery, the need for imaging, the
2 need for blood replacement, the need for oxygen and
3 other common treatments.

4 LADY JUSTICE HALLETT: Sorry to interrupt. Just going back
5 to the priorities, given that ABC is the right order of
6 priorities for most civilian incidents, would you advise
7 the use of your CABC where a major incident is declared
8 because of an explosion?

9 A. I think yes, my Lady, where you have explosive-related
10 injury and where you have the likelihood of penetrating
11 injury from fragment, amputating injury from blast and
12 other mechanisms, our experience is that there is value
13 in people going into that environment at least thinking
14 CABC, although not every person who has had an
15 amputation demands a tourniquet, as I think we'll
16 explore with some of the later evidence.

17 LADY JUSTICE HALLETT: Have there been discussions between
18 people like you and whoever's responsible for coming up
19 with the order of priorities, whoever decides ABC is
20 the --

21 A. Yes, ABC really came out of the published medical
22 literature. Prior to that, it was breathing, bleeding,
23 breaks and bones, I think, when I was a student, and
24 this reflects the American advanced trauma life support
25 system, which really came into the UK within the 1980s.

1 But certainly now, in 2010, there is discussion
2 between the military and the Department of Health.
3 There's certainly been discussion between the military
4 and the joint ambulance -- the Ambulance Liaison
5 Committee, the Joint Royal College Ambulance Liaison
6 Committee, who set the ambulance syllabus, and I believe
7 I'm correct in this, that the ambulance hazardous area
8 response teams have this type of paradigm in mind.
9 Although clearly this is not my main area of work at the
10 moment, I have been consulted on peripheral areas of
11 that.

12 LADY JUSTICE HALLETT: Because you'd obviously have to train
13 the crews that, the minute they heard there was the
14 chance of an explosion, they slip into CABC rather than
15 ABC?

16 A. Yes, my Lady. When people are thinking about managing
17 compressible -- ie, you can stop it with pressure,
18 rather than internal bleeding -- our experience has been
19 we need people to have a change in the way they're
20 viewing the casualty, to think managing major bleeding
21 immediately and then move on.

22 Although certainly, although CABC has not been part
23 of standard teaching, in my pre-hospital experience the
24 clinical understanding of a lot of ambulance crews in
25 different areas meant that it was something they

1 understood naturally, even though they weren't being
2 taught it directly.

3 LADY JUSTICE HALLETT: They did it instinctively?

4 A. Yes, indeed.

5 LADY JUSTICE HALLETT: Sorry to interrupt.

6 MR KEITH: My Lady, not at all. Over the page, in fact,
7 my Lady will see references to combat application
8 tourniquets in paragraph C7.1 [INQ11065-44].

9 Colonel, have there been changes, in broad terms, in
10 the practical aspects of management of catastrophic
11 haemorrhage, in that, although, prior to 2005, the
12 standard military advice was not to use a tourniquet,
13 that has now changed and there are now combat
14 application tourniquets used, and even in the civilian
15 world there have been changes over the last few years in
16 recognition of the different trauma aspect associated
17 with explosions?

18 A. I think that's fair, and if you look back, say, over
19 200 years of military history, you'll see the tourniquet
20 comes in and out of favour. The difficulty is balancing
21 the loss of a limb from a tourniquet going on
22 unnecessarily and meaning that you cut off the blood
23 supply to that limb and that limb then becomes what we'd
24 say ischaemic, so no blood supply, no oxygen, and then
25 that limb dies, versus the loss of a life due to

1 catastrophic bleeding.

2 What then comes with that is the training bill that
3 my Lady mentioned, the need to have people understanding
4 the difference between saving a limb, saving a life and
5 when it's appropriate to do one or the other.

6 Q. As a result, is it your understanding that guidance
7 issued both to private ambulance services as well as
8 National Health Service ambulances, has altered, and
9 some ambulance services now do carry forms of tourniquet
10 to cover the possibility that they may be confronted by
11 a different form of trauma that may require such?

12 A. I can't comment on private ambulances. I can comment on
13 my discussions with members of the HART teams, the
14 hazardous area response teams, that those individuals
15 were explaining to me that they now carried combat
16 application tourniquet, and in my own personal
17 experience from 2008/early 2009 on a helicopter service
18 we had tourniquets as part of our equipment. This is on
19 the civilian aircraft. We had tourniquets as part of
20 that. But I could not say whether this is a universal
21 application or whether this is just some examples that
22 have filtered through, but I can say that it's something
23 that the Department of Health is looking at very
24 seriously, but trying to make the difficult balance
25 between when you get people in stressful situations to

1 move from save a limb/save a life.

2 We have a different reason, as well as saving the
3 life from the bleeding, our young people having to shoot
4 and drag the casualty at the same time. So they can't
5 just wait and control bleeding. They need to get it on,
6 return fire, drag, back into cover, and shoot again. So
7 we need something they can do hands-free, effectively.

8 Q. Implicit in this debate -- and we will return to your
9 professional qualification and your experience in
10 a moment; I've digressed somewhat -- there is
11 a recognition that the needs and requirements and, of
12 course, the resources in the civilian world differ
13 greatly from those in the military world?

14 A. They do. Different population, different injury
15 patterns.

16 Q. So it would be wrong for anybody to draw from your
17 experience and your evidence any kind of unfavourable
18 comparison in terms of the level of treatment or care
19 that one would ordinarily face in a civilian world?

20 A. I agree. I think it would be -- it's just not correct.
21 Different population, different injuries, and even the
22 explosive mechanisms are different, IED in Afghanistan
23 out on the ground is a very different mechanism to the
24 type of explosive injuries that we're discussing here
25 within the confined spaces.

1 Q. But the particular facts of this case and these
2 proceedings of course engages your military expertise,
3 because this is the area in which you are most expert:
4 namely, the effects of explosive devices?

5 A. Yes, and explosives and explosions that take place
6 within vehicles, impacting on vehicles or within
7 buildings are also something that we are exposed to and
8 are familiar with, but that is different to the
9 individualised IED attacks that we're seeing.

10 Q. That brings me back to your qualifications and I should
11 complete that area, if I may.

12 You have a number of military awards and
13 commendations, which I shall not embarrass you by
14 listing, and you are an author of a number of books and
15 periodicals on ballistic trauma and combat casualty care
16 and resuscitation and so on.

17 A. Yes.

18 Q. Are you currently Defence Professor of Anaesthesia at
19 the Department of Military Anaesthesia and Critical Care
20 in the Royal Centre for Defence Medicine in Birmingham?

21 A. Yes, I am.

22 Q. What is the primary function of the Royal Centre for
23 Defence Medicine?

24 A. It has a number of functions. The part of the Royal
25 Centre for Defence Medicine within the hospital, within

1 Queen Elizabeth Hospital in Birmingham is the receipt,
2 care and management of our military casualties in
3 integrated partnership with our NHS colleagues.
4 The other function of Royal Centre for Defence
5 Medicine is training, and it is training both our
6 medical staff, nursing staff and other paramedical staff
7 for operations, and we link in with other training
8 organisations accordingly, and then, within the academic
9 and research part of Royal Centre for Defence Medicine,
10 you have the Defence Professors, of which I am one, but
11 there are others, in emergency medicine, trauma,
12 orthopaedics, surgery and other related areas, and we
13 each have an aspect of the military research programme,
14 the clinical research programme that we are responsible
15 for.

16 Q. In operational terms, and of particular significance to
17 the families of those who tragically have died on active
18 service abroad, are you all, at that establishment and
19 elsewhere, concerned in reviewing cases in which members
20 of our armed services have died and examining whether or
21 not they could have been saved?

22 A. We are. That is a regular event that we undertake. We
23 look at the circumstances under which somebody died, the
24 injuries and the treatment that was administered. We
25 are supported in this by the forensic pathologists and

1 the military police, who do the investigations of the
2 scene, and if there's additional expert knowledge that
3 we don't have, as was the case for myself in compiling
4 these reports, we can call on other experts.

5 Q. So did you call upon, in this case, fellow specialists
6 in a number of different areas, but all of whom are
7 engaged regularly in reviewing why people have died, and
8 whether they could have been saved, and also into
9 research into the various disciplines that are engaged
10 in this process, such as engineering and computer
11 modelling, as well as ballistic research and the like?

12 A. Yes, and I'd also add that the clinicians that I called
13 upon, my two colleagues from RCDM, are also actively
14 involved both in a clinical work within the National
15 Health Service and deploying out to the operational
16 environment of Afghanistan.

17 Q. Briefly, then, looking at your fellow authors, each of
18 whom not only contributed to the overall conclusions
19 that were reached in relation to each of the deceased,
20 but also contributed their own specialty to the process
21 by which those conclusions were reached, do we have,
22 firstly, Colonel Clasper of the Royal Army Medical
23 Corps?

24 A. We do.

25 MR KEITH: My Lady, his brief qualifications or, rather,

1 a brief summary of his qualifications, are set out on
2 [INQ11065-26], again within one of the individual reports,
3 Mr Ellery's, in fact.

4 He is a consultant in orthopaedic surgery at
5 Frimley Park Hospital, NHS Trust, that's to say surgery
6 associated with musculoskeletal trauma?

7 A. Yes.

8 Q. He is a Defence Professor of Trauma and Orthopaedics,
9 a director of the Trauma and Orthopaedic Higher Surgical
10 Training Programme, and an expert in injuries, in
11 essence, following mine explosions, and an expert in
12 vehicle protection measures and the outcomes of blast,
13 missile and gun shot wounds?

14 A. He is and he has also been appointed as an Honorary
15 Professor at Imperial College in bioengineering, which
16 links in with his current research strands there on
17 explosive-related injury to lower limbs and pelvis.

18 Q. Lieutenant Colonel Russell of the Royal Army Medical
19 Corps also contributed, his CV is on our system at
20 INQ10810 [INQ10810-1]. Again, subject to my Lady's direction on
21 publication.

22 If we could just enlarge the middle and the lower
23 part of the page, please, he is a consultant in
24 emergency medicine, he's head of the academic department
25 of military emergency medicine, and a visiting senior

1 lecturer in military emergency medicine at University of
2 Birmingham. Is that right?

3 A. That's correct.

4 Q. He is an expert in trauma clinical governance, is he
5 not?

6 A. Yes, he is.

7 Q. What does that mean?

8 A. Trauma clinical governance is the examination of the
9 whole process of clinical care from injury through to
10 rehabilitation, and ensuring that the care that our
11 military casualties have received meets the standards
12 that we have set, subject to operational constraints.

13 One of Colonel Russell's roles is to look after
14 something called the Joint Theatre Trauma Registry,
15 I think referred to in the report as JTTR, which is the
16 database that summarises the injury information, the
17 injury scores, which are also referred to in the
18 reports, and gives us an indication if the outcome for
19 a particular person was what we would have expected, was
20 exceptionally good, or if there were issues of care or
21 we think our system could have done better, subject to
22 the operational constraints.

23 Q. You also called upon the expertise of Mr Alan Hepper of
24 the Defence Science and Technology Laboratory. Could we
25 have, please, [INQ11065-53]?

1 He is a principal engineer at the Biomedical
2 Sciences Department at the Defence Science and
3 Technology Laboratory at Porton Down?

4 A. Yes, he is.

5 Q. Just for one moment examining the DSTL, the Defence
6 Science and Technology Laboratory, what is it in
7 outline?

8 A. It's a Government laboratory. A "laboratory" perhaps
9 underestimates it. The site of Porton Down goes over
10 several thousand acres and a multitude of buildings, and
11 within that there are a number of divisions.

12 The area that I interact with is particularly the
13 individuals looking at blast and ballistic research and
14 survival and, within that, we interface with Alan Hepper
15 and his colleagues who look particularly at the
16 performance of body armour and other protective systems,
17 both on the individual and within vehicles, and the
18 clinical effects on people who have been wearing that
19 and the improved survival both from the vehicles and
20 from the armour.

21 Q. Is Mr Hepper, in essence, an expert in the engineering
22 perspective of blasts, that is to say, what in terms of
23 the movement of the body and what could be expected in
24 terms of movement following blast and what the
25 consequences would be of such movements in terms of

1 survivability?

2 A. Yes, he is. He is an expert in looking at the
3 environment where an explosion has taken place, the
4 damage to an environment or the vehicle, damage to the
5 armour and other protective systems, being able to
6 predict where the bomb was when it went, an idea of the
7 size of the bomb and a prediction of the likely injuries
8 that a person would have, which is then correlated by us
9 as the clinical team.

10 Q. Next we have Dr Pope of the same institution. His CV is
11 at INQ10812 [INQ10812-1]. Is he a principal scientist and capability
12 leader in structural dynamics? Could we enlarge the
13 bottom half of the page, please, again?

14 An Honorary Reader in the Department of Civil and
15 Structural Engineering, I think he is a visiting
16 academic at the Department of Aeronautics at
17 Imperial College.

18 Is he an expert in structural dynamics, that is to
19 say examining how buildings and structures respond to
20 terrorist attack?

21 A. Yes, he is, and his particular expertise is within
22 computer modelling and he has a team of people who
23 undertake computer modelling and they construct virtual
24 environments and, within that, they look at the
25 environment -- they look at the characteristics of how

1 an explosion is detonated, how it generates in the
2 initial microseconds and the effect of that explosion on
3 structures, or the structure within which it is
4 contained, such as an Underground train, and the effects
5 on objects between the explosion and the environment,
6 including people and other structures within, say, the
7 train, such as seats and poles.

8 Q. In fact, has he been studying now for some years, since
9 the events of 7 July 2005, the development of a model to
10 try to ascertain the likely consequences of a detonation
11 of an explosive device in an Underground carriage with
12 a view to trying to assist in the process of designing
13 structures and carriages and equipment that can better
14 withstand the terrible consequences of such an explosive
15 device?

16 A. Yes, he is. They've been engaged actively since 2006
17 really looking at the design of vehicles and other
18 structures trying to find ways of mitigating explosive
19 effects in advance of an attack happening in the future.

20 Q. Finally, did you call upon the expertise of
21 a Dr Kirkman, whose qualifications are at page 73 of
22 INQ11065 [INQ11065-73], who is a principal scientist in surgical
23 science, holder of numerous professional qualifications,
24 and he, in essence, in this case, assessed the results
25 of the detailed computer modelling that his colleagues

1 had prepared in order to express a view on the likely
2 physiological consequences, what the effects would be of
3 the particular computer-assessed results in terms of the
4 effect on the body of an explosive device detonating?

5 A. He did. The computer gave us a series of likely
6 pressures and Dr Kirkman, who is an expert on blast
7 physiology -- that is how an intact body will behave
8 when subject to the forces of an explosion in terms of
9 the likely reflexes and the likely injury patterns that
10 you would see. So he -- and not only did he base that
11 on the computer models, but he based it on archive
12 material from Porton Down, which I believe is referenced
13 in his annex, and other experimental work that he
14 conducts on behalf of the Ministry of Defence.

15 Q. In conclusion, in relation to the expertise that you
16 were able to bring to bear, did you and your colleagues,
17 both between yourselves and calling upon the expertise
18 of others in all these establishments, spend probably
19 thousands of hours assessing the material in this case,
20 using computer models and highly advanced analysis
21 available to the military in order to express a view on
22 the survivability of the deceased in this case?

23 A. I think that's very fair. From the tasking in August,
24 I required individuals to cancel clinical duties, cancel
25 other commitments. I required technical staff to work

1 Bank holidays and weekends. They virtually broke one of
2 the computer programmes, they took it to its limits to
3 run this, because although the pictures that I'm sure
4 we'll examine later of the blast propagation within the
5 vehicles look fairly simple, it actually represents, in
6 some cases, days of computers running just to try to
7 generate the -- accurately generate the explosive flow
8 throughout the environment.

9 Within this, everyone was also undertaking other
10 clinical duties and operational duties, but I offer full
11 credit to them, when they knew it was for the inquest
12 and fully appreciated the importance of it, they pulled
13 the stops out at all points and worked round the clock,
14 as I required of them, as, indeed, did everybody.

15 Q. Your report has been prepared in such a way as to make
16 it digestible and comprehensible to us, but it
17 represents, in essence, only the tip of the iceberg of
18 a huge amount of work that has gone into its
19 preparation.

20 A. It does. Some of the reports are the summary of, I'd
21 say, filing cabinets of documents or indeed gigabytes of
22 data generated by the computer models.

23 Q. You've called upon the assistance of technical,
24 secretarial, research and operational experts?

25 A. Yes, I have.

1 Q. Thank you very much. So we have your material. Can we
2 now look very briefly at what you were provided with so
3 we can understand the basis on which you proceeded to
4 prepare your reports?

5 You had the scene reports prepared by the
6 Metropolitan Police, including the seating plans.

7 A. Yes.

8 Q. Videos of the scenes that my Lady has seen, of course.
9 Photographs of the deceased at the scenes. Witness
10 statements relating to each of their deceased and, as
11 we've heard, endeavouring to explain the location of the
12 deceased post-explosion and their movements and
13 recovery, if any. Statements from Clifford Todd, the
14 gentleman in charge of forensic examination of these
15 scenes, as well as the post-mortem reports, photographs
16 from the post-mortems and medical notes?

17 A. We have, and we've relied very heavily on the court to
18 summarise material for us. So when I started the
19 tasking in August, I went through the initial witness
20 statements, but then the court very helpfully provided
21 me with the disclosed time-line summary, which meant
22 that I could then concentrate the team on the areas
23 I most wanted them to work on, which was looking at the
24 individuals and understanding how that individual's
25 physiology, such as level of consciousness, breathing

1 pattern, changed from the moment they were injured up
2 until the moment they were declared as having not
3 survived.

4 Q. Because of the time required to prepare the reports,
5 when you came to consider the individual circumstances
6 of each of the deceased, it was possible to provide you
7 with, not merely summaries of the material out of the
8 scene reports, but also summaries of the evidence
9 actually given in court in relation to Aldgate and
10 Edgware Road.

11 But because her Ladyship was already engaged,
12 by December, in the process of examining the evidence at
13 King's Cross and, obviously, this month,
14 Tavistock Square, have you had to rely instead, in
15 relation to those two scenes, upon the witness
16 statements alone as well as the scene reports and not
17 the evidence given in court?

18 A. Yes, we have. We've relied on the witness statements
19 and the time-lines that the court constructed for us
20 which I understand are disclosed within my summaries,
21 and where there's been a clear discrepancy or a question
22 raised, I've been contacted by members of the court to
23 say, "Are you aware of the following? Be aware that
24 there was -- there is now a witness that has seen this
25 and this may alter what you've written", and it allowed

1 us to go back and revisit our evidence and say, "In the
2 light of this witness statement, this new evidence, can
3 we now agree that this is still what we believe
4 happened, or does this change things materially?"

5 Q. One such example is the case of Christian Small?

6 A. Yes.

7 Q. In relation to whom you were informed, of course, after
8 your reports were prepared, that evidence was given by
9 a gentleman called Garri Hollness which materially
10 altered the understanding of the events in the carriage
11 as far as he was concerned?

12 A. Yes, it did, and in addition, some of the injury
13 patterns that we observed caused us to question where
14 people were placed or -- the recall. We weren't in any
15 way criticising witnesses who had been through
16 a desperate time, but if the injury pattern indicated to
17 us that somebody had to be closer to the bomb than the
18 map indicated, then that's something we have attempted
19 to draw out in the reports.

20 But I do accept that evidence has taken place in the
21 last few weeks that certainly will not be within the
22 report and it may be something I need to consider today.

23 Q. When you came to consider the position or the
24 circumstances of each of the deceased, did you sit down
25 in a collegiate way and discuss the conclusion that

1 should be reached properly on all the material before
2 you alongside your colleagues?

3 A. I had two methods. I asked people to do it individually
4 so they could look at it, each person, with fresh eyes
5 and draw their own conclusions. Then, when I could
6 bring people to Porton Down, we would go into an area
7 where we were not overlooked and we had the ability to
8 project the images in a secure -- well, a more secure
9 environment, than just the -- well, the inner compound
10 in Porton Down, and that allowed to us look in detail
11 and give our views and that allowed me to bring in
12 engineering views at that point as well.

13 Where I couldn't bring an individual down for that
14 due to other duties, I could meet them in turn in the
15 Royal Centre for Defence Medicine and talk through their
16 conclusions with them.

17 So the conclusions reached are collegiate
18 conclusions. They're not just the musings or the views
19 of one individual. They represent a considered approach
20 by the individuals that you have described.

21 Q. Some of the individual deceased gave rise, in terms of
22 terms of this issue of survivability, to more complex
23 and difficult questions than others.

24 A. Yes.

25 Q. In some of these instances, did the debate as to the

1 proper conclusion to be reached necessitate many hours
2 of debate between you all --

3 A. Yes.

4 Q. -- as to what your joint view would be?

5 A. Weeks.

6 Q. Weeks. The broad question that you asked yourselves is
7 set out in the individual reports. Again, by way of
8 example, it's set out at page 6 of INQ11065 [INQ11065-6]of that
9 relating to Mr Ellery. We can see it set out at
10 paragraph 2.1. You were asked to assess whether or not
11 the deceased, in each of the 18 cases in which the
12 evidence appeared to show that death was not
13 instantaneous, suffered non-survivable injuries.

14 A. Yes.

15 Q. The question arises, does it not, Colonel, because the
16 medical condition known as blast lung, which is apparent
17 in these cases, is one of a group of injuries from which
18 long-term survival is not possible, even if instant
19 death is not caused?

20 A. It really depends on the degree of blast lung. We
21 certainly have survivors in our currently military
22 cohort with blast lung and in the reported literature
23 there are people who have had blast lung who have
24 survived.

25 What our task -- well, as we interpreted the task --

1 was, was to say, "Was this person in a blast
2 environment, that the evidence in front of us, the
3 published literature and the experimental evidence that
4 we're aware of and the computer-generated evidence that
5 we are producing, does that come together to say that
6 that person was subject to an amount of blast that would
7 cause an unsurvivable degree of blast lung?"

8 I think there's a little bit more detail of that in
9 the final annex in some of the casualties from the
10 Northern Ireland data.

11 Q. We'll come back to the data in that regard perhaps a bit
12 later.

13 A. Yes.

14 Q. The essence of your task, though, lies in recognising
15 that it's possible to compute by reference to proximity
16 to a given device the likely injuries that will result,
17 all other things being equal?

18 A. It is, all other things being equal. Clearly, a real
19 environment can be very complex, as we will be drawing
20 out in a moment, but you can compute in terms of
21 proximity to an explosion by understanding the size of
22 the explosion, the characteristics of the explosive and
23 the pressures and temperatures that that person was
24 subject to, you can predict the likely injuries.
25 Ideally, as we had with the military casualties, we

1 would have an internal post-mortem to give us the degree
2 of detail that we need to confirm those views, but even
3 in the absence of that, you can make an informed
4 judgment.

5 Q. That is why your view is to be properly expressed as
6 a judgment, because you didn't have internal post-mortem
7 material here which would have allowed you actually to
8 see the condition of the lungs in each of the deceased?

9 A. That's absolutely correct. There are some people,
10 unfortunately, where you can look at the pictures and
11 the environment and say, "I can feel very, very
12 confident this person would not have survived and, in
13 fact, would have likely died instantly", and there are
14 other circumstances where we had to spend a lot more
15 time reviewing the factors and trying to come to
16 a balanced conclusion, and there there are no absolutes.

17 Q. It's important we understand, therefore, that you
18 weren't asked to address the question of what was the
19 cause of death in each case, because you were doing
20 something different, which was to assess what was likely
21 to have been the cause of death, because, of course, you
22 had to use modelling and the other devices open to you
23 because of the absence of internal post-mortem material?

24 A. That's right. Where we felt we had a clear cause of
25 death, a particular injury that was demonstrated in the

1 clinical documents, the external post-mortem report and
2 that tied clearly with our views from the scene and the
3 witness reports, we've highlighted that. In other
4 circumstances, we've just had to come to a conclusion as
5 to what was the likely cause of death, given the blast
6 environment that we have calculated and assessed, but
7 accepting the error bars that exist within that
8 environment.

9 Q. I asked you specifically whether the assessment was
10 carried out, all other things being equal, because you
11 are not here to comment upon the adequacy or otherwise
12 of medical treatment received.

13 Does your judgment, and the judgment of your
14 colleagues, proceed on the basis that you could examine
15 the question of whether or not they would have survived
16 if they had received a normal, adequate treatment,
17 assumed adequate treatment, based upon the nature of
18 those likely injuries? You're not being asked: what
19 more could have been done to ensure that they would have
20 survived?

21 A. Yes, that is the understanding we had from the tasking
22 order from Mr Smith.

23 Q. It seems to follow, does it not, Colonel, from what you
24 said earlier, that that is for very sensible reasons
25 because, firstly, there are very different

1 considerations applicable in the civilian world by
2 comparison to that in the military world, and you're not
3 here to comment upon resources and the nature of the
4 treatment that might have been available?

5 A. No, I'm not, and the situation that I find myself in, in
6 2010, looking after blast lung injury, is very different
7 to my level of understanding in 2007. My experience has
8 increased enormously because of the current conflict and
9 prior to that, my understanding was very different. So,
10 yes, we've taken that fully into consideration.

11 Q. Perhaps I might permit myself one question, though, in
12 relation to the comparisons between military and
13 civilian responses.

14 If these events had happened today, in perhaps the
15 close environment or within the boundaries of
16 Camp Bastion in Afghanistan, would these events, even
17 with the huge experience now available in the military
18 field, because of the conflict, have tasked the military
19 expertise to the utmost? Would you have struggled, even
20 in that scenario, to cope with the nature of the
21 injuries that presented?

22 A. No question. If you presented us with the number of
23 seriously injured people that happened on --
24 in July 2005 at these bombings and presented them all at
25 once to our hospital in Bastion, there is no question

1 that we would have struggled, and would struggle today,
2 and there's no question that we would have to make
3 triage decisions.

4 Q. Your assessment in each case, or -- I'm sorry, the
5 ability to form a judgment, to use your word, as to the
6 likely injury that would be caused by an explosive
7 device depends on a number of different factors, does it
8 not?

9 A. Yes, it does.

10 Q. Firstly, the nature of the explosive device?

11 A. Yes.

12 Q. Why does that matter?

13 A. Well, not all explosives are the same. An explosive is
14 just a substance that will expand rapidly. Nuclear
15 releases energy from within atoms. The more
16 conventional explosives that we're talking about
17 releases energy between atoms or between molecules.
18 Physical explosions may release energy, say, from
19 a compressed cylinder. So you have different types
20 of -- at the very basic level, different types of
21 explosives.

22 Then if we're talking just about chemical or
23 conventional-type explosives, they can be graded into
24 low explosive, high explosive, and will behave
25 differently according to the quantity and the

1 environment within which they are contained.

2 Q. Proximity, is that a relevant factor as well?

3 A. It's certainly a relevant factor in terms of somebody
4 being injured, and it's also very relevant depending on
5 the nature of the explosive.

6 So if you took a military grade explosive, had
7 a theoretical hypothetical sphere here, detonated it,
8 that is set it off to make it explode within the centre,
9 you would expect it to rapidly turn into gas and rapidly
10 expand, releasing energy in the form of heat, light and
11 sound.

12 You would expect it to move evenly and the sphere
13 would expand. If, this was where what's called a free
14 field environment, ie there's no intervening structures,
15 the pressure would go up and then rapidly fall off,
16 which I think we'll explore in a little while. If you
17 put intervening structures in the way, then the pressure
18 can hit those and be pushed back, changing the effect on
19 someone between the explosive and the object.

20 If you have unconventional explosive, such as the
21 ones being considered here, they may not detonate in
22 that even pattern, and so the actual effects you get
23 will not be the same, even if you're looking at an
24 explosive in terms of a TNT equivalence, which is what
25 we've used, that is -- if I have this much of this

1 explosive and it goes off, what would be the effect of
2 that bomb compared to a quantity of TNT, the nature of
3 the explosion, the nature of the way it decays, the
4 nature of how the explosion propagates within the
5 material, the nature of the container, will alter the
6 effect you get on the people.

7 Q. In the present case, it appears plain that the explosive
8 substance was neither contained in a hard casing, and
9 nor was it symmetrical, because it was in the form of
10 a wet paste contained, it seemed to be, in plastic bags
11 wrapped around with ice coolant, freeze blocks.

12 Does that, therefore, impact again, or is it yet
13 another variable in the considerations that you had to
14 consider?

15 A. Yes, it certainly is. Now, I'm not an explosive
16 engineer or an expert in the chemistry of explosives,
17 and so we had access to Mr Todd's report, and in
18 addition, as part of our work, we went to talk to
19 explosive experts and watch videos of different types of
20 explosives being detonated in different types of
21 vehicles, trains, Underground carriages, and we also
22 watched high-resolution, slow-motion photography of
23 devices constructed, as far as people know, in the same
24 way as the bombs used on 7 July 2005, and really,
25 depending on how the bomb is orientated, depending on

1 how it detonates, you can see some effects that you
2 would not get with a military grade explosive.
3 You can see uneven detonation, you can see tongues
4 of -- I'd call them tongues of flame, but they're
5 extremely hot, more like lightning, going off in uneven
6 directions. So instead of getting the sphere expanding
7 evenly, you get a very uneven effect, very close into
8 the bomb.

9 Beyond the bomb, the blast tends to settle out, and
10 you get a more even effect, which does make it more
11 straightforward for our people to compute in the models,
12 but within about a metre, their view was the nature of
13 the explosive meant it was very hard to predict, and in
14 addition, that gives you the anomalies that you see in
15 the environments of the Tube, where some people
16 fortunately were spared the worst of the explosion, even
17 though they were close by, whereas other people
18 effectively were hit by the directional effect of an
19 explosive and suffered worse injuries than someone close
20 in.

21 Q. Your generic report and, in particular, that part of the
22 generic report prepared in October by Mr Hepper, deals
23 with the chemistry of an explosive device --

24 A. Yes.

25 Q. -- and the effects of a device in terms of the nature of

1 the explosive injury that is caused.

2 A. Yes.

3 Q. Could we have, please, on the screen [INQ10552-12], which
4 is an extract, as I say, from Mr Hepper's contribution
5 to that earlier generic report?

6 He refers at paragraph A4.1.1.2 to the effect of
7 a detonation of high explosive and, in particular, the
8 creation of a very rapid pressure wave or shockwave,
9 which, as he then goes on to describe, can pass through
10 the surrounding medium, whether it be air or water.

11 Does that wave travel extremely fast?

12 A. Yes, it does. We talked before about this theoretical
13 ball of explosive being detonated. The speed is
14 measured in hundreds of metres per second. The time
15 course to go from the detonation to being a gaseous
16 state is measured in thousandths of a second. So
17 virtually instantaneously, you have the explosive
18 detonating, disintegrating, turning to gas, the energy
19 released, and then this very fast pressure wave moving
20 out from the explosive.

21 But it also decays very quickly. So it is moving
22 very quickly, but very quickly out from the explosive,
23 in conventional explosive, depending on the size of the
24 weapon, actually the pressure effects can be very
25 limited.

1 Q. What is the effect of the pressure wave in terms of the
2 atmospheric pressure around an object or a person within
3 close proximity to the detonation?

4 A. It rises very, very rapidly, very rapidly, and I think
5 in some of the annexes we have numbers placed on that by
6 Mr Pope -- Dr Pope rather.

7 Q. We do indeed. If we go over the page [INQ10552-13], we can see that
8 he prepared a chart, and if I can endeavour to do
9 justice to the technical expertise that no doubt
10 underpins that chart, the relevant question, when
11 considering the effect of the bomb and the pressure that
12 is generated by the shockwave that comes out of it
13 first, is the question of what is called there "peak
14 overpressure" that is to say the highest point of the
15 pressure created by the bomb. Is that right?

16 A. That's correct. If you look at the graph and you see
17 before you've got the vertical line, labelled "peak
18 overpressure", you have a horizontal line, that
19 horizontal line is continued as a dotted line as you
20 move across the graph.

21 The initial horizontal line is the normal pressure,
22 such as the room that we're in now. Then the bomb is
23 detonated and you see you've got an almost instantaneous
24 rise in what we call the peak overpressure, ie the
25 pressure over the normal pressure, and that is

1 a function of the type of bomb, how much explosive you
2 have.

3 Then you see the pressure decaying and, as you move
4 away from the bomb, the pressure will drop down: but you
5 see there's actually an area underneath the curve before
6 it drops back to normal level and that gives you an
7 indication of how high and for how long. So larger
8 bomb, different types of explosive, up high for longer,
9 stays higher longer, drops down at a lower rate.

10 Then you'll notice the curve drops below atmospheric
11 pressure. This means that you've then displaced --
12 you've had the explosive, you've displaced the air,
13 you've created a subatmospheric environment so that air
14 and debris can rush back into that, and in some
15 explosives you'll see that, you'll see a bang, a flash,
16 and then you'll see material being sucked back and the
17 creation of a -- of, like, a mushroom cloud.

18 Q. What is the danger or what is the damage done by the
19 high pressure shockwave? Is it strong enough to move
20 a physical object, for example, a person, backwards, or
21 does its damaging effects lie in a different way?

22 A. The damaging effects lie in a very different way, and
23 this is what we call primary blast injury and, as
24 described previously, it happens very, very quickly and
25 the pressure becomes very high in a very short space of

1 time. So that energy, if it's delivered to a person, is
2 what we call coupled to systems within the person. So
3 it goes into the person and then interacts with
4 different organs in the body in different ways.
5 So air-containing organs, particularly the lungs,
6 are very, very vulnerable to this effect. What this
7 energy does, it causes movement and tearing of the
8 organs right down to very small structures. So within
9 the lungs, the very small air sacs known as alveoli at
10 the end of the air passages -- and there are millions of
11 these in the lungs -- get moved around and torn which
12 causes bleeding.

13 There are other effects on other organs which are
14 less well-defined, but there is definitely a primary
15 effect of a blast wave on the brain, and in water
16 explosions, if people are in the water and the top half
17 of the body is outside the water, the coupling with the
18 water and the energy hitting the body causes blast bowel
19 injury as well.

20 Q. So the most damaging but perhaps hidden effect of the
21 bomb will be this high pressure shockwave?

22 A. That will be the initial one, particularly on things
23 like lungs. Then you have all that follows.

24 Q. What follows behind the high pressure shockwave?

25 A. Well, behind that, from the graph we saw the pressure is

1 up and, for a while, you get displacement of air, and
2 you get a mass movement of air which effectively moves
3 out from the explosion. You've got the initial movement
4 that compresses air and gives you the shock front, and
5 then you've got other air and combustion products moving
6 behind that.

7 Q. When you say "combustion products", do you mean parts of
8 the bomb itself?

9 A. Yes, I do. I mean the heat energy released by the
10 explosion, and that then follows behind the blast front
11 in the form of what's called a wind, the blast wind, and
12 that is the force that can pick people up and throw
13 them, and then, in addition, you get the effect of
14 energised fragments.

15 Now, these can be fragments that have been
16 surrounding the bomb as part of its casing. In the case
17 of these bombs, you're talking about bits of the
18 rucksack, not metal. But it can also be fragments from
19 within the environment, so coins, glass from windows,
20 keys in people's pockets. Material that is picked up
21 and thrown, energised, causes what we call secondary
22 injury.

23 So in that short space of time you've got primary
24 injury from the shockwave, the initial shock, secondary
25 injury from the fragments, and tertiary injury from the

1 mass movement of air throwing people.

2 Q. At the same time, are enormous quantities of heat
3 generated?

4 A. They are and the heat is delivered by a number of
5 mechanisms. There's the heat generated from the
6 explosive detonating which can cause a fireball. In
7 addition, you have radiant heat, a bit like the effect
8 of heat radiating from the sun, which can be felt by
9 people further away from the explosion, and also items
10 that are caught up in the blast, furnishings, clothing,
11 hair, people, can be set on fire, depending on the
12 duration and temperature of the blast.

13 Q. We spoke earlier of the variants, that is to say the
14 different issues you would have to consider when forming
15 a view as to the likely injury being caused by a given
16 bomb.

17 A. Yes.

18 Q. One of the most important variants is, as you indicated
19 earlier, the nature of the surrounding circumstances;
20 for example, whether or not the bomb is detonated in an
21 open space or in a confined condition, such as, in this
22 case, an Underground carriage and, to a lesser extent,
23 the top level of a bus.

24 Is the nature of the surrounding environment such
25 that there can be very different outcomes, depending on

1 whether or not the bomb is detonated in an open space or
2 in a confined quarter, in terms of the likely
3 fatalities?

4 A. Very different outcomes. If you look at an open space,
5 the energy's got somewhere to go. If you look at
6 a closed space, it's trying to find its way out and
7 people are between it and its ability to vent, so that,
8 in a closed space such as an Underground carriage or
9 a bus or a train carriage, you're far more likely to get
10 people exposed to the effects of the initial high
11 pressure wave for longer and more often, because the
12 wave will bounce off different surfaces until it vents,
13 until a roof gives or windows are blown out. So you'll
14 get a higher number of people suffering from primary
15 blast injury such as blast lung, whereas, in an open
16 environment, you wouldn't expect as much of that,
17 because someone who was close enough to a bomb to be
18 suffering from that you'd expect to be close enough to
19 be disrupted by the bomb, which is not the case in the
20 Underground carriages, and then the construction of the
21 bomb, whether it has fragments associated with it such
22 as ball bearings or other items associated with it, will
23 also alter the characteristics of the injury.

24 Q. Tragically, this is a well-researched area --

25 A. Yes.

1 Q. -- and there is literature which sets out the increased
2 likelihood of fatality if a bomb is detonated in
3 a confined space.

4 Do you set out some of that material in your report?

5 Can we have [INQ11065-30], please? Paragraph B4.3 you
6 refer to an author called Arnold who reviewed the
7 outcome of 29 incidents which collectively produced
8 8,364 casualties and 903 immediate deaths, and he and
9 his colleagues analysed the relative mortality for the
10 three types of bombing and noted that they differed
11 depending on the environment.

12 We can see there, can we not, that the probability
13 of fatality increases very rapidly in confined space
14 explosions?

15 A. It certainly does, and there's the higher incidence of
16 the primary blast injury as we've just discussed.

17 LADY JUSTICE HALLETT: Do I take it that this material will
18 be readily available on the internet to would-be
19 bombers?

20 A. The Arnold reference, my Lady, is in the open access
21 literature, because that's actually a medical paper
22 looking at the medical response, but there is a lot of
23 material out on the internet that tells you how to make
24 a better bomb.

25 MR KEITH: You have referred, Colonel, to primary, secondary

1 and tertiary injuries. Can we just explore those
2 concepts in a little more detail, because they've been
3 addressed at some length in generic report? Can we
4 have, please, [INQ10552-26]? This is an extract from that
5 part of the generic report that was prepared by
6 Dr Kirkman. We can see there the heading "Primary Blast
7 Injuries", and under that heading a reference to "blast
8 lung", which you have already described to us.
9 You've described how blood flowing through the
10 injured areas of the lung fails to collect sufficient
11 oxygen once it has been damaged by the explosive force,
12 in particular, the high pressure shockwave.
13 What is the clinical effect of the damage on the
14 lung created in that way?
15 A. Well, the lung -- you can consider the lung as a sponge.
16 It starts off with wide air passages and they divide and
17 divide and divide down until you get these very small
18 air sacs. You get two main effects.
19 The first effect, when the energy wave or the blast
20 wave -- the shockwave hits the person, you get rapid
21 movement and disruption of the structure, which causes
22 bleeding. If you've got bleeding into an area of the
23 lung and the little air sacs fill up with blood, it
24 means you can't get air into them and it means that
25 those little air sacs are not available for the normal

1 function of exchanging oxygen and carbon dioxide.
2 So for the person, they effectively are operating on
3 a smaller volume of lung, or a smaller amount of lung,
4 so the effect of them is to be short of oxygen, and that
5 can be manifest by the person, if they're conscious,
6 saying they've got difficulty breathing and, in
7 observers watching, the fact that they're struggling for
8 their breath.

9 In addition, this process continues the same way as
10 if you go over and sprain your ankle, it's not as
11 swollen immediately as it will be later. The bleeding
12 can continue and the blood itself being released into
13 the substance of the lung is very irritating, and this
14 sets up subsequent inflammatory reactions within the
15 lung, so that what you're seeing is a progressive
16 illness. So someone whom you see soon after a bomb who
17 appears to be okay, although albeit a bit distressed,
18 their respiratory function can deteriorate very rapidly,
19 and the literature talks about up to 24 hours.
20 Our experience has been we see it rapidly within
21 a matter of -- a matter of hours.

22 Q. Does that explain why, counterintuitively, a casualty
23 may be conscious, may indeed even be alert, may not
24 appear to have life-threatening injuries, but may
25 subsequently succumb as a result of explosive

1 detonation?

2 A. That's certainly one of the mechanisms that would
3 account for that.

4 Q. The report shows, doesn't it, that there's a substantial
5 body of evidence to indicate that, when a blast occurs
6 in a confined space -- and the particular example
7 referred to is the Madrid train bombings -- blast lung
8 is then found in a significant proportion of seriously
9 injured casualties?

10 A. Yes.

11 Q. If a survivor -- that is to say someone who is not
12 instantaneously killed -- suffers from severe blast
13 lung, are they likely to have also, in addition,
14 a number of other very severe conditions or injuries?

15 A. Usually you would expect that. You would look to other
16 injuries as a marker for severity of the blast exposure.
17 It doesn't always follow.

18 It's described before that a blast wave can bounce
19 off substances -- wrong, can bounce off surfaces, and
20 blast waves can concentrate in particular areas of
21 a room, so blast going to those walls might end up
22 coming back and concentrating in a corner, blast waves
23 going to another part of the room might cancel each
24 other out. So you get differential effects.

25 What this means is that somebody who appears to be

1 sheltered from the fragments, fire and other effects of
2 the explosion, and so does not show all the other
3 indications of being close to an explosion, could
4 actually be killed by a wave going floor, ceiling, wall,
5 back down to where they're sheltering, and you see that
6 sometimes in people who have been sheltering in bunkers
7 or sheltering behind walls, who have been killed as
8 a result of being hit by the sort of concentrated effect
9 of the blast wave.

10 So, yes, you would expect other injuries and we look
11 for markers of other injuries when we're interpreting
12 whether we think somebody has or has not got blast lung,
13 but it's not a guarantee.

14 Q. In this regard, you referred earlier to material from
15 Northern Ireland.

16 A. Yes.

17 Q. Could we look, please, at that? It's [INQ11065-87].
18 Was there research conducted into fatalities
19 following explosions in Northern Ireland between 1970
20 and 2002 and, of course, tragically a very large number
21 of fatalities, was that research consistent with the
22 views of yourself and your colleagues and, no doubt, you
23 drew upon it as well, to this effect: that a very
24 significant proportion of those who are injured but who
25 do not instantaneously die subsequently succumb because

1 of blast lung?

2 A. It did, but as we've discussed before, it also depended
3 on the nature of the injuries, so that, if you look
4 at -- if you look at people who are killed in civilian
5 environments from bombings, the likely causes of death
6 involved chest injury, including blast lung, head injury
7 from either blast effects or fragment effects, or major
8 bleeding from amputations.

9 But certainly, the Northern Ireland work represents
10 a lot of different types of bombings, individual
11 bombings, car bombings, mortarings, barrack bombs, but
12 the published papers that we were able to access and the
13 subsequent help we've had from the State Pathologist's
14 Department in Belfast led by my colleague
15 Colonel Clasper has helped to add weight to that. It's
16 allowed Colonel Clasper's team to look in more detail at
17 some of the results and confirm the sort of time-lines
18 and likely causes of death in these people.

19 Q. You've referred to primary blast injury by particular
20 reference to blast lung --

21 A. Yes.

22 Q. -- and you referred in passing to the damage that could
23 be done to other organs in the body.

24 Could you just summarise the position in that regard
25 for us? In relation to the heart, can close proximity

1 to an explosive device have a profound effect on the
2 circulatory system?

3 A. It can, and it can by a number of mechanisms.

4 One mechanism, it can impact on the nerves that
5 control the rate of the heart, so it can make the heart
6 go very, very slow or indeed stop.

7 Another mechanism, it can cause air bubbles to form
8 in the circulation of the heart and the coronary
9 circulation which may be a direct effect due to the
10 pressure changes we've described or it may be an effect
11 of air being forced into the coronary circulation from
12 injured lungs.

13 A third effect, which is, I think -- we think is
14 less well understood is the actual effects on the heart
15 muscle and the fact that, after being hit by a blast
16 wave, the heart muscle clearly -- if I say "don't like
17 it", I don't mean that to sound trite. It stuns it, and
18 it doesn't -- initially after the explosion, it doesn't
19 beat in the way you would like it to, the way you would
20 expect it to, and all of that can add up to an inhibited
21 heart which is not working as well, therefore not
22 pushing blood round the body as well and, therefore, for
23 a person who's already short of oxygen from the other
24 mechanisms we've described, they are doubly jeopardised
25 because the heart's not functioning the way we'd like it

1 to and, indeed, some of those mechanisms, such as air in
2 the coronary vessels, can result in the heart stopping.

3 Q. In these proceedings, my Lady has heard a number of
4 witnesses describe clinical symptoms -- although they
5 are lay witnesses, clinical symptoms such as falls in
6 blood pressure, rapid shallow breathing. As you
7 observed earlier, witnesses reported also, or made
8 reference to people saying that they were unable to
9 breathe.

10 Are these all symptomatic, therefore, not just of
11 blast lung, but also of possible damage to the heart as
12 well?

13 A. I think what you're describing is the constellation of
14 injuries that would be consistent with explosive injury.
15 Clearly, other injuries, an illness, can cause the same
16 sort of signs and symptoms in people and have the same
17 signs and symptoms reported, but in the context of these
18 attacks, it would be reasonable to say that these -- the
19 injuries you're describing and the effects that you're
20 describing to me are consistent with blast-related
21 injury.

22 Q. What about in relation to the brain, other deleterious
23 effects on the brain from close proximity?

24 A. There are. It's not as well-defined. You can
25 certainly -- you can get injuries to the brain,

1 including bleeding, including the brain being shaken
2 around within the skull, causing damage to a number of
3 the connecting areas within the brain. You can get
4 injury to the brain from people being thrown and banging
5 their heads, such as being thrown out of a window onto
6 the floor, and there also seem to be effects, which are
7 just now being disentangled, of the impact on the body
8 sending shock waves up and around the body within the
9 circulatory system and within the circulatory system of
10 the spinal fluid. But those mechanisms are not
11 well-understood.

12 Q. The evidence in these proceedings has shown that a very
13 significant number of people suffered amputation, in
14 particular of the lower limbs.

15 Is that type of injury redolent of primary injury or
16 is that generally characterised as a secondary injury,
17 that is to say as a result of either objects colliding
18 into the person or the person themselves moving round
19 the carriage or the environment in such a way as to
20 cause further injury?

21 A. I think the mechanism of amputation is also, with our
22 experience in Afghanistan and Iraq, being looked at
23 again. Amputation could be caused by the blast effect
24 and with -- when I described earlier the effect of the
25 bomb detonating, when we have tongues of what look like

1 lightning coming out from the bomb, that would be
2 consistent with some of the amputation mechanisms we've
3 seen, where it looks like the limb has been burned away.
4 In addition, one of the theories in the published
5 open literature is that the initial shockwave causes
6 breaking of the bones of the limb and then the
7 subsequent blast wind, the mass movement of air, helps
8 move -- ends up pulling that limb away. There has been
9 experimental work, particularly looking at people
10 ejecting from aircraft and injuries from ejection from
11 aircraft, which would support that, but equally, there's
12 other suggestions that limbs are removed by large
13 fragments or, indeed, an effect of the primary blast
14 wave, the heat and the mass movement of the person.
15 So had you asked me that question in 2007, I would
16 have categorically said, "Yes, it's like this". Our
17 more recent experience means that we are questioning the
18 underlying mechanisms. But the believed mechanisms are
19 those we've stated in the report, yes.

20 Q. That's primary and secondary?

21 A. And tertiary.

22 Q. Tertiary you've just come on to now. Tertiary is, as
23 you've described earlier, blunt acceleration of a person
24 or an object causing further damage by colliding with
25 a wall or some other structure?

1 A. Yes.

2 Q. That's of particular relevancy in this case, of course,
3 because of those persons who were blown out of the top
4 deck of the bus.

5 A. It certainly is. People blown out of the top deck of
6 the bus, who were blown potentially hitting the
7 structure of the bus as they were thrown and then ending
8 up hitting the floor, have been displaced and displaced
9 a considerable distance. So that's exactly the sort of
10 person who would be vulnerable to tertiary injury.

11 Q. Then quaternary injury is burns. Is that right?

12 A. Yes, after tertiary injury, the definitions in the
13 literature get inconsistent, but it's fair to say that
14 burn injury has been ascribed to quaternary injury.

15 Q. And so, in summary, before the short adjournment, a bomb
16 detonating in close proximity will cause, and if you're
17 close, very close, will particularly cause injuries in
18 a number of different ways -- primary, secondary,
19 tertiary and quaternary?

20 A. Yes.

21 Q. That was a very -- that is a very significant feature of
22 the effect of explosive injury and explosive detonation
23 in this case, is it not?

24 A. Certainly in confined and closed environments it's
25 a very significant feature that you will see this

1 enormously complex range of mechanisms operating on the
2 victim.

3 Q. At its most basic level, because injuries will be caused
4 in a myriad way -- a different number of ways, that
5 adversely affects the likelihood of survivability
6 because there is a combination of injuries caused?

7 A. Certainly, the more energy you're hit with, the more
8 injuries you have and the greater complexity of those
9 injuries and, indeed, the subsequent interaction of the
10 effect of those injuries means it makes it more
11 difficult for that person to survive.

12 MR KEITH: My Lady, is that a convenient moment?

13 LADY JUSTICE HALLETT: Certainly, 2.05.

14 (1.00 pm)

15 (The short adjournment)

16