



Report

Scottish Police Services Authority

HM Advocate v. Ross Monaghan

Mr Andrew Rennison MSc

Issued 26 January 2016

FSR-R-617

1. EXECUTIVE SUMMARY

- 1.1.1 On 13 January 2010 an incident occurred in the car park of ASDA at 1 Monument Drive, Glasgow in which Mr Kevin Carroll was shot a number of times – resulting in his death.
- 1.1.2 As part of the investigation a jacket was submitted to the Scottish Police Services Authority (SPSA) forensic science laboratory in Glasgow. The police requested the jacket be examined for the presence of firearms discharge residue. The laboratory performed the examination and found one particle of discharge residue. It then compared the elemental composition of the particle to materials found on cartridges recovered from a number of locations.
- 1.1.3 Mr Ross Monaghan was prosecuted for the murder of Mr Carroll. He was acquitted.
- 1.1.4 The judge ruled that the evidence in relation to the discharge residue was inadmissible. In doing so he made comments which could be construed as criticising the performance of the SPSA. In particular he commented on what he considered to be:
- a. The failure of the SPSA to comply with its own procedures; and
 - b. The inappropriate role of police officers in influencing the content of reports produced by the SPSA.
- 1.1.5 The SPSA, as a public authority providing services to the Criminal Justice System, was particularly concerned with the judge's comments. As a result it asked me to perform an independent review its performance in this case.
- 1.1.6 I have reviewed the performance of the SPSA in this case and reached the following conclusions.
- a. The SPSA performed a comparison which would not routinely be performed - but which was not prohibited.
 - b. The comparison was performed at the request of the police and against the advice of the SPSA scientists.

- c. There was nothing inherently wrong in the police requesting the comparison.
- d. There was nothing improper in the scientists performing and reporting the comparison.
- e. The report issued by the SPSA scientists, taken in conjunction with the precognition and testimony, provided an accurate statement of the evidence.
- f. The evidence provided by the SPSA was not, other than reporting comparisons undertaken at the request of the police, affected by the police requests.
- g. No attempt was made by the police or management of the SPSA to influence the content of the evidence provided.

1.1.7 I have made a number of comments and recommendations in relation to way in which the SPSA approached this case. These do not relate to major issues. I have concluded that the performance of the SPSA in this case was to the expected standard. The judge's criticisms appear to have arisen as a result of a number of statements in evidence which, taken together, provided an unintended and misleading impression of what had been done.

2. PURPOSE

- 2.1.1 This report sets out the results of a review, by the Forensic Science Regulator (the Regulator), on the performance of the Scottish Police Services Authority (SPSA or the Authority) in the case of *HM Advocate v. Ross Monaghan*.
- 2.1.2 The review was requested by the Authority and was undertaken in accordance with Terms of Reference¹ agreed by the Regulator and the Authority.

3. ASSISTANCE

- 3.1.1 The review and the preparation of the report were undertaken with the assistance of officials from the Forensic Science Regulation Unit of the Home Office.

4. INTRODUCTION

4.1 The Forensic Science Regulator

- 4.1.1 The position of the Forensic Science Regulator was proposed in HM Government's response [1] to the report² "Forensic Science on Trial" [2]. The creation of the position was announced by Meg Hillier MP (Parliamentary Under-Secretary of State at the Home Department) on 12 July 2007.
- 4.1.2 The role of the Regulator was described, in a Written Ministerial Statement [3], as follows:
- "... will be to advise Government and the Criminal Justice System on quality standards in the provision of forensic science. This will involve identifying the requirement for new or improved quality standards; leading on the development of new standards where necessary; providing advice and guidance so that providers will be able to demonstrate compliance with common standards, for example, in procurement and in courts; ensuring that satisfactory arrangements exist to provide assurance and monitoring of the standards and reporting on quality standards generally."
- 4.1.3 Clearly the role focuses on quality standards within forensic science. It does not deal with market or economic regulation nor does it deal with what could be

¹ The Terms of Reference are set out at paragraph 6.2 below.

² By the House of Commons Select Committee on Science and Technology.

considered service delivery standards. In performing this role I am supported by the Forensic Science Advisory Council (FSAC).

4.1.4 Although my remit does not extend to Scotland or Northern Ireland, their respective authorities have agreed to join my work, and the FSAC, as full partners and, accordingly, to implement the resulting standards in their own jurisdictions. This will beneficially ensure the existence of UK-wide standards in forensic science.

4.1.5 It is a feature of the role that I am expected to investigate complaints or concerns raised as to the quality of forensic science supplied to the Criminal Justice Systems in the UK.

4.2 The Scottish Police Services Authority

4.2.1 The SPSA was a non-departmental public body established by the Police, Public Order and Criminal Justice (Scotland) Act 2006.³ It was not part of a police force and had an independent governance structure as determined by the above Act.⁴

4.2.2 The SPSA was under a duty to provide certain support services to the police.⁵ These services included “the development and provision of a national forensic science service”.⁶ The SPSA therefore provided services to all police forces in Scotland through forensic science laboratories based at Glasgow, Edinburgh, Dundee and Aberdeen.

4.2.3 The Scottish Parliament has enacted legislation⁷ which transferred the functions of the SPSA to the new Scottish Police Authority (SPA). The SPA is a non-departmental public body with the governance structure set out in the Act.⁸

4.2.4 The Act sets out the SPA role in relation to forensic science.⁹

“The Authority must provide forensic services to the Police Service, the Police Investigations and Review Commissioner and the Lord Advocate and procurators fiscal.”

³ This is an Act of the Scottish Parliament.

⁴ Schedule 1 Police, Public Order and Criminal Justice (Scotland) Act 2006.

⁵ Section 3 Police, Public Order and Criminal Justice (Scotland) Act 2006.

⁶ Section 3(2)(f) Police, Public Order and Criminal Justice (Scotland) Act 2006.

⁷ Police and Fire Reform (Scotland) Act 2012.

⁸ Schedule 1 Police and Fire Reform Act (Scotland) 2012.

⁹ Section 31 Police and Fire Reform Act (Scotland) 2012.

4.3 Firearm Discharge Residue

4.3.1 When a firearm is discharged there are two separate events. The first is the detonation of a primer (generally a small amount of inorganic explosive) caused by the firing pin striking the cartridge. The primer detonation causes the detonation of the larger propellant charge (generally an organic explosive). It is the detonation of the propellant charge which propels the bullet from the firearm [4].

4.3.2 These two detonations cause material to be expelled from the firearm. These include the following.

- a. The material produced by the detonation of the primer (including microscopic metal particles).
- b. The material produced by the detonation of the propellant.
- c. Non-combusted components of the propellant.

4.3.3 The person who fired the weapon, and people in the immediate vicinity, will be contaminated with this material to varying degrees.

4.3.4 Forensic science laboratories examine items for the presence of the inorganic or organic residues.

5. BACKGROUND

5.1 The Investigation

5.1.1 On 13 January 2010 an incident occurred in the car park of ASDA at 1 Monument Drive, Glasgow in which Mr Kevin Carroll was shot a number of times – resulting in his death.

5.1.2 The resultant homicide investigation was, clearly, a large operation and involved the examination of a number of locations and items by forensic scientists from the SPSA.

5.1.3 The item of relevance to my review was a jacket identified as production 1135/10.

5.2 Production 1135/10

Submission to the Laboratory

- 5.2.1 On 30 July 2010 police searched premises at [REDACTED] [REDACTED], Glasgow. During that search the police found, what has been described as, a black Stone Island jacket.
- 5.2.2 On 9 August 2010 the jacket, identified as production number 1135/10, was submitted to the SPSA forensic science laboratory in Glasgow. The police requested it be examined for the presence of firearm discharge residue (FDR).¹⁰
- 5.2.3 The SPSA scientists¹¹ involved in this case were Ms Alison Colley BSc MRSC and Ms Laura Wilcock BSc. Both were, at the time the report was issued, authorised forensic scientists under the provisions of s280(4) Criminal Procedure (Scotland) Act 1995.

The Examination

- 5.2.4 The jacket was examined for FDR and a number of particles of interest were found. Only one, on the front of the jacket, had an elemental composition and morphology which allowed the scientists to identify it as FDR.
- 5.2.5 There was then a request, from the police, for the elemental composition of this particle of FDR to be compared against FDR recovered from cartridges found at the scene of crime and elsewhere.
- 5.2.6 The elemental composition of the single particle of FDR and the materials recovered from the cartridges were determined as part of the routine examination of the items. It follows that the requested comparison required no new analytical work and only the examination of results which already existed and were part of the case record.
- 5.2.7 The result of the examination and comparison was a report (in terms of s280 Criminal Procedure (Scotland) Act 1995) written by the two scientists referred to above and dated 7 October 2010.

¹⁰ The SPSA procedures search for inorganic material.

¹¹ Two scientists were involved in the examination due to the requirement of Scot's Law for corroboration of evidence.

5.2.8 The report sets out the conclusion in relation to the presence of FDR as follows.

“PBR No 1135/10 “BLACK “STONE ISLAND” JACKET” LABELLED ”In wardrobe front bedroom, [REDACTED], [REDACTED], [REDACTED] at:11-25 on 30/7/2010”

The article was examined when it was found to be a black “Stone Island” jacket with a hood.

The following areas were sampled;

Right Sleeve

Left Sleeve

Front

Front right pocket

Front left pocket

Interior

Rear

The seven samples were examined when the presence of a single particle of percussion primer firearm discharge residue was detected in the sample taken from the front of the jacket.

The remaining six samples were examined for the presence of percussion primer firearm discharge residue with a negative result in each case.”

5.2.9 No comment was made as to the evidential significance, if any, of the presence of a single particle of FDR on the jacket.

5.2.10 The report proceeds to describe a number of cartridges submitted to the laboratory from two sources. The cartridges were from (a) the scene of the offence and (b) a location of interest in Coatbridge. It then sets out that:

“At the request of ‘B’ Division, Strathclyde Police we compared the elemental composition of the single particle of percussion primer firearm discharge residue recovered from the “BLACK”STONE ISLAND” JACKET” to the elemental composition of the cartridges.”

5.2.11 The results of the comparisons were then set out as follows.

“Conclusion:

- The single particle of percussion primer firearm discharge residue recovered from the “BLACK “STONE ISLAND” JACKET” and the percussion primer firearm discharge residue recovered from the handgun cartridges show similarities such that they could be considered to be of a similar type.
- The single particle of percussion primer firearm discharge residue recovered from the “BLACK “STONE ISLAND” JACKET” and the percussion primer firearm discharge

residue recovered from the revolver cartridges showed elemental differences. In our opinion there is insufficient information available to comment further as only a single particle was detected.”

5.3 Prosecution

5.3.1 Mr Ross Monaghan was charged with the murder of Mr Carroll. He was acquitted.

5.4 Precognition

5.4.1 In late February 2012 precognition¹² occurred with the Prosecution which was attended by both scientists named above.

5.4.2 On 19 March 2012 precognition occurred with the Defence which was attended by Ms Colley.

5.5 Admissibility

Hearing

5.5.1 The Defence raised an objection to the admissibility of the FDR evidence under the provisions of s79(2) Criminal Procedure (Scotland) Act 1995. The judge, The Honourable Lord Brailsford, conducted a hearing, in the absence of the jury, on 25 April 2012 to hear counsel and scientists on this issue.

5.5.2 Mr Ian McSporran, Advocate Depute, appeared for the Crown and Mr Ogg QC for the Defence. The scientific evidence was presented by Ms Colley.

5.5.3 During the hearing the Advocate Depute covered (a) the potential significance of a single particle of FDR as the last remnant of a larger population and (b) the issues surrounding the comparison of the single FDR particle found on the jacket to material recovered from the cartridges. The Defence concentrated on (a) the evidential significance, if any, of a single particle of FDR and (b) possible sources of contamination. The Defence did not attack the comparison of the FDR particle to the cartridges.

¹² A precognition is a statement taken from a witness to a crime before the case goes to trial. It is different from other witness statements because it cannot be put to the witness at the trial. In addition to the statement of the witness, precognitions often contain the comments of the precognoscer (the person taking the statement) as to how the evidence fits in with the rest of the case. Precognitions cannot be used in evidence nor are they recoverable by the other side in proceedings.

5.5.4 The Defence had a scientist present at the hearing but decided it was not necessary to have her provide testimony.

Ruling

5.5.5 In his ruling on the admissibility of the FDR evidence the judge reviewed the relevant evidence as follows.

[6] The fact of the recovery of the jacket, the examination of the jacket, the methodology of the witness's scientific examination of the jacket and of an article found thereon and the integrity of the scientific findings were not the subject of challenge by the Defence. No more requires to be said about those matters.

[7] The sole matter of controversy concerned the conclusions stated in the report, Crown production 99. The factual conclusion for the report, which I repeat was not challenged, was that examination of the jacket detected "the presence of a single particle of percussion primer firearm discharge residue". As stated in the report, the conclusion drawn in relation to the finding of that particle was as follows: "The single particle of percussion primer firearm residue recovered from the "BLACK STONE ISLAND JACKET" and the percussion primer firearm residue recovered from the handgun cartridges show similarities such that they could be considered to be of a similar type". On the face of it that conclusion is a finding of evidential value to the Crown potentially linking the particle of FDR on the coat to a cartridge used in the crime charged in the libel.

[8] The matter did not however rest with that conclusion. In a conspicuously fair piece of examination in chief, the Advocate Depute having taken the witness to the conclusion I have just quoted asked the question if that conclusion was in the terms that would normally be used in a report where the physical finding was of a single piece of FDR. The witness replied with commendable candour, that it was not. She further explained that within the SPSA, there was a protocol which required that when the finding was of a single piece of FDR, no conclusion could be drawn and any report would be confined to recording the finding of the particle. The reason for this protocol was that the elemental composition of a single particle did not enable any meaningful scientific conclusion to be drawn by way of scientific comparison with the elemental composition of any cartridge. In simple terms, as the witness accepted in questions put to her by myself, it was unsafe to draw any scientific conclusions from the presence of a single particle of FDR ...

[9] Given that the evidence in Court of Ms Colley did not match, insofar as any conclusion which could be drawn from physical findings were concerned, the written conclusions in her judicial report, no. 99 of process, I asked for that inconsistency to be explained. Ms Colley, again displaying commendable candour, informed the Court that she had been requested to frame her conclusions in the way she did by a Detective Superintendent involved in the inquiry in this case. That request was subsequently confirmed by her superiors in the SPSA. The result of this

process was that the conclusions of the report were expressed in terms which were contrary to the protocol in respect of findings of single particles of FDR in force in the SPSA and, further, were not supported by the author of the report in giving of her evidence in Court. I am bound to say that I found this evidence to be disturbing. My understanding, which was confirmed by Ms Colley in response to a direct question from myself, is that the SPSA, notwithstanding its name, is an independent body, distinct from the police and that its reports are intended to constitute independent expert statement of opinion. If that is the case and if the integrity of the SPSA is to be maintained then its reports must be expressed on the evaluation and consideration of scientific examination, free from any outside influence. No external body should be permitted to influence the conclusions that independent experts express to the Court.”

5.5.6 Having reviewed the evidence the judge concluded:

“[10] ... The correct interpretation to be placed upon Ms Colley’s findings, is no more than that a particle of FDR was found on the jacket. That of itself, in my opinion, is sufficient to answer the question raised in the minute in favour of the Panel. I will accordingly sustain the minute”.^{13 14}

5.5.7 The judge therefore ruled, at paragraph 12, that the FDR evidence was inadmissible.

5.5.8 The FDR evidence in this case can be viewed as addressing two separate issues. The first is the presence of FDR as evidence that the clothing may be linked to the discharge of a firearm and the second is the ability to support or exclude a link between the FDR to a particular discharge event (as provided by the elemental composition comparison between the particle and the cartridges). The judge appears to have concentrated on the latter as this was the issue being debated.

5.6 Expert Evidence

5.6.1 The comments of Lord Brailsford need to be viewed in light of the obligations placed, by law, on expert witnesses.

England and Wales

5.6.2 The responsibilities and obligations on expert witnesses have been the subject of significant consideration by the Courts in England and Wales.

¹³ The term “minute” refers to an application to the Court [5].

¹⁴ The term “Panel” means the defendant.

5.6.3 Perhaps the most quoted starting point is the judgment of Cresswell J in *National Justice Cia Naviera SA v. Prudential Assurance Co. Ltd (The Ikarian Reefer)* [1993] 2 Lloyd's Rep 68, 81- 82; [1993] F.S.R. 563; [1993] 37 E.G. 158; Times, March 5, 1993.

"The duties and responsibilities of expert witnesses in civil cases include the following:

1. Expert evidence presented to the court should be, and should be seen to be, the independent product of the expert uninfluenced as to form or content by the exigencies of litigation:

Whitehouse v. Jordan [1981] 1 W.L.R. 246 at 256, per Lord Wilberforce.

2. An expert witness should provide independent assistance to the court by way of objective, unbiased opinion in relation to matters within his expertise: *Polivitte Ltd. v. Commercial Union Assurance Co. plc* [1987] 1 Lloyd's Rep. 379 at 386, Garland J. and *Re J* [1990] F.C.R. 193, Cazalet J. An expert witness in the High Court should never assume the role of an advocate.

3. An expert witness should state the facts or assumptions upon which his opinion is based. He should not omit to consider material facts which could detract from his concluded opinion (*Re J*, supra).

4. An expert witness should make it clear when a particular question or issue falls outside his expertise.

5. If an expert's opinion is not properly researched because he considers that insufficient data is available, then this must be stated with an indication that the opinion is no more than a provisional one (*Re J*, supra). In cases where an expert witness, who has prepared a report, could not assert that the report contained the truth, the whole truth and nothing but the truth without some qualification, that qualification should be stated in the report: *Derby & Co. Ltd. and others v. Weldon and others*, The Times, 9 November 1990, per Staughton L.J.

6. If, after exchange of reports, an expert witness changes his view on a material matter having read the other side's expert's report or for any other reason, such change of view should be communicated (through legal representatives) to the other side without delay and when appropriate to the court.

7. Where expert evidence refers to photographs, plans, calculations, analyses, measurements, survey reports or other similar documents, these must be provided to the opposite party at the same time as the exchange of reports (see 15.5 of the Guide to Commercial Court Practice)."

5.6.4 The above judgment addressed the obligations on experts in the civil courts. In *R v. Harris, Rock, Cherry & Faulder* [2005] EWCA Crim 1980 the Court of Appeal (Criminal Division) made clear that the above obligations applied equally to experts in the Criminal Justice System.

5.6.5 In *R v. Bowman* [2006] EWCA Crim 417 the Court of Appeal (Criminal Division) took the opportunity to expand upon the obligations on expert witnesses in the Criminal Justice System.

“176 We desire to emphasise the duties of an expert witness in a criminal trial, whether instructed by the prosecution or defence, are those set out in *Harris*. We emphasise that these duties are owed to the court and override any obligation to the person from whom the expert has received instructions or by whom the expert is paid. It is hardly necessary to say that experts should maintain professional objectivity and impartiality at all times.

177 In addition to the specific factors referred to by Cresswell J. in the *Ikarian Reefer* [1993] 2 Lloyds Rep. 68 set out in *Harris* we add the following as necessary inclusions in an expert report:

1. Details of the expert's academic and professional qualifications, experience and accreditation relevant to the opinions expressed in the report and the range and extent of the expertise and any limitations upon the expertise.
2. A statement setting out the substance of all the instructions received (with written or oral), questions upon which an opinion is sought, the materials provided and considered, and the documents, statements, evidence, information or assumptions which are material to the opinions expressed or upon which those opinions are based.
3. Information relating to who has carried out measurements, examinations, tests etc and the methodology used, and whether or not such measurements etc were carried out under the expert's supervision.
4. Where there is a range of opinion in the matters dealt with in the report a summary of the range of opinion and the reasons for the opinion given. In this connection any material facts or matters which detract from the expert's opinions and any points which should fairly be made against any opinions expressed should be set out.
5. Relevant extracts of literature or any other material which might assist the court.
6. A statement to the effect that the expert has complied with his duty to the court to provide independent assistance by way of objective unbiased opinion in relation to matters within his or her expertise and an acknowledgment that the expert will inform all parties and where appropriate the court in the event that his opinion changes on any material issues.
7. Where on an exchange of experts' reports matters arise which require a further or supplemental report the above guidelines should, of course, be complied with.”

5.6.6 The approach set out in the above cases has been codified in Part 33 of the Criminal Procedure Rules [6].

Scotland

5.6.7 The responsibilities and obligations on expert witnesses do not appear to have been considered as frequently by the Scottish criminal courts. The Criminal Procedure Rules [7] do not contain provisions of the kind set in Part 33 of those Rules that apply in England and Wales.

5.6.8 In *Wilson & Anor v. Her Majesty's Advocate (Scottish Criminal Cases Review Commission Referral)* [2009] HCJAC 58 Lord Wheatley considered expert evidence.

"[59] The effect of expert opinion evidence can perhaps be described with more precision. The role of the expert witness, and his duties and responsibilities, have been subject to much judicial comment. In *National Justice Campania Naviera, S.A. v Prudential Assurance Co. Ltd ("The Ikarion Reefer [sic])* [1993] 2 Lloyd's Rep 68, Cresswell J listed a number of such duties and responsibilities, inter alia -

"1. Expert evidence presented to the court should be, and should be seen to be, the independent product of the expert uninfluenced as to the form or content by the exigencies of litigation.

2. An expert witness should provide independent assistance to the court by way of objective unbiased opinion in relation to matters within his expertise.

3. An expert witness should state the facts or assumptions on which his opinion is based. He should not omit to consider material facts which could detract from his concluded opinion.

4. An expert witness should make it clear when a particular question or issue falls outside his expertise."

[60] To this might be added a requirement that an expert witness should in particular explain why any material relevant to his conclusions is ignored or regarded as unimportant. Although the categories of duty and responsibility described by Cresswell J in the *Ikarion Reefer [sic]* case were concerned with civil matters, these rules are equally applicable to criminal cases.

[61] In addition, particularly in criminal cases, other duties and responsibilities have been recognised by the courts. For example, the court will expect in a criminal matter that an expert's report must state the facts upon which opinions are based, and if assumptions are made, these must be clearly identified. Reasons must be given for conclusions. Whether instructed for the prosecution or defence, the principal duty of an expert witness is to the court, and this overrides any duty he owes to the party which instructed him. Again, explanations should be given for the basis on which all relevant material is either accepted or rejected.

...

[63] It is abundantly clear therefore, and has been for many years in our courts, that an expert witness is not in the position to provide the court with a statement of unqualified conclusions about the question of fact on which his opinion bears. If he does so, the effect of his testimony may well be much diminished. In this context, it is perhaps worth noting that an expert witness is in a particularly privileged position in our courts. Prior to the decision, he is the only person permitted to express an opinion. Other witnesses must confine themselves to facts. Further, an expert witness will routinely rely on assumptions, hearsay evidence, his impression of testimony that he has not heard, and reports, statements and other secondary sources of information, all of which might be incompetent in a court of law if presented as factual evidence. It is therefore of the utmost importance that any expert witness carefully describes the source and assesses the worth of all material on which his opinion is based. We refer to the case of *Gilmour v H.M Advocate*, paras [79] and [80]”

5.6.9 Lord Wheatley, at paragraph 61 of his judgment, does not specify which courts he means but there are similarities to the judgements of the Court of Appeal discussed above.

5.6.10 The Scottish criminal courts approach to evidence is to focus on testimony as opposed to written reports. It follows that expert witnesses must, unless an alternative is specified, discharge their obligations by the process culminating in providing testimony.

5.7 Criticism of the SPSA

5.7.1 The ruling, at paragraph 9, could be interpreted as making a number of criticisms of the performance of the police and the SPSA in this case. These can, as far as relevant to the SPSA, be summarised as follows.

- a. Ms Colley was put under pressure by the police to word her evidence in a particular manner.
- b. The pressure applied by the police was subsequently supported by managers within the SPSA.
- c. As a result of the pressure Ms Colley issued a report setting out conclusions which she would not otherwise have given and which violated SPSA procedures.
- d. Ms Colley did not, in evidence before the Court, support the conclusions set out in the report.

5.7.2 The subsequent comments, in paragraph 9 of the ruling, in relation to the integrity of the SPSA reinforce the apparent criticisms.

5.8 The Review

5.8.1 The SPSA, as a non-departmental public body, providing services to the Criminal Justice System and, in particular, forensic science services recognised the need for it, and those acting on its behalf, to work to the highest standards of integrity. This was reflected in its policies [8] which required that:

“Staff of the SPSA should conduct themselves with integrity, impartiality and honesty”.

5.8.2 The apparent criticisms of the performance of the SPSA were therefore considered, by the SPSA, to be a serious matter. The management of the SPSA determined that the appropriate response was an independent review of its performance in this case.

5.8.3 I was invited to perform that review.

6. THE REVIEW

6.1 Nature of Review

6.1.1 The review followed the following sequence.

- a. The Terms of Reference were agreed with the SPSA.
- b. There was a meeting with SPSA managers to discuss the review.
- c. The SPSA provided documents of relevance to the review (including the ruling by Lord Brailsford, the relevant SPSA procedures and SPSA policies).
- d. The SPSA provided access to the case file and related papers (including SPSA scientists’ notes of the precognitions with the Prosecution and Defence).
- e. The SPSA arranged for a transcript of the hearing on 25 April 2012 to be provided.
- f. Ms Colley and Ms Wilcock each met with me, separately, to discuss the case and the issues arising from the judge’s ruling.
- g. The SPSA sought copies of the Prosecution record of the precognition.

- h. I contacted Mr Calum Ross, of Ross and Fox Solicitor's, who acted for Mr Monaghan to (a) seek access to the expert report it commissioned on the FDR evidence and (b) seek comment on the evidence.
- i. The information was considered and further clarification sought where necessary.
- j. A copy of the draft report was provided to the SPSA to allow comment on factual accuracy.
- k. A copy of the draft report was provided to the Crown Office to allow for comment.
- l. A final version of the report was prepared and presented to the SPSA.

6.1.2 The request for information to the Defence was limited to the information noted above as (a) the expert report would have been prepared with the expectation it may be deployed in evidence and (b) comments could be provided without intruding on legal privilege. In particular no request was made for access to the Defence precognition notes as such material would form an intrinsic part of the Defence strategy and would be subject to legal privilege.

6.1.3 No request for assistance or information was made to Strathclyde Police or the officers involved in this case. **REDACTED**

6.1.4 I considered it inappropriate to seek views from the judge.

6.2 Terms of Reference

6.2.1 The Terms of Reference for the review were agreed as follows.

- a. Consideration of SPSA's policies and procedures in relation to FDR evidence.¹⁵
- b. Whether any scientist involved in the examination of the FDR evidence in the *Monaghan* case felt they were subjected to any pressure, external or otherwise.
- c. Whether the FDR evidence produced was accurate and the process followed was in accordance with SPSA's procedures (including FDR and 'whistle blowing' procedures).

¹⁵ This requires a consideration of whether the relevant policies were complied with rather than an assessment of whether they established appropriate quality standards. That should be addressed as part of the accreditation process against ISO 17015:2005 [9] – see the discussion at 7.5 below.

- d. Whether SPSA's relevant procedures are accredited.

6.3 Reservation

General

6.3.1 The review was undertaken at the request of the SPSA and, as set out in the Terms of Reference, was to review the performance of the SPSA. **REDACTED**

6.3.2 **REDACTED**

6.3.3 In light of the above nothing in this report should be read as making a determination of actions taken by persons/organisations other than the SPSA. Nothing in this report should be considered a criticism of any person or any organisation other than the SPSA.

Testimony

6.3.4 In this report I have quoted from the transcript of the hearing on 25 April 2012.

6.3.5 It must be borne in mind, when considering the testimony of scientists, that statements made in court are subject to significant limitations. These include the following.

- a. The scientist is not in control of the process and has to respond to questions/issues raised by the advocate or judge.
- b. The manner in which questions/issues are raised may not be sufficiently clear.
- c. The scientist has a very limited period to consider the response and does not have the opportunity to consider the various ways in which the response might be interpreted.
- d. The scientist may have to explain complex issues to a "lay" audience.
- e. There is a risk that a sequence of questions, all answered honestly and fairly, may give rise to an overall result which is less clear than it might be had the scientist had the opportunity to explain the issues directly.

6.3.6 It follows that nothing in this report should be construed as a criticism of Ms Colley for her testimony. She addressed the issues raised honestly and comprehensively. The fact that there may have been some confusion over the evidence as a whole is a reflection of the system.

Scottish Police Authority

6.3.7 The relevant responsibilities of the SPSA have now been assumed by the SPA and the SPSA no longer exists. It follows that, in this report, I refer to the SPSA and its policies, procedure, accreditation etc. in the past tense.

6.3.8 This should not be taken as any indication of whether such policies etc. now exist within the SPA.

6.4 Prosecution Position

6.4.1 The Crown Office views the precognition process as a confidential one covering many aspects the approach to a case. It therefore decided that it would be inappropriate to provide copies of the precognition notes.

6.5 Defence Position

6.5.1 Mr Ross gave careful consideration to my requests for information. He concluded it would not be appropriate to provide a copy of the defence expert report as it had not been served on the prosecution, or otherwise deployed, in the case. He was, however, happy to provide views on the issues raised by this case.

6.5.2 The points made by Mr Ross were as follows.

- a. He has had dealings with Ms Colley prior to the *Monaghan* case and always found her to be a thoroughly professional and reliable forensic scientist.
- b. Through previous cases he was aware of her position on single particles of firearms discharge residue and the fact that she would attach no evidential significance to such particles.
- c. In the *Monaghan* case she was open and frank with him during the meetings prior to the trial and was clear that in this case that there was no evidential significance or conclusion that could be drawn from the single particle found on the jacket (production 1135/50).
- d. He has no criticism of Ms Colley or the SPSA in their handling of the FDR evidence in the *Monaghan* case.

- e. He had a defence expert examine and report on the FDR evidence but did not need to serve that report in light of the information and objective opinions given by Ms Colley.

7. CONSIDERATION

7.1 FDR Procedures

Purpose

7.1.1 The Terms of Reference cover whether the examination and reporting of the results in this case complied with the SPSA procedures.

7.1.2 As the issues which have arisen in this case relate to the reporting of the results, as opposed to the analytical procedures, I will focus on this area.

Procedures

7.1.3 The SPSA provided copies of the following quality management procedures covering the examination of items for FDR.

- a. Introduction to FDR Examination in SPSA FS(G) [10].
- b. Guidance for Liaison Staff - Acceptance of Test Items for FDR Examination [11].
- c. Receipt of Test Items at FDR Facility [12].
- d. Examination of Test Items for FDR [13].
- e. Note-Taking and Corroboration for FDR Cases [14].
- f. Removal of FDR from Spent Cartridge Cases and Samples from Bullets [15].
- g. Mounting of FDR Sample Tapes [16].
- h. Storage of Consumables and Equipment used for FDR Analysis [17].
- i. Transportation of Prepared FDR Samples [18].
- j. Preparation of Reference Samples [19].
- k. SEM/EDX Analysis for FDR Samples [20].
- l. Interpretation of FDR Data [21].
- m. Background Monitoring/FDR Facility [22].
- n. Counter Contamination Protocols/FDR Facility [23].
- o. Access to FDR Facility [24].

p. Preparation of FDR Kits [25].

Regulator's Standards

7.1.4 My approach to the implementation of standards involves the preparation the Codes of Conduct and Practice [26] which will be supported by additional documents covering specific technical fields or related issues. I have sought advice on the standards to apply to this area and a draft has been prepared ¹⁶ ¹⁷ covering the area of Gun Shot Residue (GSR) ¹⁸ [27]. ¹⁹

Single FDR Particle "Protocol"

7.1.5 An initial issue to address is whether there is a "protocol" for dealing with the location of one particle of FDR on an item. If such a "protocol" exists what is its nature?

Existence of a Protocol

7.1.6 At paragraph 8 of his ruling Lord Brailsford refers to the "protocol".

"... that within the SPSA, there was a protocol which required that when the finding was of a single piece of FDR, no conclusion could be drawn and any report would be confined to recording the finding of the particle"

7.1.7 It appears likely that the judge has used this term because it was used in the hearing both by advocates and Ms Colley.

7.1.8 Examination of the procedures listed in paragraph 7.1.3 above provided no evidence of the existence of such a protocol.

7.1.9 This matter was discussed with Ms Colley. She explained that there is no "protocol" in the sense of a written procedure; it is an understanding between the scientists in the SPSA who report FDR cases as to how to apply their professional judgment. She would not normally describe this as a "protocol". Her recollection was that the term "protocol" was first used by one of the advocates and she continued to use the term rather than divert the Court into a

¹⁶ The draft was prepared by Ms Angela Shaw of Principal Forensic Services. She was previously the consultant and lead scientist for FDR in the Forensic Science Service Ltd.

¹⁷ The work was commissioned and the draft provided before the review was initiated.

¹⁸ The terms Firearms Discharge Residue and Gun Shot Residue are both used in this field and the difference in terminology has no significance in relation to this report.

¹⁹ The draft is at the start of the process and may be altered by the development process before being agreed.

debate about the correct term. At that point there would be no indication, or reason to assume, the term would assume any significance.

7.1.10 The transcript shows that the first use of the term “protocol” was in a question by Mr McSporran (transcript page 13 at line 16). The first use of the term by Ms Colley was in response to that question (transcript page 13 at line 17).

7.1.11 The matter was also discussed with Ms Wilcock. She confirmed the position described by Ms Colley.

7.1.12 It appears that, rather than a formal protocol, the “protocol” referred to amounted to normal practice within the laboratory.

Nature of the Protocol

7.1.13 The operation of this “protocol” needs to be considered in relation to the two separate aspects of FDR evidence – the presence of the FDR and the comparison of the FDR to the cartridges.

7.1.14 The extent of the operation of the practice is not entirely clear. While the report made no comment on the evidential significance of the presence this was covered at both precognitions and in the testimony of Ms Colley. The significance of the comparison was commented upon in the report, precognitions and testimony.

7.1.15 In relation to the evidential significance of the presence of a single particle of FDR there is a logical basis for the approach. The presence of one FDR particle could result from a number of sources which do not include involvement in the discharge of a firearm. As a result the evidential significance of one particle, in isolation, as direct evidence of the person/item on which it was found being in the proximity of a discharging firearm is, effectively, nothing. Depending on the circumstances of the case the presence of a single particle of FDR may support other evidence in the case as part of the corroboration requirement in Scots Law. However, see the later discussion at 7.8.

7.1.16 In relation to the evidential significance of the comparison of a single particle of FDR against potential sources the basis, as it has been described by the judge, is less sound. In discussions both scientists made clear that the finding of similarities between the single particle of FDR and a potential source would be

virtually meaningless. However, it may be possible to exclude a potential source by such comparisons. This could inform a police investigation or, perhaps, assist a defence case. Given the evidential significance attached to one particle of FDR, the assistance provided to the defence would be very limited.

7.1.17 The operation of the “protocol” appears to have been poorly described in testimony. The operation of the protocol appears, in my view, better described as follows.

- a. The presence of one particle of FDR will be reported as a fact but, in the report, no comment will be made as to the evidential significance.
- b. The evidential significance of one FDR particle will be explained at precognition or in testimony.
- c. The comparison of the elemental composition of a single particle of FDR against possible sources will not normally be undertaken due to the limited evidential significance of one particle of FDR.
- d. The comparison of the elemental composition of a single particle of FDR against possible sources may be performed in some cases.
- e. Where such comparison is performed the report would make clear the significance of exclusion or the limited significance of non-exclusion.

7.1.18 The advice provided to me covering this area [27] discusses the reporting of results. It states as follows.

“6.10.2 Any positive finding must be declared in the report or statement however no evidential value shall be placed on single particles”²⁰

7.1.19 This text is supplemented by a footnote which is worded as follows.

“Single particles present a particular problem being the smallest detectable amount of residue it is possible to find. A single particle is defined as one particle found on an item or group of items from a single source. Background environmental surveys have shown the presence of single particles on public transport and on unarmed police officers. There has been an increase in the criminal use of firearms and a rise in the number and use of armed police officers. For these reasons no significance shall be place on single particles of GSR.”

²⁰ The term “evidential value” is used within the forensic science community in England and Wales but may not be appropriate in Scotland due to the views of the Scottish judiciary on the respective roles of witnesses and the jury.

7.1.20 There is, at a later point in the draft, a consideration of the significance of comparison.

“6.10.5.d. Residues cannot be associated with a particular gun or cartridge but there are differences in composition that can be used for comparison purposes. The differences can be used to eliminate a particular source.”

7.1.21 It appears that the SPSA position, particularly if my interpretation provided at 7.1.17 above is correct, is very close to the approach set out in the draft standard.

Submission

7.1.22 In discussions both scientists noted that, at the time of submission, they advised the police that, as a result of the period from the offence to the seizure of the jacket and the unknown history of the item in that period, an examination for FDR would be unlikely to provide evidence of any significance. **REDACTED**

Firearms Officers

7.1.23 The SPSA had two procedures which related directly to the submission of items to the laboratory for examination for FDR. Those were:

- a. Guidance for Liaison Staff - Acceptance of Test Items for FDR Examination [11].
- b. Receipt of Test Items at FDR Facility [12].

7.1.24 Neither of these procedures sets out issues to be addressed with the submitting officer. In particular they do not address the issue of the involvement of firearms officers.

7.1.25 In discussions with the scientists there was reference to a checklist used at the point of submission which addressed the issue but no record of this checklist was found in the procedures.

7.1.26 The position was clarified with the SPSA. While there was an “aide memoire” to assist the scientists this did not form part of the formal procedures for this type of examination.

7.1.27 In this case the scientists note they were unaware of the involvement of armed officers at the point the report was issued (see discussion at 7.6 below).

7.1.28 My Code of Conduct [26] includes the requirement that a practitioner must:

“6. Seek access to exhibits/productions/information that may have a significant impact on your findings.”

7.1.29 The advice provided to me [27] discusses the risks of contamination and the involvement of armed police officers.

“6.10.4 The provider shall ensure that staff include any information regarding armed police officers’ involvement in a case in the report or statement. Where armed police officers are known to have had contact with a suspect or attended and searched a scene the GSR findings shall be treated with caution and any significance taken in the context of the case. It is advisable that the residue produced by ammunition used by armed police officers is regularly tested together with samples taken from clothing, vehicles and premises relating to armed police.”

7.1.30 This text is supported by a footnote worded as follows.

“Armed police officers who regularly fire their guns when training are likely to be heavily contaminated with GSR. When making an arrest they may have considerable contact with a suspect and potentially can transfer high levels of GSR to a suspect. They may also transfer GSR to surfaces and items of clothing when searching an address.”

7.1.31 In relation to reporting the results the following statement is included.

“6.10.5.c. The possibility of cross-contamination shall be utmost in the mind of staff reporting GSR casework and every effort shall be made to establish the full circumstances of the arrest of a suspect and the history of an item prior to it being submitted to the laboratory.”

Examination

7.1.32 As far as can be determined from a review of the file the examination of the item was in accordance with the SPSA procedures.

Analysis

7.1.33 The case file records that the particles found were subjected to analysis by SEM/EDX.

7.1.34 A number of particles found on the jacket were not identified as FDR apparently because the results did not meet the criteria.²¹

7.1.35 One particle, recorded as originating from the front of the jacket, was described as “2µm nodular spheroid” and with the elemental composition lead, barium,

²¹ The case file does not include reasons for the decisions.

antimony, calcium, aluminium, silicon, iron and copper. This was identified as FDR.

- 7.1.36 The identification of FDR particles is considered in the procedures “Interpretation of FDR Data” [21] and “SEM/EDX Analysis for FDR Samples” [20]. The results appear to correspond to those of “unique particles” set out in category 4 [21].
- 7.1.37 The identification of the particle as FDR appears to have complied with SPSA procedures.
- 7.1.38 The Defence, which was in possession of an expert report on the FDR evidence, made no criticism of the identification.
- 7.1.39 The advice provided to me for this area [27] discusses terminology employed in the field. It notes that particles containing lead antimony and barium may be found in material arising from sources other than FDR and whereas they may previously have been considered “unique” to FDR the term “characteristic” would now be more appropriate.

Comparison to Cartridges

- 7.1.40 In discussions with the scientists it was noted that the police did not explain why the comparison was requested. As noted above such examination, when performed in relation to a single particle of FDR, cannot provide information which will assist in linking the particle to any event or increase the evidential significance. It might produce results which show the particle could not have arisen from a particular source.
- 7.1.41 The SPSA procedures, noted above, cover a number of aspects of FDR examinations but do not set out details about the approach to comparison. Clearly, the results having been produced in accordance with the procedures the comparison is a matter of professional/scientific judgment.²²
- 7.1.42 It follows that, as far as applicable, the comparison appears to have been undertaken in line with the SPSA policies.

²² This was confirmed by the SPSA.

7.1.43 The comparison was not in accordance with the approach to single FDR particle cases as described by the judge. It does appear in line with the practice as described at paragraph 7.1.17.

Reporting

7.1.44 In discussions with the scientists it was explained that the report prepared was relatively brief and focussed. It would be possible to produce a far longer report dealing with all of the technical issues. That was considered unnecessary as the evidence would be addressed through the precognition process and all of the issues discussed with the representatives of the Prosecution and Defence.

7.1.45 The reporting of FDR results is set out in “Interpretation of FDR Data” [21]. It sets out the content of the “test report” as follows.

- a. Introductory paragraph containing: names, qualifications, and authorisations.
- b. Pertinent case background information.
- c. Details of the receipt of test items.
- d. Technical introduction paragraph.
- e. Individual test item details i.e. labelling details, description and condition of item, areas sampled, and results of analysis.
- f. A conclusion derived from the background information and analytical results.

7.1.46 Some standard paragraphs are provided.

7.1.47 Consideration of the report issued on 7 October 2010 against the above shows that, subject to the points below, it met the requirements.

- a. The scientists’ qualifications are not stated in the introductory paragraph. They are provided on both pages 5 and page 6 of the report.
- b. In relation to the presence of one FDR particle no conclusion is provided. However, comments in the conclusion in relation to the comparison could be interpreted as explaining the significance of the presence of one particle of FDR.

7.1.48 The first of these is trivial. The second appears to relate to the single particle protocol. This is discussed at paragraph 7.8 below.

- 7.1.49 The Defence made no criticism of the report at the hearing.
- 7.1.50 Subject to these points the report appears to comply with the SPSA procedures.
- 7.1.51 There appears to be a conflict between the wording of the procedures (requiring a conclusion) and the normal practice in respect of single particles of FDR (requiring no conclusion).

7.2 Application of Pressure

Pressure

- 7.2.1 The ruling, at paragraph 9 (see paragraph 5.5.5), makes clear that the judge considered pressure had been applied to the scientists.
- 7.2.2 Consideration of the evidence provided by Ms Colley offers support for the judge's view.
- 7.2.3 On page 9 of the transcript (starting at line 7) there is the following exchange with the Advocate Depute.

"Mr McSporran – And is there any distinction to be drawn between the finding of a single particle of firearm discharge residue, and a greater number of particles, from the scientific reporting point of view?"

Ms Colley – Yes ...we don't normally comment on ... how a single particle came to be present. We will report that it's there and that we found it, but we don't normally report on the significance of it.

Ms McSporran – And why is that?

Ms Colley – That's because we don't have enough information about the population that the particle's come from, but also because we don't know the history of the garment or the person wearing the garment."

- 7.2.4 The fact a comparison was made between the particle of FDR from the jacket and those from cartridges was again raised by the Advocate Depute. On page 13 (starting at line 1) of the transcript there is the following exchange.

"Mr McSporran – And that's something you would not normally do, is that so?"

Ms Colley – That's correct, yes."

- 7.2.5 The testimony noted above suggests that there were routine practices in relation to (a) reporting the significance of a single particle and (b) comparison of the elemental composition of single particles to a different population. It also

suggests there has been a deviation from the routine practice in relation to the latter. The nature and significance of the deviation are discussed below.

7.2.6 The deviation from routine practice was pursued by the judge. On page 20 (starting at line 13) there is the following interaction with the judge.

“Lord Brailsford – Why did you depart from protocol ... ?

Ms Colley – We were requested to do so.

Lord Brailsford – By whom?

Ms Colley – By ... the detective superintendent.

Lord Brailsford – ... I see. Now ... my understanding ... was that although you're called the Scottish ... Police Services Authority ... you are actually independent?

Ms Colley – Yes, that's correct.

Lord Brailsford – ...and therefore, presumably, you could have told the police officer who requested you to do something to go away, get lost, if you'd wanted?

Ms Colley – ... we have tried ... on a number of occasions giving out advice and saying we advise against something or not, and sometimes we're overruled and told just do it.

...

Lord Brailsford - ...At your personal level, you were requested by a detective superintendent to depart from protocol and report in the way that you did.

Ms Colley – Yes, that's why we did that.”

7.2.7 The matter was again considered by the Advocate Depute and on page 49 (starting at line 13) of the transcript there is the following exchange.

“Mr McSporrán – You would report a single particle found but make no further comment, is that ... ?

Ms Colley – Yes, that's correct; that's our current protocol.

Mr McSporrán – And, in this particular case, some pressure was applied for you to carry out a process you wouldn't normally have carried out, is that right?

Ms Colley – Yes, that's correct.”

7.2.8 This issue was discussed with Ms Colley. She confirmed that, in her view, pressure had been applied.

7.2.9 The issue was also discussed with Ms Wilcock. She stated that that pressure had been applied.

Source

- 7.2.10 The ruling makes clear the judge’s view (see paragraph 9 of the ruling – quoted at paragraph 5.5.5 above) that pressure was applied both by the police and “superiors” within the SPSA.
- 7.2.11 The text quoted at paragraph 7.2.6 above indicates Ms Colley believed pressure had been applied by the police.
- 7.2.12 The transcript has been considered and there is no clear statement that pressure was applied from within the SPSA. It appears possible that, as a result of the evidence, presented by Ms Colley, that the SPSA was an independent body (under no obligation to comply with instructions from the police) and that the scientists had been “overruled” (see paragraph 7.2.6 above) the judge concluded the decision to overrule the scientists must have originated within the SPSA.
- 7.2.13 This issue was discussed with Ms Colley. She was very clear that in this case, the pressure was from the police – not from within the SPSA.
- 7.2.14 In light of the potential significance of the evidence in relation to being “overruled” Ms Colley was asked (a) whether this was a general comment or (b) whether it was a reference to this case. Further, who had overruled her?
- 7.2.15 Ms Colley made clear that the comment was both general and case specific. In many cases scientists at the SPSA offered advice to the police, and others, as to the value of a potential examination. Regardless of that advice the police, or others, may have been adamant that they wanted the examination performed. The SPSA approach was that, in such cases, the examination would normally be performed. The SPSA provided a service to the police, and others, in the investigation and prosecution of crime. It did not normally adopt a position of refusing to perform examinations because (a) those with responsibility for the investigation/prosecution should, normally, take such decisions and (b) the SPSA was often not aware of all of the circumstances so was not well placed to be certain an examination would be worthless. The decision to proceed against the advice of the SPSA scientists was generally taken by officers in the investigation team, the Senior Investigating Officer or a prosecutor (e.g. a procurator fiscal).

7.2.16 In this case Ms Colley recalled that the issue of comparison against the material recovered from the cartridges was discussed with a number of members of the investigation team. In the end it was Detective Superintendent [REDACTED] [REDACTED] (the Senior Investigating Officer) who determined that the comparison was required.

7.2.17 Ms Wilcock was asked to comment on the source of pressure in this case. She confirmed the views expressed by Ms Colley that there was pressure and that pressure originated from the police not from within the SPSA.

7.2.18 Given the potential significance of the evidence in relation to scientists being “overruled” Ms Wilcox was also asked to comment on this statement. She stated that, in her view, this was both general and specific. Scientists often offered advice as to the value of an examination but the advice was not always followed. The decision not to follow the advice was taken by the police or prosecutor. She had never encountered a case where the managers within the SPSA ignored the advice of the scientists responsible for a case.

Object

7.2.19 It is important to consider the object of the application of pressure. There appear to be two possibilities.

- a. That pressure was applied to have the scientists carry out an examination which would not routinely have been performed.
- b. That pressure was applied to have the scientists word their evidential conclusions in a particular manner.

7.2.20 The ruling indicates (see paragraph 9 of the ruling – quoted at paragraph 5.5.5) that the judge considered the object of the pressure was the second option. This would be particularly significant as it (a) could create the risk of a miscarriage of justice and (b) would place the scientists in violation of the obligations set out in *Wilson*. Depending on the exact circumstances there is even a risk of a criminal offence being committed.

7.2.21 Consideration of the evidence provided by Ms Colley appears to offer support for the judge’s view.

- 7.2.22 The transcript (see the quotation at paragraph 7.2.6 above) indicates normal practice was not followed and contains the following interaction with the judge.
- “Lord Braisford - ...At your personal level, you were requested by a detective superintendent to depart from protocol and report in the way that you did.
- Ms Colley – Yes, that’s why we did that.”
- 7.2.23 This states the deviation from normal practice was at the request of the police. Taken with the earlier quoted discussion this may be the source of the judge’s views.
- 7.2.24 This matter was discussed with Ms Colley. She stated that pressure was applied to have the comparison between the particle of FDR found on the jacket and the material recovered from the cartridges. No pressure was applied in relation to the results of the comparison or the way in which those results were reported. The report would, of course, be modified because the completion of the comparison created a requirement for that to be reported.
- 7.2.25 It appears that the term “report” was, in testimony, being used to mean a number of different things. In some cases it appears to relate to “reporting” the case as in the determination of what examinations to perform and the reporting the results of this work to the court. In others it appears to refer to the drafting and wording of the report to the court.
- 7.2.26 The matter was discussed with Ms Wilcock. She was clear that pressure was applied to perform a non-routine comparison. No pressure had been applied in relation to the manner in which the results should be reported. In 12 years working as a forensic scientist (both in England and Scotland) she had never experienced pressure as to the content of a report or her evidence.

Result

- 7.2.27 If pressure was applied did this have any impact on the evidence provided by the scientists?
- 7.2.28 The report, dated 7 October 2010, issued in relation to production 1135/10 can be seen as dealing with two separate examinations. The conclusions, which are quoted at paragraphs 5.2.8 and 5.2.11 above, deal with (a) the presence of

FDR on the jacket and (b) the comparison of that FDR against material recovered from cartridges.

7.2.29 In relation to the presence of FDR the report states that one particle of FDR was located on the front of the jacket. In relation to the other six areas sampled it states that no FDR was located. No further comment about the significance of the presence of the particle was made.

7.2.30 In relation to the comparison against the cartridges the report stated whether the FDR particle was similar or dissimilar to the material recovered from each of the two sets of cartridges. Included in one of these statements is a caveat based on there being only one particle of FDR.

7.2.31 The form of the report supports the position described by the scientists where there was pressure to undertake a non-routine examination.

7.3 Reporting Concerns

7.3.1 The ruling suggested that pressure had been applied to the scientists to present their evidence in a particular fashion. Further, it was suggested that this pressure had come from both the police and SPSA management. Under the circumstances it was considered appropriate to investigate what processes, if any, the SPSA had in place to allow staff to raise concerns about such matters.

7.3.2 There are two reasons for such consideration. Firstly, it is relevant to know whether, had staff had concerns about what they were being asked to do, (a) there was a process by which those concerns could be raised/addressed and (b) whether those processes, if they existed, were employed. Secondly, were such processes employed, the response of the SPSA would be a relevant issue.

7.3.3 The SPSA provided a number of internal policy documents which were considered potentially relevant to this issue. These were the following.²³

- a. Employee Handbook [28].
- b. Staff Code of Conduct [8].

²³ A number of the documents, or versions of the documents supplied, post-date some of the events under consideration. If these documents had been relevant to the consideration of the issues relevant versions would have been requested. However, they were not considered relevant.

- c. Confidential Reporting Policy [29].
- d. Dignity and Respect at Work Policy [30].

- 7.3.4 These documents were reviewed. It was clear that neither the Employee Handbook [28] nor the Dignity and Respect at Work Policy [30] contained relevant provisions.
- 7.3.5 The Confidential Reporting Policy [29] appears drafted to allow staff to raise concerns about the operation of the SPSA. It does, however, cover actions which are unlawful or amounts to improper conduct. The policy sets out a normal first step of raising the matter with line management. An alternative, confidential, reporting mechanism is provided.
- 7.3.6 The Staff Code of Conduct [8] does not appear to have been drafted with forensic scientists particularly in mind. This is not entirely unexpected in an organisation the size of the SPSA. The policy set out a requirement that “Staff of SPSA should conduct themselves with integrity, impartiality and honesty”. It also required that staff “should not deceive or knowingly mislead ... partners, stakeholders or the public”. In the context of forensic scientists the stakeholders should be considered to include all parties involved in the Criminal Justice System. It also covered any case where a member of staff believed they were being asked to act in a manner which was illegal, improper, unethical, criminal, unlawful or in breach of a professional code. The policy set out a normal first step of raising the matter with line management. An alternative, confidential, reporting mechanism was provided.
- 7.3.7 It therefore appears that processes were available which could be used to raise concerns in relation to the application of pressure.
- 7.3.8 The issue of reporting concerns was raised with both scientists involved in this case. Their responses indicated that the level of staff awareness of these policies was lower than might have been expected. However, both scientists made clear that, if they had concerns about pressure being applied, their first action would be to raise the matter with their line manager. Thus, in practical terms, the lack of awareness of the procedures had no effective impact.
- 7.3.9 Both scientists stated that, as they had no concerns as to the propriety of what they were being asked to do, there was no reason to raise concerns. The issue

of the non-routine comparison was discussed with their line manager, as a matter of routine, as she would probably have to check the file.

7.4 Standard of Evidence

7.4.1 There are two strands to the FDR evidence in this case. The first is the evidence of the presence of FDR. The second relates to the comparison of the FDR to material recovered from cartridges cases.

7.4.2 An assessment of the standard of the evidence presented in this case requires consideration of (a) the report and (b) the testimony at the hearing. The consideration must also be informed by the discussion at precognition.

Report

Presence of FDR

7.4.3 In relation to the presence of FDR on the jacket the report states the following conclusions.

“The seven samples were examined when the presence of a single particle of percussion primer firearm discharge residue was detected in the sample taken from the front of the jacket.

The remaining six samples were examined for the presence of percussion primer firearm discharge residue with a negative result in each case.”

7.4.4 The stated conclusions are accurate representations of the results of the examination. No interpretation, or comment, is made about the evidential significance of the results.

7.4.5 As noted above the lack of conclusion may not comply completely with the procedures of the SPSA (see paragraph 7.1.47).

7.4.6 The report appears to comply with the stated practice in relation to the finding of single particles of FDR.

7.4.7 Whether this is an appropriate approach to the provision of evidence is discussed at paragraph 7.8 below.

Comparison to Cartridges

7.4.8 In relation to the comparison with the cartridges the report set out the following conclusions.

“Conclusion:

- The single particle of percussion primer firearm discharge residue recovered from the “BLACK “STONE ISLAND” JACKET” and the percussion primer firearm discharge residue recovered from the handgun cartridges show similarities such that they could be considered to be of a similar type.
- The single particle of percussion primer firearm discharge residue recovered from the “BLACK “STONE ISLAND” JACKET” and the percussion primer firearm discharge residue recovered from the revolver cartridges showed elemental differences. In our opinion there is insufficient information available to comment further as only a single particle was detected.”

7.4.9 The wording of this part of the conclusions was raised by the Advocate Depute (transcript page 22 starting at line 6).

“Mr McSporran – ... you go on, in the conclusions, to say something about single particle percussion primer firearm discharge residue ...on the jacket; and a comparison between the residue recovered from the revolver cartridges, and you say that they show elemental differences. And then the next bit, the next one’s final line is, “In our opinion there is insufficient information available to comment further as only a single particle was detected.” This may very much sound like splitting hairs, but should ... that last sentence, rather than being appended to the second paragraph of your conclusions, should it in fact be read as, as covering both the paragraphs of your conclusions?

Ms Colley – Yes, It can cover both.

Mr McSporran – ...and in a sense ...if we read it as, put it onto a new line all, all on its own, that would be a better understanding of the conclusions, Is that correct?

Ms Colley – Yes.”

7.4.10 The wording of this part of the conclusions was also discussed with both Ms Colley and Ms Wilcock. Ms Colley reiterated the position set out above – the caveat applies equally to both statements. Ms Wilcock adopted the same position. Both noted that they had considered the wording carefully and had attempted to set out the results of the comparison out and ensure the limitations on interpretation, resulting from there being one particle of FDR, were clear.

7.4.11 Both scientists stated that, with the benefit of hindsight, they would reconsider the wording of this conclusion so that the caveat was (a) clearly applicable to both statements and (b) clearer.

- 7.4.12 The report appears to be an accurate statement of the results but there are a number of points which can be made.
- a. It does not appear to comply with the practice, as described in testimony and by the judge, in respect of single particle FDR cases in that it reports more than just the presence of the particle.
 - b. It does comply with the practice as interpreted at paragraph 7.1.17 above.
 - c. It states the results (as in similarity or differences) but does not seek to interpret these in the context of the case.
 - d. There is a caveat but it is not as clear as it might be (or as the scientists hoped) as to the limitations of the inferences that can be drawn from the comparison.

7.4.13 As noted above (see paragraph 7.1.50) the report appears to be in compliance with the SPSA procedures.

7.4.14 Whether this is an appropriate approach to the provision of evidence is discussed at paragraph 7.8 below.

Precognitions

Scientists' Views

7.4.15 The nature of the precognition process is such that the scientists are not normally in a position to produce a contemporaneous record of the discussions. In this case the scientists produced notes after they were precognosed.

7.4.16 I was provided a copy of those notes and discussed the precognition with the scientists.

7.4.17 It is clear that, as might be expected, there was a significant degree of similarity in the issues covered in discussions with Prosecution and Defence.

- a. The evidential significance of a single particle of FDR.
- b. The normal SPSA practice of reporting presence but making no further comment.
- c. The fact that further work was undertaken in this case at the request of Strathclyde Police.
- d. The meaning of the results of the comparison between the particle recovered from the jacket and the material recovered from the cartridges.

- e. That FDR could not be linked to a particular source or event.
- f. The possibility that FDR may have been present without the garment being linked to a firearms discharge event.

7.4.18 In the precognition with the Defence a number of issues were raised.

- a. The involvement of firearms officers.
- b. The number of items related to Mr Monaghan that had been submitted.

7.4.19 The scientists were confident that, at the end of the precognitions, the Prosecution and Defence fully understood the work undertaken by the SPSA, the reasons for that work and the significance of the results provided in the report.

Prosecution Position

7.4.20 The SPSA sought copies of the Prosecution notes of the precognition. As noted above the Crown Office, on the basis of the confidentiality of the precognition process, decided to not provide these.

7.4.21 The approach to the FDR evidence, and the questions asked, by the Advocate Depute at the hearing strongly suggest he was fully aware of the issues.

Defence Position

7.4.22 As noted above I did not request access to the Defence notes of the precognition.

7.4.23 The Defence approach to the hearing suggests that it was fully aware of the issues surrounding the FDR evidence. That is also clear from the Defence position noted at 6.5 above.

Testimony

7.4.24 The evidence was considered at the hearing on 25 April 2012.

7.4.25 In this section I shall consider general issues, the comparison of the single particle first and then presence second as that was the order in which the issues were addressed at the hearing.

General Issues

7.4.26 At the start of the testimony of Ms Colley the judge intervened as follows (transcript page 5 starting at line 15).

“Lord Brailsford – Let me interrupt, Advocate Depute. Mr Ogg, am I right in thinking that there is no dispute that such a particle was found on this clothing, and where it was found on the clothing, and it was what it was?”

Mr Ogg – ... your Lord has it in one.

Lord Brailsford - Right. So you don't need to bother about the, the technicalities. There's no challenge to what ...Miss Colley found.

Mr McSporran - ... it does assist ... the witness to know that that's not in dispute.”

7.4.27 There follows a discussion of the examination of items for FDR and the circumstances in which that would be appropriate.

7.4.28 The discussion then moves to the issue of reporting a single particle of FDR. There is the following exchange with the Advocate Depute (transcript page 9 starting at line 7).

“Mr McSporran – And is there any distinction to be drawn between the finding of a single particle of firearm discharge residue, and a greater number of particles, from the scientific reporting point of view?”

Ms Colley – Yes ... we don't normally comment on ... how a single particle came to be present. We will report that it's there and that we found it, but we don't normally report on the significance of it.

Mr McSporran – And why is that?

Ms Colley – That's because we don't have enough information about the population that the particle's come from, but also because we don't know the history of the garment or the person wearing the garment.”

7.4.29 The judge seeks clarification of the comments which leads to the following testimony from Ms Colley (transcript page 10 starting at line 8).

“Ms Colley - Basically when the automated part of the sampling, or ... the analysis is done, we have a report generated by the piece of equipment that we use, and ... we will search down through that for the particles of interest. Because a firearm discharge residue particle will have ... a certain elemental composition, and the correct morphology for it to be a particle. So we will look through this list and we will check the particles that may be of interest to us. So if we only have one particle, we don't have enough information ... if we have ten particle you don't get

exactly the same composition every single time, necessarily, because ... when particles are produced you get a variety of different particles produced. So you may have lead particles on their own, or you may have lead and barium, or you maybe have lead and antimony, or you may have lead, barium and antimony together; and we're looking for the combination of all three. ...

Lord Brailsford – And the combination of various percentages that are known to you, or simply the combination of the particles?

Ms Colley – No, it's simply the combination of the particles.

Lord Brailsford – Simply the combination of those elements?

Ms Colley – Yes.

Lord Brailsford – Within the particle ...?

Ms Colley – Yes, but there will be other elements within the cartridge as well. ... when we do a comparison we'll look for what is in the cartridge part, and what's in our particle. But because we only have one particle you, you don't necessarily know you have all the elements from within the cartridge present.

Lord Brailsford – ... Simply as a matter of statistics, the more particles you would have, the more confident you would be ... as to whether or not it matched the ... cartridge that you have taken a sample of?

Ms Colley – Certainly ...the more particles you had, you would see more elements present in them.”

Comparison to Cartridges

7.4.30 The Advocate Depute raised the issue of the comparison leading to the following exchange (transcript page 13 starting at line 19).

“Mr McSporran - ... if we were to take from your report any suggestion that it was possible to make a comparison between the firearm discharge residue found on the black jacket, and either the firearm discharge residue found on the cartridges from one gun or from the cartridges of the other gun ... should we take anything from your report, in that regard?

Ms Colley – There are limitations, as I've explained, because you don't ... know you have all the components from your cartridges. But there are different types of firearm discharge residue for different elemental compositions available, so you could rule some as being different.

...

Lord Brailsford – ... you might be able to eliminate because of the absence of certain things

...

Lord Brailsford - .. So for example, the, the cartridge did not have, I've seen antimony mentioned, so we'll just pick that at random. The cartridge did not have antimony present, the FDR particle had antimony present; ergo it can not come from the same cartridge.

Ms Colley – ... that's one way, depending on the circumstances of the case.

Lord Brailsford - ..that's as far as you could go.

Ms Colley – Yes.”

7.4.31 The issue was considered further by the Advocate Depute (transcript page 19 starting at line 8).

“Mr McSporran – And, these particles, tiny as they are, a single particle won't, won't give you, necessarily, the full constituent or composition of the residue as, as a whole; is that fair to say?

Ms Colley – Yes, that's correct.

Mr McSporran – And does that really, in a sense, highlight why you would not normally go on to make a comparison because it's; here's the suggestion for you to comment on; it's close to meaningless?

...

Ms Colley – Yes, we feel that there's not enough information to be gained from just looking at one single particle. We would like to have looked at more particles to know that we were happy with the content of all of them, because there may be differences between particles themselves.

Mr McSporran – And would I understand you correctly to say then, that in the normal course of things, your report would have essentially stopped as reporting the finding of a single particle of firearm discharge residue?

Ms Colley – Yes, it would.”

7.4.32 The matter is discussed further (transcript page 22 starting at line 6).

“Mr McSporran – ... you go on, in the conclusions, to say something about single particle percussion primer firearm discharge residue ...on the jacket; and a comparison between the residue recovered from the revolver cartridges, and you say that they show elemental differences. And then the next bit, the next one's final line is, “In our opinion there is insufficient information available to comment further as only a single particle was detected.” This may very much sound like splitting hairs, but should that, that last sentence, rather than being appended to the second paragraph of your conclusions, should it in fact be read as, as covering both the paragraphs of your conclusions?

Ms Colley – Yes, It can cover both.

Mr McSporran – ... and in a sense, if, if we read it as, put it onto a new line all, all on its own, that would be a better understanding of the conclusions, Is that correct?

Ms Colley – Yes.”

7.4.33 The testimony provided an accurate description, and interpretation, of the results of the comparison. The meaning of the results was made clear and the limitations on the information which can be derived from one particle of FDR were clearly stated.

7.4.34 It is notable that the Defence made no attack on this evidence.

7.4.35 It is clear from the ruling (see paragraphs 8 and 10 of the ruling – quoted at paragraphs 5.5.5 and 5.5.6) that the judge understood the significance of the evidence.

7.4.36 It is also clear from the transcript of the hearing that the Prosecution and Defence were aware of all the issues surrounding the FDR evidence.

Presence of FDR

7.4.37 The issue of the significance of one FDR particle was then discussed (transcript page 30 starting at line 7).

“Lord Brailsford – You don’t comment upon them very properly, because you cannot, as a scientist ...draw any meaningful conclusions from that.

Ms Colley – And that’s why we’ll report that we found it because we report our findings, but we don’t comment.

Lord Brailsford – Because that’s a fact ...

Ms Colley – Yes.

Lord Brailsford – You have to report you’ve found it, but ...you decline to go further because there is, in your opinion ...no scientific value to what you have found.

Ms Colley – ... there’s not enough information for us to comment properly.

Lord Brailsford – Very properly put, but ... the paucity of information precludes you making any further finding, rather than the mere presence of the particle.

Ms Colley – ... yes.”

7.4.38 The matter is discussed further (transcript page 32 starting at line 13).

“Mr McSporrán – Is the logical extension of that analysis not this then; that the finding of a single particle of firearm discharge residue could be the remnants of a huge quantity of firearm discharge residue, the vast majority of which, all but one particle of which has been lost by the same process?

Ms Colley – ... it's a possibility there have been more and only one remained.

Lord Brailsford – But with the presence of only one particle, it would be mere speculation?

Ms Colley – Yes, and we cannot comment on, on how that got there.”

7.4.39 There followed a discussion of the scenarios in which one, or more, particles of FDR could be on an item and the reasons for limiting the interpretation of low numbers of FDR.

7.4.40 Following on from the discussion of various numbers of particles the Advocate Depute initiated the following exchange (transcript page 43 starting at line 4).

“Mr McSporrán – And so a question asked of you, which would be, could someone have picked this up, these two particles entirely inadvertently and unknowingly, and without ever having been in the presence of a discharging or discharged firearm; your answer to that would be?

Ms Colley – Yes, it's a possibility.”

7.4.41 The Defence examination started by considering the risk of contamination created by the involvement of armed officers in the search of the premises in which the jacket was found. This is discussed at paragraph 7.6 below.

7.4.42 The Defence then proceeded to cover a number of issues surrounding the potential for clothing to be contaminated with FDR without the owner being aware or being involved with firearms. Ms Colley provided evidence that there were a number of ways in which this could happen.

7.4.43 There is then the following exchange with the Defence (transcript page 85 starting at line 18).

“Mr Ogg – ... there is no scientist in, in the country who would do other, in the United Kingdom, who would do other than both the ... English Guidelines and your own laboratory would do, which is simply to report that a single ... firearm particle ... has been found and that nothing can be drawn from that of the sort of positive finding you might scientifically .. be able to offer if there is two or more particles found; is that correct?

Ms Colley – To the best of my knowledge, that's correct.”

7.4.44 It is clear that the Defence had an expert witness at court but decided there was no need to call the witness.

7.4.45 The testimony provided an accurate description of the evidence and the significance of the presence of one particle of FDR.

- 7.4.46 It is notable that the Defence made no attack on this evidence.
- 7.4.47 It is clear from the ruling (see paragraph 10 of the ruling – quoted at paragraph 5.5.6) that the judge understood the significance of the evidence.
- 7.4.48 It is also clear from the transcript of the hearing that the Prosecution and Defence were aware of all the issues surrounding the FDR evidence.

Overall

- 7.4.49 The evidence and related information provided by the SPSA scientists (taken as a whole) provided the Prosecution, Defence and the Court with an accurate understanding of the evidence.

7.5 Accreditation of Procedures

- 7.5.1 On 20 July 2012 the United Kingdom Accreditation Service^{® 24} Internet site (www.ukas.com) was checked for the schedule of accreditation for the SPSA laboratory in Glasgow.
- 7.5.2 The site contained Schedule of Accreditation Number 2061 (Issue 013 dated 8 October 2010). This records that the SPSA Forensic Services (Glasgow) was accredited, by UKAS^{® 25}, to ISO 17025 [9] at two locations in Glasgow.
- 7.5.3 The details of accreditation include, under “Materials/Products tested” a section on:
“Clothing/items from both subjects and loci, FDR Recovery Kits, cartridge cases and bullets”.
- 7.5.4 This section then states, in relation to “Types of test/Properties measured/Range of measurement”:
“Identification of inorganic (percussion primer) firearm discharge residues”.
- 7.5.5 In relation to “Standard specifications/Equipment/ Techniques used” the section states:
“Documented In-House Methods for Sample Recovery. Documented In-House Methods using scanning electron microscopy and energy dispersive X-ray spectrometry”.
- 7.5.6 The entry related to the SPSA laboratory at 173 Pitt Street Glasgow.

²⁴ United Kingdom Accreditation Service is a registered trademark owned by the body of that name.

²⁵ UKAS is a registered trademark owned by United Kingdom Accreditation Service.

- 7.5.7 Clearly this schedule post-dates some of the work undertaken in this case.
- 7.5.8 SPSA provided a copy of the previous document - Schedule of Accreditation Number 2061 (Issue 012 dated 16 October 2009). This records that the SPSA Forensic Services (Glasgow) was accredited, by UKAS, to ISO 17025 [9] at two locations in Glasgow.
- 7.5.9 The text of this version of the schedule is effectively the same as that in issue 13.
- 7.5.10 This case involved the examination of clothing and cartridge cases for particles of FDR created by the percussion primer. The examination employed SEM/EDX for the identification of the FDR particles. All of the above were completed substantially in line with the documented in-house procedures,

7.6 Firearms Officers

- 7.6.1 In the cross-examination of Ms Colley the Defence highlighted the involvement of armed officers in the search of the premises from which production 1135/10 was recovered. There were a series of questions seeking to investigate the risks of contamination created by the involvement of such officers. Ms Colley agreed that this created a significant risk of contamination.
- 7.6.2 This issue was not addressed in the report issued by the scientists.
- 7.6.3 The matter was discussed with both of the scientists. Neither was aware of the involvement of firearms officers at the time the report was issued. It appears potential contamination by such officers was raised as a “hypothetical” issue at the precognition with the Prosecution. It was not until the precognition with the Defence that it was made clear that this case involved such an issue.
- 7.6.4 In discussions the scientists were asked whether, had they known before the report was issued, this would have made a difference to the approach to the case. Both were clear that, had they known, they would have given advice to the police, at the time of submission, that the risk of contamination would make the significance of the potential evidence, which was already seen as weak, ever weaker. Further, the report would have contained a statement as to the risks of such contamination being the source of the FDR particle found.

- 7.6.5 In discussions the scientists made clear that the possible involvement of firearms officers was routinely raised at the point of submission of material for examination for FDR evidence (see discussion at 7.1.25 above). In this case the submission of the jacket was not expected and it is possible that, as a result, the matter was not raised.
- 7.6.6 In this case the involvement of firearms officers would not have had a significant impact on the evidence. The conclusions already stated the evidence was of no significance. The scientists would, almost certainly, have made comment in the report as to the additional reasons why this was so. That would not have changed the significance of the evidence.
- 7.6.7 There are cases where such information would have a significant impact on the evidence the scientists could present.
- 7.6.8 The position set out in the advice to me [27] is noted above (see paragraph 7.1.29).

7.7 Nature of Evidence

- 7.7.1 The assessment of what happened in this case requires consideration of the legal obligations placed on expert witnesses. As noted above (see paragraph 5.6.3) the starting point for these obligations is the *Ikarian Reefer*. The first two obligations set out in that judgment are as follows.

“1. Expert evidence presented to the court should be, and should be seen to be, the independent product of the expert uninfluenced as to form or content by the exigencies of litigation: *Whitehouse v. Jordan* [1981] 1 W.L.R. 246 at 256, per Lord Wilberforce.

2. An expert witness should provide independent assistance to the court by way of objective, unbiased opinion in relation to matters within his expertise: *Polivitte Ltd. v. Commercial Union Assurance Co. plc* [1987] 1 Lloyd's Rep. 379 at 386, Garland J. and *Re J* [1990] F.C.R. 193, Cazalet J. An expert witness in the High Court should never assume the role of an advocate.”

- 7.7.2 The first obligation appears to suggest the expert acts in isolation from the case before the courts. Clearly this cannot be what is meant. In civil litigation an expert will only address those issues which are actually relevant and, presumably, in dispute in the case. Those will be defined, for the expert, by the party instructing him. In the Criminal Justice System this issue is, if anything, more obvious. The evidence to be examined will be seized by the police, the

items submitted for examination (and the nature of the examination) will be defined, at least initially, by the police or prosecution. Similarly, the issues of relevance to the case will be described to the expert by the police or prosecution – albeit that the issues may reflect the defence approach or issues raised by the defence. Clearly a similar position could be described in relation to experts instructed, subsequently, by the defence.

7.7.3 It therefore appears that, in evidence, the expert provides independent, objective and unbiased opinion in relation to the examinations undertaken and the results obtained without any intention to further the case of either party. It does not appear necessary that the expert has control over what examinations are performed.

7.7.4 These requirements are reflected in my Code of Conduct [26].

7.7.5 It is notable that Lord Brailsford, at paragraph 9 of his ruling (quoted at paragraph 5.5.5), stresses the need for the reports and conclusions to be based on scientific examination and free from outside influence.

“... if the integrity of the SPSA is to be maintained then its reports must be expressed on the evaluation and consideration of scientific examination, free from any outside influence. No external body should be permitted to influence the conclusions that independent experts express to the Court.”

7.7.6 That appears to agree with the analysis above in that it stresses the independence of the report.

7.7.7 In light of the above I believe there are certain principles which can be stated.

- a. It is acceptable for the police, or prosecutor (e.g. procurator fiscal), to request that a particular examination or comparison is undertaken by the forensic science laboratory.²⁶
- b. The forensic scientists should, in appropriate cases, provide advice as to the value of such examination/comparison – particularly if they believe it would be limited value.

²⁶ This position might be altered if there were any illegal or improper motive for the request.

- c. It is acceptable for the police, or prosecutor, to maintain a request for an examination/comparison to be undertaken even if the forensic scientists advise against it.²⁷
- d. It is, subject to the points in paragraph 7.7.8 below, acceptable for a forensic scientist to perform, and report, an examination/comparison undertaken at the request of the police. This is true even if the scientist advised against the examination/comparison being done.
- e. The scientist must provide the Criminal Justice System with evidence which is independent, objective and unbiased and which represents his honest opinion (including any limitations) about the examinations/comparisons undertaken, the results obtained and their relevance to the case.
- f. It is improper for the police, or prosecutor, to attempt to influence the evidence to be presented by the scientist in relation the results obtained, the interpretation of those results or significance of any examinations/comparisons.
- g. It is improper for the scientist to modify, or considering modifying, his evidence in relation to the results obtained, the interpretation of those results or the significance of any examination/comparison at the request of the police or prosecution.²⁸

7.7.8 Special considerations would apply in any of the following circumstances.

- a. If the scientist believes the performance of the examination/comparison is intended to, or may, create a substantial risk of a miscarriage of justice.
- b. If the proposed work involves the use of a method which is not within the scope of the laboratories accreditation in a field where the laboratory is accredited.
- c. If the proposed work involves the use of a method which has not been properly validated and implemented by the laboratory.

²⁷ This position might be altered if there were any illegal or improper motive for the request.
²⁸ If examinations/comparisons have been undertaken at the request of the police or procurator fiscal then the obligation to report the results means that the evidence will have been modified. Such a modification dealing with the facts of the examination/comparison is acceptable.

7.7.9 Such issues may not prevent the examination/comparison being performed but the (a) such work is likely to be subject by approval by management and (b) reporting of such work would probably be subject to careful consideration.

7.8 Expert Evidence

Role

7.8.1 The role of the expert witness was considered by the Court of Session in *Davie v. Edinburgh Magistrates* [1953] SC 34; 1953 S.L.T. 54.

“... Expert witnesses, however skilled or eminent, can give no more than evidence. They cannot usurp the functions of the jury or Judge sitting as a jury ... Their duty is to furnish the Judge or jury with the necessary scientific criteria for testing the accuracy of their conclusions, so as to enable the Judge or jury to form their own independent judgment by the application of these criteria to the facts proved in evidence.”

7.8.2 This judgment has been endorsed by the High Court of Justiciary – see for example the judgment of the Lord Justice Clerk in *Gage v. HM Advocate* [2011] HCJAC 40.

7.8.3 In *Wilson & Anor. v. Her Majesty's Advocate (Scottish Criminal Cases Review Commission Referral)* [2009] HCJAC 58 the judge, Lord Wheatley, stated:

“[62] It therefore follows that a judge or jury is not bound by the opinion evidence tendered by an expert witness. There are clear principles under which such evidence is admitted. In *Davie v. Magistrates of Edinburgh* 1953 S.C. 34 the Lord President Cooper said ...

[63] It is abundantly clear therefore, and has been for many years in our courts, that an expert witness is not in a position to provide the court with a statement of unqualified conclusions about the question of fact on which his opinion bears. If he does so, the effect of his testimony may well be much diminished ... It is therefore of the utmost importance that any expert witness carefully describes the source and assesses the worth of all material on which his opinion is based ... It is a matter of considerable concern therefore to note that, in his report on the appellants ... states unequivocally that he considers the confessions made by the appellants to the police to be unreliable. That is not a conclusion that an expert witness should draw. His role is to place his opinion before a court or jury in the fashion described above, in order to allow the court or the jury to reach a proper conclusion on the matter.”

Presence of FDR

7.8.4 In light of the above there is a question as to whether a practice, if such a practice exists (see discussion at paragraph 7.1.17 above), of reporting the

presence of a single particle of FDR with no comment as to the significance of that presence meets the obligations on expert witnesses.

7.8.5 As discussed above the requirement is that an expert discharges his obligations through the process culminating in testimony. It is not a general requirement that the report by itself achieves this.

7.8.6 I will consider the report and the complete process separately. The precognition process is confidential and the testimony provided is not entirely within the control of the scientist. It follows that the only part of the process which the scientist can control and which can be used to publically discharge the obligations is the report. If the report does not ensure all obligations are met this creates a risk for the scientist.

7.8.7 The report stated that one particle of FDR had been located on the garment. It provided no relevant information as to how that conclusion had been reached. Nor did it state the evidential significance of that finding. Had the evidence comprised only of the report I believe the obligations would not have been complied with.

- a. It does not provide the Court with the necessary information and scientific criteria to make an assessment – see *Davie*.
- b. It does not describe the assessment of the evidence – see *Wilson*.
- c. It does not provide reasons for the conclusion (albeit unstated) that the single particle was of no evidential significance – see *Wilson* (paragraph 61 at quoted at 5.6.8 above).

7.8.8 The evidence before the court, originating from the report and testimony (where the issues discussed would have been influenced by the precognition process) set out the results in relation to the presence of the single particle of FDR. It also covered the scientists' opinions as to the significance of the evidence in relation to the case. It follows, in my opinion, that the obligations set out above were met.

Comparison to Cartridges

7.8.9 The report stated a comparison had been performed against material obtained on cartridges from two sources but did not provide the analytical results, the

basis of the comparison, the results of the comparison or all but the most basic interpretation of the results. Had the evidence compromised only the report I believe the obligations set out in *Davie* and *Wilson* would not have been met.

- a. It does not provide the Court with the necessary information and scientific criteria to make an assessment – see *Davie*.
- b. It does not provide the facts upon which the opinion is based – see *Wilson* (paragraph 61 at quoted at 5.6.8 above).

7.8.10 The evidence before the court, originating from the report and testimony set out the results in relation to the comparison of the single particle of FDR to the material recovered from the cartridges. It also covered the scientists' opinions as to the significance of the evidence in relation to the case. It follows, in my opinion, that the obligations set out above were met

7.9 Independence

7.9.1 In section 7.7 the issue of independence was raised as part of the legal obligations placed on expert witnesses. There are provisions within ISO 17025 [9] which impose a similar, but separate, obligation.

7.9.2 Paragraph 4.1.5 of ISO 17025 [9] contains the following requirements.

“The laboratory shall ...

b) have arrangements to ensure that its management and personnel are free from any undue internal and external commercial, financial and other pressures and influences that may adversely affect the quality of their work”.

7.9.3 This is considered in my Code of Practice [26].

“7.1. The provider shall ensure that all of its practitioners adhere to the Code of Conduct in respect of their independence, impartiality and integrity ...”

7.9.4 It continues as follows.

“7.2. The conflicts of interest, perceived or otherwise, and threats to impartiality may include a practitioner:

- a. having the perception of being coerced, or is being coerced, openly or secretly ...”

7.9.5 The SPSA had the following protections for independence.

- a. A management structure which was independent from those it supplied services to (see paragraph 4.2.1 above). This is discussed further below (see paragraph 7.9.6).
- b. It had staff policies which demand its staff maintain the highest standards of integrity, impartiality and honesty [8].
- c. It had procedures to allow staff to raise concerns [8, 29].

7.9.6 The SPSA was a non-departmental public body with structures which are separate from the police. It was governed by a Board which was composed of seven members²⁹ including an independent convener, two independent members, two police force members and two police authority members. One of the police force members was Stephen House (then Chief Constable of Strathclyde Police). None of the other members were associated with this force. It appears unlikely that any member of the Board would use that position to attempt to influence a particular case and, if they did, there does not appear to be an obvious means of doing so.

7.9.7 There were separate protections to the independence of those undertaking the work.

- a. The scientists are subject to legal obligations in relation to independence (see paragraph 5.6 above).
- b. Any scientist failing to meet the obligations could risk sanction by the court.
- c. Scientists knowingly providing evidence which they did not believe in would commit a criminal offence (for example perjury, attempting to pervert the course of justice or attempting to defeat the ends of justice).
- d. Persons trying to influence scientists into giving false or misleading evidence would be committing a criminal offence.

²⁹ As listed on the SPSA Internet site (www.spsa.police.uk) on 31 July 2012.

8. CONCLUSIONS

8.1 FDR Procedures

8.1.1 The work in this case has, subject to some relatively minor points, been in accordance with the relevant SPSA procedures.

8.1.2 The deviations from the procedures did not have an adverse impact on the evidence provided.

8.2 Application of Pressure

8.2.1 Having considered the available information I have reached the following conclusions.

- a. The police insisted the SPSA perform a comparison which would not routinely have been undertaken.
- b. No pressure was applied to influence the evidence produced by the scientists other than the natural modification which was required as a result of the additional comparison.
- c. No pressure was applied by the management of the SPSA.

8.2.2 I do not believe there was anything wrong in the scientists performing, and reporting results of, the non-routine comparison.

8.2.3 I have not investigated the performance of the police in this matter and can not comment on their conduct. However, in my view there is nothing inherently wrong in the police requesting the non-routine comparison – even if they have been advised the comparison would not produce valuable information.

8.3 Reporting Concerns

8.3.1 In relation to the reporting of concerns I have reached the following conclusions.

- a. The SPSA had procedures in place which allow staff to report concerns as to requests made by the police.
- b. Those procedures did not appear to be as well known by staff as might have been expected but, for reasons set out below, this had no impact on this case.

- c. The scientists involved in this case were not aware of the procedures but would have raised any concerns through the initial route set out in the procedures.
- d. The scientists had no concerns as to the probity of the requests being made and, as a result did not see any need to raise concern.
- e. In light of the above the SPSA response to concerns being raised does not arise.

8.4 Standard of Evidence

Presence of FDR

8.4.1 In relation to the presence of the single particle of FDR on the jacket I have reached the following conclusions.

- a. The evidence (comprising the report and testimony) and the precognition process provided the Prosecution, Defence and Court with an accurate representation of the evidence and its significance in the case.
- b. The report, by itself complied with the SPSA practice but, as a result, provided less information than might have been useful for the Criminal Justice System.

Comparison of FDR

8.4.2 In relation to the comparison of the single particle of FDR from the jacket to potential sources I have reached the following conclusions.

- a. The evidence (comprising the report and testimony) and the precognition process provided the Prosecution, Defence and Court with an accurate representation of the evidence and its significance in the case.
- b. The report, by itself, provided conclusions which were correct but not sufficiently clear to avoid misinterpretation.

Overall

8.4.3 The evidence provided by the scientists from the SPSA met the standards demanded by the Criminal Justice System.

8.5 Accreditation of Procedures

8.5.1 The SPSA was (during the period the work in this case was undertaken) accredited against ISO 17025 [9] in relation to the examination of items for FDR.

8.5.2 The work in this case was undertaken, substantially, in line with the SPSA procedures. The deviations from the procedures were trivial.

8.6 Firearms Officers

8.6.1 In relation to the involvement of firearms officers in this case my conclusions are as follows.

- a. The involvement of such officers had no impact on the evidence in this case as the judge ruled the FDR evidence inadmissible based on its limited significance without having to consider the risk of contamination.
- b. The SPSA procedures did not appear to specifically cover the issue but, as described, the normal practices would have addressed the issue.
- c. In this case the normal practices did not identify the involvement of armed officers.
- d. The involvement of firearms officers may have more significant impact on other cases.

8.7 Nature of Evidence

8.7.1 I have concluded that the evidence provided by the scientists was:

- a. The result of an independent and objective assessment of the information available to the them;
- b. Was prepared to provide the Criminal Justice System with an accurate understanding of their honest opinions; and
- c. Was not influenced by the views of others (if such views existed) as to the content or wording.

8.7.2 Clearly the information available to the scientists was influenced by (a) the items submitted and (b) the examinations requested by the police. This is a feature of the Criminal Justice System which affects, to some degree all cases, and does not, by itself, undermine the nature of the evidence.

8.7.3 It follows that the evidence met the standards required by the *Ikarian Reefer* and *Wilson*.

8.8 Expert Evidence

8.8.1 I have concluded that the evidence provided by the scientists, taken as a whole, met the requirements for assisting the court set out in *Davie* and *Wilson*.

8.8.2 The report, by itself, did not meet the requirements. Neither of the judgments states that the report must do so. This may create a risk for the scientist.

8.9 Independence

8.9.1 The governance and management structures of the SPSA provided sufficient independence to ensure the results produced were protected from external pressure.

9. RECOMMENDATIONS

9.1 Single FDR Particle Protocol

9.1.1 The SPA should review the practice with respect to reporting the presence of a single particle of FDR to ensure there is a clear policy statement with respect to:

- a. The evidential significance of the presence of the particle of FDR;
- b. Whether a comparison to potential sources is acceptable; and
- c. The significance of any comparison against potential sources of FDR.

9.1.2 The review should consider the apparent incompatibility between the existing practice and the SPA procedures (see paragraph 7.1.47).

9.2 Terminology

9.2.1 The SPSA procedures employed the term “unique particle” in relation to certain elemental compositions. The advice provided to me [27] suggests that scientific opinion in this area has moved away from that approach.

9.2.2 The SPA should review its procedures to determine whether the use of the term is still appropriate. As the SPA will be involved in the development of the draft standard this may form part of that process.

9.3 Conclusions

9.3.1 The SPA should consider adopting a policy where a clear statement is provided as to the evidential significance of a single FDR particle in the report.

9.4 Expert Evidence

9.4.1 The report provided by the SPSA in this case was short and focussed on the issues. That is commendable and I am reticent about making any recommendation which could lead to longer reports.

9.4.2 The evidence provided by the SPSA, when taken as a whole, met all of the requirements established by the Courts in Scotland. To a degree this was a result of the precognitions (which influenced the issues raised in testimony) and testimony. However, it must be recognised that both of those processes are outside the control of the scientists. The SPA may wish to consider whether this creates a risk that it, or its scientists, may be criticised for events which were outside their control.

9.4.3 The SPA should consider potential means of addressing this risk. Potential options include the following.

- a. To review its procedures in relation to reporting to ensure the following requirements are met.
 - i. The need to provide the court with the facts and criteria for assessing the scientists evidence – see *Davie*.
 - ii. Provides the facts on which the opinion is based – see *Wilson*.
 - iii. Describes the assessment of the evidence – see *Wilson*.
 - iv. Describes the basis for the opinions provided – see *Wilson*.
- b. To engage with the Crown Office and Procurator Fiscal Service to investigate the possibility of an alternative to the precognition process where the scientist can set out their views “on the record”.

9.5 Reporting Concerns

9.5.1 The SPSA had procedures in place to allow staff to report concerns.

9.5.2 The SPA may wish to assess the staff awareness of its procedures in this area..

9.6 Firearms Officers

9.6.1 In this case the involvement of armed officers was not known by the scientists at the time the report was prepared. This had no impact on the evidence in the case – see comments at paragraph 8.6.1.

9.6.2 The SPA should consider why the involvement was not determined and review its procedures to determine whether they need to be modified to reduce the risk of this occurring in the future,

10. ACKNOWLEDGEMENTS

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- f. Dr J Adams of the Home Office for his assistance with the review and preparation of the report.

11. REFERENCES

- 1 Forensic Science on Trial: Government Response to the Committee's Seventh Report of Session 2004–05, 2005.
- 2 Forensic Science on Trial, Report of the House of Commons Select Committee on Science and Technology, 2005.
- 3 House of Commons Hansard, 12 July 2007, Column 67WS.

³⁰ The staff of the SPA listed in this section previously held equivalent roles within the SPSA.

- 4 Wardlow T, Firearms, The Law, and Forensic Ballistics, 2nd Edition, CRC Press, 2005.
- 5 Stewart AL, The Scottish Criminal Courts in Action, 2nd Edition, Tottel, 1997.
- 6 The Criminal Procedure Rules 2012, SI 1726 of 2012.
- 7 Act of Adjournal (Criminal Procedure Rules) 1996, SI 513 of 1996.
- 8 Scottish Police Services Authority, Staff Code of Conduct, SPSA0005, Scottish Police Services Authority, March 2007.
- 9 BS ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories.
- 10 Introduction to FDR Examination in SPSA FS(G), SPFSD-SOP(C)-0001, Issue 6, Scottish Police Services Authority, Issued 14 November 2008.
- 11 Guidance for Liaison Staff - Acceptance of Test Items for FDR Examination, SPFSD-(C)-0003, Issue 7, Scottish Police Services Authority, Issued 4 December 2009.
- 12 Receipt of Test Items at FDR Facility, SPF-SOP(C)-0004, Issue 5, Scottish Police Services Authority, Issued 14 November 2008.
- 13 Examination of Test Items for FDR, SPFSD-SOP(C)-0005, Issue 16, Scottish Police Services Authority, Issued 23 March 2012.
- 14 Note-Taking and Corroboration for FDR Case, SPFSD-SOP(C)-0006, Issue 8, Scottish Police Services Authority, Issued 14 November 2008.
- 15 Removal of FDR from Spent Cartridge Cases and Samples from Bullets, SPFSD-SOP(C)-0008, Issue 8, Scottish Police Services Authority, Issued 14 November 2008.
- 16 Mounting of FDR Sample Tapes, SPFSD-SOP(C)-0010, Issue 7, Scottish Police Services Authority, Issued 14 November 2008.
- 17 Storage of Consumables and Equipment used for FDR Analysis, SPFSD-SOP(C)-0014, Issue 5, Scottish Police Services Authority, Issued 18

- 18 Transportation of Prepared FDR Samples, SPFSD-SOP(C)-0017, Issue 4, Scottish Police Services Authority, Issued 14 November 2008.
- 19 Preparation of Reference Samples, SPFSD-SOP(C)-0018, Issue 7, Scottish Police Services Authority, Issued 14 November 2008.
- 20 SEM/EDX Analysis for FDR Samples, SPFSD-SOP(C)-0020, Issue 15, Scottish Police Services Authority, Issued 22 October 2010.
- 21 Interpretation of FDR Data, SPFSD-SOP(C)-0021, Issue 8, Scottish Police Services Authority, Issued 4 December 2009.
- 22 Background Monitoring/FDR Facility, SPFSD-SOP(C)-0022, Issue 13, Scottish Police Services Authority, Issued 14 November 2008.
- 23 Counter Contamination Protocols/FDR Facility, SPFSD-SOP(C)-0025, Issue 8, Scottish Police Services Authority, Issued 14 November 2008.
- 24 Access to FDR Facility, SPFSD-SOP(C)-0028, Issue 4, Scottish Police Services Authority, Issued 14 November 2008.
- 25 Preparation of FDR Kits, SPFSD-SOP(C)-0036, Issue 5, Scottish Police Services Authority, Issued 14 November 2008.
- 26 Codes of Conduct and Practice for forensic science providers and practitioners in the Criminal Justice System, Forensic Science Regulator, Issue 1.0.
- 27 Codes of Practice and Conduct, Forensic Science Regulator, FSR-C-103, Gun Shot Residue, Draft 0.10.
- 28 Scottish Police Services Authority, Employee Handbook, SPSA0071, Scottish Police Services Authority, May 2012.
- 29 Scottish Police Services Authority, Confidential Reporting Policy, SPSA0022, Scottish Police Services Authority, April 2008.
- 30 Scottish Police Services Authority, Dignity and Respect at Work Policy, SPSA0068, Scottish Police Services Authority, January 2012.

12. ABBREVIATIONS

Abbreviation	Meaning
BS	British Standard
BSc	Bachelor of Science
Co	Company
Crim	When used with EWCA means Criminal Division
EDX	Energy Dispersive X-Ray Spectroscopy
EG	Estates Gazette
EWCA	England and Wales Court of Appeal
FCR	Family Court Reporter
FDR	Firearm Discharge Residue
FSAC	Forensic Science Advisory Council
FSR	Fleet Street Reports
GSR	Gun Shot Residue
HCJAC	High Court of Justiciary Appeal Court
HM	Her Majesty's
IEC	International Electrotechnical Commission
ISO	International Organization for Standardization
J	Justice of the High Court
LJ	Lord Justice
Ltd	Limited
MRSC	Member of the Royal Society of Chemistry
MSc	Master of Science
PBR	Production Book Reference
PLC	Public Limited Company
QC	Queen's Council

SC	Session Cases
SEM	Scanning Electron Microscopy
SI	Statutory Instrument
SLT	Scottish Law Times
SOP(C)	Standard Operating Procedure for Chemistry Division
SPA	Scottish Police Authority
SPFSD	Strathclyde Police Forensic Science Department ³¹
SPSA	Scottish Police Services Authority
UKAS	United Kingdom Accreditation Service
WLR	Weekly Law Reports

³¹ Before the creation of the SPSA the Scottish forensic science laboratories were part of the police structure.