



Home Office

# **DAMILOLA TAYLOR:** AN INDEPENDENT REVIEW OF FORENSIC EXAMINATION OF EVIDENCE BY THE FORENSIC SCIENCE SERVICE

A report by Alan Rawley QC  
and Professor Brian Caddy



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# REPORT

## THE PURPOSE OF THE REVIEW

1. In August 2006 we (Alan Rawley Q.C. and Professor Brian Caddy) accepted an invitation from the Home Secretary to conduct an Independent Review of the scientific evidence presented by the Prosecution during the trials of Danny and Rickie Preddie in connection with the death of Damilola Taylor.
2. During the course of the two trials involving the Preddie brothers evidence presented by the Prosecution suggested that there were serious quality failures in the Forensic Science Service Ltd's (FSS) examination of items of clothing sent to them by the Metropolitan Police Service (MPS) after Damilola's death.
3. Our terms of reference were as follows:
  - (a) To conduct a Review of the forensic examination of evidence carried out by the FSS following the death of Damilola Taylor.
  - (b) To establish an agreed set of facts and time line of the FSS' examination of this evidence.
  - (c) In the light of its findings above, to make recommendations to the Home Secretary on the need or otherwise to re-examine forensic evidence in other comparable cases.
  - (d) To make recommendations to the Home Secretary and the Board of the FSS on the need or otherwise to make changes in its examination procedures and the recruitment, training and management of forensic scientists by the FSS.
  - (e) To make recommendations, as necessary, to the Home Secretary on the future role of the Forensic Regulator in the oversight of standards applicable to all suppliers providing forensic services to the Criminal Justice System within the UK.

## OUR CONCLUSIONS

4. We have restricted our review to the finding of blood and other body fluids. We have not considered DNA profiling. Our conclusions (which are without hesitation or qualification), based upon documentary evidence and oral testimony, are that there was no systemic failure in the operations of the FSS; there were however human failures in implementing the operating procedures of the FSS which brought about the failure to recover crucial evidence; that evidence was Damilola's blood on the right trainer (APR 60) said to belong to Danny Preddie and Damilola's blood on a black "Giorgio" sweatshirt (APR 34) said to belong to Rickie Preddie.
5. The human failures which we find took place varied in seriousness and we will make the appropriate distinctions in due course. It is appropriate however to note that no scientist however experienced or skilled can ever be guaranteed to find the evidence sought. Searching with the naked eye, with appropriate lighting, with microscopic aids and with the application of chemicals yields the right results in nearly all cases. But sometimes, due to human fallibility, there is failure. We do not believe that the failure rate is high; the FSS on the evidence will tolerate no acceptable failure rate and nor will any of the other Forensic Providers.

6. We have examined a number of other cases where a failure to find blood by the FSS has allegedly occurred. These cases have been supplied to us via the MPS and the Association of Chief Police Officers (ACPO) and we have examined them all. Our detailed findings are set out in the Schedule Part 1 for those cases where we do not believe there was a failure; and we shall deal in outline with those cases where there was a failure in the main body of the report. What we need to say at this stage is that our finding that there was no systemic failure by the FSS is not affected by these matters.
7. We have every reason to hope and believe that we have been supplied through the MPS and ACPO with all homicide cases where any suspicion arises that the FSS missed vital evidence of blood or other body fluids. As a result of this the risk of comparable cases throwing up the sort of difficulty experienced in the Damilola Taylor case is low although it cannot be entirely excluded. The cases identified by the MPS and ACPO are set out on Part 2 of the Schedule to this report; we have not been told of any others where there is an appreciable risk. It has recently been suggested to us that the FSS ought to look at every case on which the Reporting Officer (RO) and the two Assistant Scientific Officers (ASOs) the subject of this report worked. We enquired of the FSS whether this was feasible; their reply was that it was not. It would mean finding every exhibit wherever it was and examining it afresh in its present condition and not the condition it bore when submitted to the laboratory. We believe that the difficulties are real and substantial and, accordingly, we are loath to make any positive recommendation that the exercise should take place. We think it best to leave it to the FSS and the police to co-operate in considering whether the exercise could possibly be done and if so in what form. We therefore advise the Home Secretary to await any further police report.
8. Nor do we need to make recommendations to the Home Secretary or the Board of the FSS on the need to make changes in its examination procedures or the recruitment, training and management of forensic scientists by the FSS. We believe that there is no such need, although we have made suggestions on detail. We have engaged in an exhaustive examination of all of the FSS Standard Operating Procedures and other internal management regulations and of all the recruitment and training practices then and now in place. We have been supplied with all the relevant documents and have listened to the relevant oral evidence. Without exception we regard the standards set by the FSS to be excellent. They compare properly with what we have been able to learn of other Forensic Providers' operating practices. The FSS is also UKAS and BSI accredited.

## OUR THANKS

9. Before we turn to the details of our Review we must explain that we have of necessity relied entirely upon the goodwill and co-operation of all parties since we have no powers to compel, only to cajole and persuade. This has meant delay of various sorts since we could not expect witnesses to cancel foreign business trips and vacations long arranged in advance; nor could we reasonably expect a search for documents to be made upon the instant to the detriment of all other business of an organisation or an individual. We pay tribute to the co-operation we have received for which we are very grateful. The FSS in particular have co-operated willingly, quickly and in every particular. Mr Michael Loveland deserves particular commendation for the exemplary way in which he collected and marshalled the FSS documents. Dr Angela Gallop formerly of Forensic Alliance (FAL) and now of LGC Forensics, assisted the review at no little inconvenience to herself and her staff and despite the fact that there was a risk that confidential information might be compromised. Happily we believe that it was not. FAL was taken over by LGC Forensics on September 16 2005. LGC continued the work on the case. We are grateful to Mr Gary Pugh Director of MPS Forensic Services and all other members of the MPS who have assisted in collating evidence and making submissions. All the witnesses attended voluntarily. To all of them we owe our thanks particularly to those who attended notwithstanding that they might be the subject of criticism. Finally we wish to thank Mr Christopher Sallon Q.C. and his junior Miss Rebecca Trowler

who represented the FSS and who together with Mr John Hardy, counsel for two of the ASOs, gave shape and purpose to the evidence and presented their cases with great skill. While we did not always accept their submissions they were needed to identify issues.

## DAMILOLA TAYLOR'S DEATH

10. On Monday November 27, 2000 at about 4.45 p.m. Damilola Taylor, a 10-year-old schoolboy, was unlawfully killed on the streets of a housing estate in Peckham, South London. He was found collapsed but still alive in the stairwell of a block of flats in Blakes Road, Peckham. He was taken to hospital where he died of his injuries. The post mortem concluded that he had died from loss of blood caused by a single stab wound to his left leg. The stab wound was in all probability caused by a broken bottle.

## THE POLICE INVESTIGATION

11. There was an intensive investigation into Damilola's death. The police tried to find scientific evidence which might link one or more of a number of suspects to the crime. There was an extensive loss of blood at the scene and it was entirely realistic for the police to set in train a search for Damilola's blood on someone else's clothing or shoes. Operation Seale, as the case was named, involved the seizure of a large number of items of clothing and shoes from various persons. The object of the exercise was to search for blood and to tape for fibre evidence which might make a connection between the deceased and a suspect.
12. In December 2000 when the Damilola Taylor investigation was first referred to them the FSS laboratory at Lambeth was already dealing with 200 homicides and 200 rapes (some of these matters being very high profile) and some members of the MPS preferred that their cases were not processed out of London. This attitude has subsequently largely changed.
13. In operation Seale up to July 2001 there were 40 submissions to the FSS laboratory which involved a total of 441 items. About half of the submissions and somewhat over 90% of the 441 items were submitted in the first 2 months. Between November 30, 2000 and the end of January 2001, 18 submissions were received containing 403 items. All but 3 of the submissions were marked urgent. APR 60 and APR 34 were part of submission No. 4 which arrived in the laboratory on December 4, 2000 part of 50 items all marked urgent. Submission 13 on December 22, 2000 contained 144 items all marked urgent; submission 16 on January 16, 2001 contained 78 items all marked urgent.
14. There was thus an enormous pressure on the FSS to process all these urgent items as quickly as possible. It is common ground that when the police want something done urgently they do not wish excellence to be compromised. Likewise the FSS while doing all they can to manage their work and reduce pressure on their scientists, in particular the all important RO, do not wish excellence to be compromised. But the tension between the pursuit of excellence and the demand for urgent results is likely to have its effects and in our view did so in this case.

## THE TEAM OF SCIENTISTS

15. The procedure, in broad terms, was for the Senior Investigating Officer (SIO) to contact the FSS laboratory and make known his requirements in writing in the submission forms. The Case Reporting Unit, within which the Reporting Officers operated and the Evidence Recovery Unit (ERU), within which the ASOs operated, would then provide a team to deal with the SIO's requirements which was usually, as here, one RO and a number of ASOs. One of the most experienced Reporting Officers was appointed RO with a team of 9 ASOs to work under him on blood screening all of whom were highly regarded and experienced operators. They were also working on other cases. The RO would liaise with

the SIO and pass on the instructions to the ASOs usually in writing or partly in writing and partly orally. In this particular case the RO asked the ASOs to keep their bench examination notes to the point and as short as was proper.

16. The relevant exhibit submission forms set out the brief circumstances of the case and requested that items of clothing be taped for fibres and that all footwear and clothing be screened for blood. These requests became the instructions to the ASOs; the screening for blood was to be of the outside of a garment and such parts of the inside of the front as might be exposed to receive transfers of blood. (The articles were taped for fibres but the FSS were not asked to investigate the results).
17. The FSS successfully managed to protect the ASOs from the pressure of the police requirements of urgency; the evidence of the ASOs is that they did not feel under pressure; the strain was taken at the RO level (hence the RO's instruction to the ASOs to keep their bench examination notes to the necessary minimum).

## RECRUITMENT AND TRAINING

18. The minimum requirement for recruitment is (and was in 2000) four GCSE passes including either a scientific subject (preferably biology or chemistry) or mathematics together with an A level in a scientific subject (preferably biology or chemistry). We are told that the reality is that recruitment provides plenty of good people above the minimum standard; people usually with 2 or more A levels and a number have degrees. Staff are encouraged to pursue further education and the FSS provide various means of support to those who, it is felt, have a good chance of moving on in the organization. With ASOs this would help towards a degree in biology or chemistry.
19. Training in body fluids search is delivered over a period of about 6 weeks by scientists with substantial experience. It is delivered according to a Training Plan known as FSS-TS-650. There are also Training Manuals. All the assistants who gave evidence before the review were satisfied with the training and felt competent at its end. Competency tests are taken before an assistant can start bench work; the tests are intended to weed out those who do not come up to standard. Once an assistant begins bench work he or she will be directly mentored by an experienced person. Mentoring will last about 3 months; an assistant will not move to bench work without being mentored if the mentor is not satisfied of the assistant's competence. Thereafter the assistant is subject to continuing supervision by a supervisor and an annual Personal Development and Personal Review (PDPR). We regard the recruitment standards and the scheme of training to be fit for their purpose. They compare with the training at FAL/LGC. Additionally we recommend that in collaboration with the Council for the Registration of Forensic Practitioners (CRFP) standards should be developed for assistant scientists all of whom should be registered competent with CRFP. We would expect the FSS to encourage and help their staff in this.

## SCREENING FOR BLOOD

20. The search for blood commences with the unaided naked eye subsequently assisted by special lighting and then the use of a low powered microscope. If blood is seen it will then be subjected to a chemical test presumptive for blood which if positive will then be followed by sampling for a DNA profile. There are a number of chemical reagents in use; in this case the Kastle-Meyer (KM) test was used. The KM test is a very reliable presumptive test for blood and has an impressive track record when properly used. The other reagents will be dealt with later in this report; all have advantages and disadvantages but no one suggests that the KM test was anything but the correct test to use.

## THE KASTLE-MEYER TEST

21. The KM test can be used as a spot test or a general test; the general test is used on an article on which blood has not been seen but is suspected to be present. The methodology is simple:- for a spot test
- (a) an ordinary round filter paper is taken and folded twice to produce a point
  - (b) the point is applied firmly but gently to the suspected stains and rubbed over it in order to transfer part of the stain to the filter paper
  - (c) the filter paper is unfolded
  - (d) the area of the point is then moistened with pure alcohol
  - (e) the same area is then treated with the liquid KM reagent
  - (f) after a short pause hydrogen peroxide is then applied to the area of the point of the filter paper
  - (g) if the reaction is pink there is a presumption of the presence of blood;

for a general test the side of the filter paper, treated as above, is dragged across the whole garment, portion by portion; it may require several filter papers to be used; each will be tested by the final application of hydrogen peroxide. The pressure on the garment should be firm but gentle and particular care should be taken with a ribbed garment to get the ribbing flat and susceptible to contact with the filter paper, which is used to get a transfer of any blood to itself from the garment.

22. The KM test can produce false positive reactions for example by contact with certain types of vegetable matter; it can also produce false negative reactions if not used properly i.e. by using the chemicals in the wrong order or by the operator not applying sufficient pressure to the point or side of the filter paper. Sometimes, also, a stain can be very resistant to transferring particles across to the filter paper and it may be necessary to excise a portion for testing.
23. Before carrying out a KM test the ASO will test the KM provided for the work usually on animal blood kept for the purpose.
24. Accordingly an ASO instructed to test an article for blood will go through the following procedures
- (a) Don the appropriate gown, cap, gloves and mask
  - (b) Clean the bench carefully with the appropriate solution
  - (c) Examine the wrapping for breaks or tears which might give rise to contamination and then unwrap the article
  - (d) Examine the article by eye then with the aid of lights and microscope if necessary
  - (e) Apply the appropriate KM test
  - (f) Write up notes, with diagrams if required, of findings
  - (g) Report findings to the RO.

## THE FSS TEST ON APR 60

25. An experienced ASO with an excellent record examined this exhibit. She was trained in 1998 in accordance with the appropriate Training Plan. She was regarded as a highly competent ASO. All her reports, with which we have been provided, make that plain. APR 60, a pair of blue Reebok trainers came into the FSS Laboratory on December 4, 2000 as part of submission No.4. The ASO examined APR 60 on December 8, 2000; there is nothing to suggest that she departed from her usual practice when carrying out the examination. KM spot tests on the right trainer were negative except for two or possibly three stains on the front outer aspect which tested positive [After DNA sampling this was revealed to be: area 1 a full profile matching Danny Preddie and area 2 no profile obtained]. The ASO

also did a general KM test of the uppers, soles, and sole ridges of both trainers including the shoelaces. The result was negative.

#### THE STAIN ON THE BACK OF THE RIGHT TRAINER APR 60

26. There was a stain on the back of the trainer (on the outer aspect of the heel of the upper). Somewhat over 4 years later (March 2004) when KM tests were done by FAL a positive result was obtained; a sample sent for DNA profiling produced a full profile for Damilola Taylor; textile fibres adhering to the stain at the heel were also discovered; one of these fibres could have come from Damilola Taylor's trousers. This was crucial evidence which had not been discovered at the FSS examination. [The FSS had not been asked to do the work of analysing and comparing fibres.]
27. The problem in discovering what happened at the FSS is caused by the fact that the principal actors (the ASO and the RO) could not be asked their recollection of events until more than 3 years afterwards because until then the problem was unknown to anyone.
28. The ASO and the RO have now given evidence on several occasions about the events of December 2000. In doing so they have naturally and properly reconstructed their recollections from the case notes made by the ASO and annotated by the RO and by the known facts in relation to the existence, visibility and shape of the stain on the rear of the right trainer. A Polaroid photograph of the trainer taken from its right by the ASO gives some help also.
29. The stain was an obvious one; it could well have been blood; and it had the shape of a drop from above. After the length of time that has now elapsed it is very much less visible particularly because the centre was cut out by FAL and removed for DNA sampling.
30. The position of the ASO is that the stain was so obvious that she cannot have failed to see it; accordingly if, as she presumes, she saw it, she must have tested it either by a KM spot test and/or by a KM general test and in each case must have obtained a negative. If she had spot tested unsuccessfully then she would have probably marked near the spot with a cross with a yellow chinagraph pencil, as she did on various other locations on APR 60. The FAL ASO who examined the shoe did not see a yellow cross on or near the stain and there was no cross when Rosalyn Hammond (another FAL Scientist) saw the shoe. That marking, if originally there, must have worn off. Alternatively if she did a general test which included the stain she obtained a negative. Her notes speak of a general test negative. In neither case did she take the matter any further by consulting with her RO, about the stain. There is no doubt that she ought to have done. Her training required her to do so, that is to consult with her RO on matters of difficulty. The stain was difficult but the negative tests could not and should not have been taken at face value. There was a clear case for considering excising a portion of the stain for testing. This decision will usually be made after consultation with the RO because excision may alter the visible character of the stain. Quite often photographs must be taken before and after excision.
31. The position of the RO is that the ASO ought to have come to him with APR 60, showed him the stain and consulted with him how best to deal with it. The RO cannot recollect whether he ever saw APR 60 out of its wrapping. Best practice dictates that he ought to look at every article and compare it with the ASO notes because it will be him giving evidence in court, not the ASO. If the RO had followed best practice, he would have looked at APR 60 and it can hardly be believed that he would not have seen the stain on the back; having seen it he would have done a KM test himself or advised the ASO to excise a portion for a KM test. The RO acknowledged without hesitation the existence of best practice and acknowledged that because of the pressures on him he had temporarily disregarded it. The expression he used was that he "wavered" best practice on some items. Thus the error of the ASO was compounded by

the RO with the far-reaching consequences now known.

32. We found both the ASO and the RO to be frank and open witnesses who did not try to excuse themselves or cover up their mistakes. Both were extremely upset at what had happened.
33. The RO continues to work for the FSS. The ASO resigned her position for personal reasons long before the error over APR 60 became known. In her personal assessment PDPR for the period April 2000 to March 2001 written for the most part in April 2001, she receives high praise on every front but was noted to have had a slight tail off in output during December 2000/January 2001 due to “outside influences”. There was no criticism of the quality of her work. The ASO herself denies there was any outside influence; but the evidence of her supervisor at the time is that the ASO was not her normal self at that time. The supervisor asked her if she had any problems. The ASO said that it was “outside of work” and didn’t want to discuss it. We accept that there was no sign of a fall off in quality of the ASO’s work leading to the time the report was written which includes the very period we are considering. But if there was a fall off in quality it would explain and be exemplified by her mistakes over APR 60.
34. There was information from another forensic scientist employed by Forensic Access, that using the normal methods it had been difficult to get a KM positive from the stain on the heel of the right trainer of APR 60.
35. When the RO was asked by the police to check that all blood traces recovered from APR 60 had been sent for profiling he checked the ASO’s notes and photographs and concluded that:-
  - (i) only two areas of bloodstaining had been identified
  - (ii) that both areas had already been sent for profiling.

#### APR 34 A BLACK GIORGIO SWEAT SHIRT

36. This item had ribbed cuffs. It was submitted to the FSS on December 4, 2000 as part of submission number 4. The request was for it to be screened for blood. Written instructions to the ERU dated December 19, 2000 included an instruction to tape the outside and search for blood/DNA.
37. Another ASO examined this item on January 4, 2001. He was trained in 2000; he expressed the view that the training was extensive and thorough; he felt himself to be competent. He made it plain that he was mentored until the FSS were happy that he was able to do live work without direct mentoring. His PDPR for the period April 2000 to March 2001 is excellent in every respect. He himself, in a written comment dated May 29, 2001, agreed with most points made in his review but stated “I feel unrewarded and undervalued as a result of my box marking”. He believed he should have achieved a better grade than the average grade he obtained.
38. The ASO saw no blood. He applied a general KM test to all the outside and inside waistband, cuffs and neck. It was negative.
39. It is clear from his notes that he checked the KM reagent before using it. He explained in evidence that he first conducted a visual examination under strip tube lights and then using a fibre optic light. He stretched the cuffs between finger and thumb on one hand to reduce the ridges of the ribbing and then used the other hand to drag the filter paper down the cuff. He found no blood.
40. On March 18, 2004 an FAL scientist using a “high” low power magnification of X40 found red material on the right cuff. The KM positive area was 3 x 3.35 cm; the small red particles covering an area

4 x 4 mm. The stain was sent for DNA testing. A full profile of Damilola Taylor was obtained.

41. It was, by common consent, a very much more difficult bloodstain to find than the stain on APR 60. The ASO's method of stretching the fabric between finger and thumb was precisely the same method applied by the FAL scientist. The stain was small and within the ribbing. Yet it should have been found.
42. The ASO resigned his position from the FSS for personal reasons long before this error came to light. We found him to be a reliable and straightforward witness.
43. Best practice in this case did not demand that the RO re-examine the garment; he ought to have looked at it sufficiently to be able to marry up the report and the article. He signed the exhibit labels. This raises questions of second examination and record checking, how they differed and when they were appropriate.

#### RE-EXAMINATION AND CHECKING

44. For a considerable period of time we did not appreciate that there was a clear distinction between re-examination and checking; the terms had been used interchangeably by all of us, witnesses included. What transpired rather late in the day and required the revisiting of parts of the evidence was that re-examination was a term properly applied to a second complete scientific examination whereas checking was a concept with many variables depending upon a great variety of factors. What had exercised our minds during the course of the evidence was the feasibility of a re-examination which would hopefully vastly reduce the possibility of error. We were told that it was not the FSS policy to re-examine for a number of reasons among which were cost, manpower and time. It was not the duty of the RO to re-examine. We floated the idea of a spot re-examination policy on selected items. It was agreed that this might reduce the possibility for error but was at the most a very second best. What was pointed out subsequently to us by the FSS was that the best practice demanded that the RO checked the work of the ASOs; checking was not a full scientific re-examination but depended on the precise circumstances of each particular article. Best practice was not enshrined in detail in any Standard Operating Practice; it was better not to legislate for detail where more harm than good might be caused. It was however dealt with in principle in item 15 of schedule 7 "Checking and Case File Review". Paragraph 4.3 of that document reads as follows:

"Everyone involved in the handling and examination of case material is responsible for the work they undertake. The direct accountability for the quality of each case must continue to rest with the individual Reporting Officer. In discharging this strict, personal accountability, Reporting Officers will be supported by the systems within which they work and by their colleagues at all levels ... the casework responsibilities of each reporting officer must include ensuring that:-

- (a) the customer requirement is met
- (b) case notes appropriate to the needs of the case so far can be assessed; record all significant findings – positive or negative
- (c) appropriate procedures are used
- (d) techniques are properly controlled and documented
- (e) advice, guidance and second opinions are sought where appropriate
- (f) statements/reports refer to all the items received, all those examined and all the apparently significant findings both positive and negative
- (g) conclusions and opinions are soundly based ...

- 5.1 certain areas of case work will be the subject of specific checking requirements as outlined in the various approved procedures. In general, a second competent scientist who has been authorised for the particular evidence type must confirm findings of critical evidential value ...
- 5.3 a reporting officer other than the Reporting Officer directly involved in the case must review all case files, statements and reports ...”

The scientific examination carried out by an ASO is therefore required to be checked at a number of levels according to a number of different criteria. The first level is the RO's application of the rule of best practice. If that had been followed in this case in relation to APR 60 the ASO would have gone to the RO with a problem stain on the rear of the right trainer and asked his advice. The ASO's evidence was that she did not think it necessary. The RO's evidence with which there was general agreement was that the ASO was wrong and he was very surprised that she had not done so.

45. The FSS best practice can be summarized in this way:-

- (a) All items must be the subject of some sort of check
  - (b) At one end of the scale is the administrative check where the article may not even be taken out of its bag but is viewed through the window in the bag to check that the item and the notes agree. This type of check would be appropriate in the case of a non-critical negative where nothing had been found nor was anything expected to be found. APR 34 probably comes into this category.
  - (c) In the case of positive findings (as on APR 60) the RO will take the item out of the bag and compare and check it against the notes. This serves two purposes: first it enables the RO, who will be the evidence giver, to familiarize himself with the item and notes; and second it will be an opportunity for him to note any other stains which are not noted or noted as negative and to decide whether further tests should be made. Those checks should be made before any part of a stain is removed for DNA sampling so that the RO may interpret the staining before its removal. Sometimes a photograph will be of assistance. If the item looks as though it might yield further information the RO may order further tests or even a complete re-examination. In any event his notes will be added to the ASO's notes. An RO should always check an equivocal stain; it ought to be brought to his attention by the ASO; and the RO ought always to consider further tests.
  - (d) We would like to see best practice and the need for checking receive a more focused treatment in the FSS Training Manuals and Standard Operational Procedures. There should be emphasis on the roles of the ASOs and the ROs and their need for close cooperation. Written instructions to the ASOs should be more comprehensive; emphasis should be placed on the need for an ASO to recognise dubious cases and to consult the RO whenever they arise.
46. The nature of checking is infinitely variable. There are among the ROs presently employed a variety of styles; using Miss Rosalyn Hammond as a bench mark (as she did herself) she told us that there were ROs whose checking was much more thorough than hers; that there were some who were not as thorough as her and some who were the same. We saw a lot of the work carried out by Miss Hammond and we regarded her as of exemplary dedication and thoroughness. She was trained at the Metropolitan Police Laboratory at Lambeth and subsequently spent 2 years at the Lambeth Laboratory as an employee of the FSS after they had taken over. She was also possessed of extremely keen eyesight.
47. The first Damilola Taylor trial, which did not involve the Preddie brothers, ended in the acquittal of all defendants. It was a trial depending upon the reliability and truthfulness of an alleged eyewitness. The

new SIO who took over the investigation after that first trial decided that he would send the exhibits for examination at FAL. The result was the finding of the crucial evidence on APR 60 and APR 34. So FAL achieved a great success and thoroughly deserve the commendations which they have received. Their success must not be contrasted too closely with the failures by the FSS. The FSS were under great pressures as we have seen; FAL were not under the same pressures and had the advantage (or possibly disadvantage) of access to casework already done and noted. They were engaged in a somewhat different task, to find something new, rather than to find everything. Nothing we say however should detract in any way from the excellence of the work of FAL.

48. Later in this report we will deal with proposals made by the FSS to eliminate so far as is possible the impact of human error on their scientific examinations.

#### OTHER ALLEGATIONS OF FAILURE BY THE FSS TO FIND BLOOD

49. We have been supplied with a schedule which contains 19 further items on which the FSS allegedly failed to detect blood. In each case we called for and studied the relevant case notes on the items prepared by the FSS scientists and the corresponding notes prepared by the LGC/FAL scientists. We have also been supplied by the ACPO with 5 or so cases from other parts of the country where it is alleged that the FSS missed blood. In each of these cases we called for all the documentation in particular the case notes and we have read and studied them all. Exceptionally a complaint included an alleged failure to find items other than blood. This we have ignored and we have restricted our investigation to the recovery of blood.
50. Of the nineteen items we rejected 15 for the reasons set out in part 1 of the Schedule to this report. The remaining 4 we accepted as failures on the part of the FSS but it is important to have regard to the particular reason in each case, the fact that in some cases other scientists from other forensic providers made the same error and that in no case was the missed blood of any evidential significance but that it may have been otherwise.

#### THE FOUR ITEMS

- 51.(a) APR 40 : a pair of dark blue Reebok tracksuit trousers with zips on the lower legs. The ASO examined this item on January 5, 2001. She recorded her examination. She found a small red/brown stain on the left leg which gave a KM positive reaction. It was sent for profiling; the result was mixed. It could not have come from Damilola Taylor. She also found a red/brown stain on the seat of the trousers giving a KM positive reaction. This produced a full profile matching Rickie Preddie. A scientist from FAL examined the item on March 17, 2004. She found nothing extra. She did not examine inside the item. 8 months later Ros Hammond of FAL, using low power magnification, found 3 small stains on the inside of the hem of the left leg the largest of which was 3 mm by 1 mm in size. A profile indicated that the blood could have come from Rickie Preddie but not from Damilola Taylor. The reason for the ASO not finding these three small stains is not clear. She carried out a general KM test of the inside of the lower legs from the zips down. She may not have applied sufficient pressure; she may have missed this tiny area; she was in any event concentrating on the outside of the article. But the blood was missed and may have been important.
- (b) APR 51 : a black puffa jacket examined by the ASO on January 4, 2001. She described it in her notes as having faint staining on front and back and quite dirty. She found a red/brown stain on the outside front of the jacket near the right pocket which gave a KM positive reaction. DNA profiling gave a match to an identified youth. FAL found further bloodstaining in and around the right pocket, on the backs of both sleeves and on the inner fabric of the right cuff. There are issues of contamination in relation to the further blood staining in and around the right pocket but there is at least one visible stain near the

pocket which could not have come about as the result of contamination. It should have been picked up by the ASO when she did her general KM test. The ASO had done a great deal of work on the item particularly around the pocket where her spot tests were negative and so marked on the item. She may simply have missed the stain or applied insufficient pressure with the filter paper. The same comments can be made in relation to the backs of the sleeves with the addition of the fact that the stains did not look like blood; the one on the back of the left sleeve was described as off white in the FAL notes. The FAL scientist told us that her first examination of this item took place over a period of as long as 7 hours. The staining on the padding under the lining of the outside of the pocket was only discovered as a result of Ros Hammond of FAL cutting the lining open – which neither the ASO nor the FAL scientist were expected to do. The staining on the inner fabric of the right cuff was not found by the FAL scientist or by Ros Hammond on her first examination and was not in fact found until April 2006. The stains found by FAL on the pocket and the backs of the sleeves was sent for profiling after positive KM results. DNA for Dannie Preddie was obtained from 4 of the stains. Unimportant blood was missed; it could have been important.

- (c) GJW 10 : A black Reebok hooded sweat top. The ASO examined this item on January 16, 2001. He found no blood (using all the usual tests and general KM testing of hood, cuffs, wristband and pockets). FAL found a bloodstain on the inside back of the left cuff close to its edge. This produced a profile which could have come from either of two identified youths. The FAL scientist failed to find this blood on October 21, 2004 even although she did a general KM test of the whole of the inside of the item. She saw no visible blood. Ros Hammond found the blood on April 11, 2005. She said that it was visible. It was however very hard to detect. Both members of the Review Panel found it almost impossible to see. Nevertheless it was blood which was not but may have been significant.
- (d) KMM 118 a grubby black school blazer. This was submitted on March 29. It was examined by an ASO on an unknown date. His notes show examination for blood under a fibre optic light and a number of KM spot tests which were negative. He also conducted a general KM test of the outside of the front and back and on the inside of the front and sleeve cuffs. He is now and was abroad during the Inquiry and could not get back to the UK. He found no blood. FAL found a bloodstain on the right cuff. The DNA profile matched an identified youth. The FAL scientist found the bloodstain. There is a problem with the state of the garment; when received by FAL both cuffs were turned up. The ASO's notes do not indicate whether the cuffs were turned up or not. In any event whatever the state of the cuffs the ASO should have found the stain. It is not possible to say why he did not other than to speculate that his KM test either missed the area or he did not exert enough pressure on the filter paper. Again, unimportant blood was missed but it might have been otherwise.

We believe that our brief discussion of each of the above 4 items reveals quite clearly examples of human fallibility and no systemic failure. We did not ask the RO about these 4 cases. The case notes have been signed off by him apparently without comment. If he did not examine the items, as appears to be the case, he disabled himself from finding the stains on APR 40 and 51 but it is unlikely that he would have seen the stains on GJW 10 and KMM 118 except by a full re-examination.

## OTHER CASES

52. We have carefully considered all the 5 or so cases sent to us by ACPO and for the reasons set out in part 2 of the Schedule we do not believe it would be right to categorise the results as failures by the FSS of the sort that occurred in the Damilola Taylor Case.

## OTHER CHEMICAL TESTS FOR BLOOD

53. We have had most of the different chemical tests demonstrated to us (except the Wagenaar & Takayama crystal tests).
54. LMG (leuco-malachite green) is like KM, a peroxidase test. It relies upon the scientist obtaining a transfer of material by rubbing a filter paper onto a suspect stain or generally across the whole article and then applying alcohol followed by LMG to the filter paper; then after a short pause hydrogen peroxide; if there is a positive there is an immediate change to green. The FSS have now since 2001 gone over to LMG although KM is still used where for instance the colour of the article is green. The change was because LMG demonstrated greater sensitivity at higher dilutions (of stain) and because KM is regarded by the FSS as hazardous to prepare.
55. Luminol: like KM and LMG Luminol involves a peroxidase reaction. A positive produces a luminescent effect. The test must be carried out in a darkened environment. It is very sensitive to blood but it is less specific than KM or LMG i.e. it will give a positive reaction not only to blood, vegetable matter or bleach but also to certain metals. Since it is often used as a spray at the scene it runs the risk, if not properly executed, of destroying evidence; it is water based and can run when sprayed on a smooth hard surface. This may interfere with or destroy a blood pattern. Photographing the luminescent effect is often difficult. It is suspected by the FSS to be a health hazard.
56. Haemastix: another peroxidase test; it is very sensitive to blood but limited in its specificity. It will give a positive reaction to other body fluids.
57. It seems to us that all the various chemical tests for blood have their disadvantages but that the balance lies clearly in favour of KM and LMG. The start of a search for blood is with the scientists' eyes aided by lights and low power microscopy. But the eyes are not always as sharp as they should be and the stains may be disoblingly obscure and hidden. Hence the development of the KM/LMG general test where the filter paper is dragged across the whole article and the spot test where a visible stain is individually tested. The weak link is that to be successful material which is blood must be transferred onto the filter paper and sometimes it is not. The commonest failure must be in the general testing; that such failures are apparently few and far between is a tribute to the care taken by the scientists. Quite often in difficult cases more than one type of chemical test is used.

## PROPOSALS BY THE FSS TO REDUCE OR ELIMINATE MISTAKES

58. The FSS have formulated and are putting into practice a number of changes in their business practices designed to reduce or eliminate errors
  - (a) a business quality model has been constructed and adopted by the Executive Board and the Main Board; the model established five levels of quality control from the practitioner through to management. The model began to be implemented in 2005; at the same time there was a reorganization of teams so that, for example, ROs and ASOs were physically closer and could get each other's attention much more quickly and easily. The demand to don or remove protective clothing every time one moved inside or outside a specific work area could be a powerful disincentive to movement.
  - (b) An internal inspectorate was introduced; it examines live cases before an RO checks an item; management structures; the management of a unit; the provision of resources; the setting of targets; quality management; and conducts compliance, best practice and case file audits.

- (c) All the above will provide an excellent new look at the systems now in place. What we regard as a most important development was the introduction of a pilot scheme which provided a means of searches available in body fluid cases some of which would include a full second examination by a second assistant scientist. Mr Phillip Jones, formerly of the FSS, described it as follows; there is a discussion between the scientists and the investigating officers as to what level of quality they require, bearing in mind that the more effort one puts into an examination the more costly it will be. Six types of searches have been identified:-
- (i) At the very basic level there would be an item with clearly obvious blood staining; the issue is not the presence of blood but its distribution which may support whether the victim was kicked or punched; or the simple taking of a sample of blood for a DNA analysis;
  - (ii) the second level is where, for example, police want to know whether there is any blood or fingerprint evidence on a weapon but using chemical reagents might well destroy the fingerprints;
  - (iii) the third level is a more intensive search of an article where one would expect to find blood and one would use low powered microscopy and chemical treatment; all the items so examined would be completely re-examined by someone else;
  - (iv) the fourth level presently called a standard search where visual aids and chemical testing would be used to include examining pocket linings and the inside and outside of clothing; there would be a complete re-examination of about 25% of the items;
  - (v) the fifth level would involve exploration of every area of an item with visual aids and a chemical treatment. Seams of clothing and shoes would be unstitched, linings of clothing would be removed for a search; if any blood was present anywhere on the item it ought to be found. There would be complete re-examination of the item;
  - (vi) level 6; blood not found on an item but speculative DNA extractions are made at the judgment of the RO and the customer. This again would be subject to a complete re-examination.
59. Item c at (i) to (vi) above in effect presents a choice to the customer. In homicide and rape the SIO might want a service that involved a complete re-examination. In volume crime he might not. The cost will be important. More work will mean higher cost. The FSS calculations applied to Operation Seale where there were some 365 items examined for blood would come out at £73,000 for an examination not repeated and a further £55,000 or thereabouts for the items to be examined twice, an increase of about 74%. The saving on the second examination would come from the preliminary work and the first set of notes having been made available. On the totality of the FSS costs for Operation Seale, (£743,781), the search for body fluids was about 10%.
60. The FSS are presently running a pilot scheme on their different types of service. How it will conclude is presently unknown; nor is it known how the commercial considerations will be factored into what may be on offer. We can see some police officers asking why they may have to pay twice for what they only ought to pay for once; and that Forensic Providers must get things right the first time. They may also take the view that the scientists may not take sufficient care first time round knowing that a safety net existed in the form of a second examination. We think that the answer to the latter point may be that such an attitude would cause great trouble for a careless scientist who would not keep his position for long. The answer to the former point is that human fallibility exists; it has been demonstrated in this case; it usually occurs when the quarry is highly elusive and the methods of flushing it out contain within themselves the possibility for error e.g. the general KM/LMG test of rubbing filter paper over the

whole of an article at the appropriate pressure to get a transfer and without missing a single millimeter of the article. The spot test is less likely to be the subject of error but the possibility exists. Those who object to the cost of a second examination would do well to ponder the realities.

61. We recommend a not less than annual evaluation of the performance of each laboratory within the FSS by unannounced inspections by specialist teams from within the FSS.

#### FURTHER DEVELOPMENTS

62. We have pointed out the weak link in the current blood testing processes to be the necessity for a scientist doing a general KM/LMG test to use the correct pressure on the filter paper and to cover every millimeter of the article. Moreover a positive KM reaction is presumptive only; even if a DNA sample is then obtained it cannot confirm the existence of blood. The DNA may have come from another body fluid. It is also clear that there are substantial limitations in the use of Luminol and Haemastix.
63. The FSS are presently involved in research and development of non-contact tests, which can demonstrate conclusively that blood is present; and a test for the source of a DNA sample to be identified i.e. whether from blood or some other source.

#### THE FORENSIC SCIENCE REGULATOR

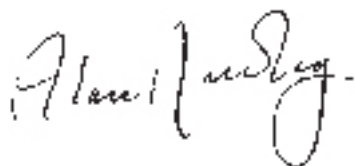
64. We met with Mr Michael Silverman of the Home Office and took evidence from him on November 7, 2006 dealing with the role of a Forensic Science Regulator. We had the original Home Office Consultation Document and the discussion with Mr Silverman addressed in particular the 9 questions posed by him on August 30, 2006. We have received from him his Final Draft dated March 5, 2007. We have received written submissions from Mr Jones at the FSS; from Christopher Sallon QC and Miss Rebecca Trowler for the FSS; from UKAS; and from LGC Forensics.
65. There are differing views on detail: on the scope of the functions of a Forensic Science Regulator and on the measures to be taken to ensure the Regulator's actual and perceived independence. UKAS differ most radically from the rest. Our views are quite firmly that a Forensic Science Regulator is long overdue; that he or she should have control and oversight of a large number of activities which are not necessarily regarded as forensic science at the present time, that he should have a board of experts to assist him and that he should be, and should be perceived to be, independent of any possible influence. The real issue is perception.
66. The Forensic Science Regulator should be an individual independent of any major forensic science provider and not wedded to any one scientific discipline. In fact there should be no requirement that the Regulator should be a scientist. He ought however to be familiar with the Criminal Justice System. The Regulator ought to have the support of an executive board (now called the Forensic Science Advisory Council) with wide experience of forensic science; lay people should be on the board. There should be representation on the board from CRFP, ACPO, UKAS and the Crown Prosecution Service and the Forensic Science Society. Forensic science should be defined as broadly as possible and should certainly cover experts working for the Defence, Police Laboratories, Scenes of Crime methodology and operations and pathologists. The ever present danger of contamination of items during the seizure by the police and subsequent storage must be within the Regulator's remit and we believe must be addressed as a matter of urgency, drawing lessons from Operation Seale and the problem of fibre analysis and matching. The Regulator would set standards, monitor their performance and deal with breaches. How this is to be done is a question for further consideration and discussion. If the Regulator is to have powers those powers must be enforceable and whether self regulation or legislation is the better course will only

become clear after an initial scheme not relying upon legislation has had time to identify and deal with the problems which will arise. If legislation is needed to create a Forensic Regulator then the creating Act can have provision for subsidiary legislation. As we understand it the proposal at present is for the creation of the Forensic Regulator and the organisation to go with him is to be by appointment by the Home Secretary with funds provided by the Home Office. That may well be the only practical course at the present time but we recommend that as soon as it is possible to do so, because of the requirement of independence, the Forensic Regulator and his Organisation are placed firmly within a Ministry of Justice.

67. The Forensic Regulator's position on ethical problems should be provided for; he should be free to consult ad hoc the appropriate persons on any ethical question with which he has to deal.
68. The Forensic Regulator's position and role in the area of covert operations and intelligence gathering must be clarified.
69. The Forensic Regulator ought to monitor the introduction of new methodologies and oversee continued professional development.
70. We suggest that the Forensic Science Regulator considers a scheme whereby each Forensic Provider is bench marked by another Provider on at least one case a year chosen by the Regulator and without prior notice.

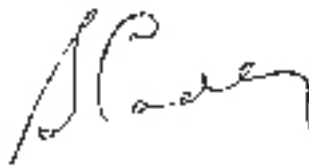
#### RECOMMENDATIONS

71. All assistant scientists should be registered competent with the CRFP; see paragraph 19 above.
72. Best practice and the need for checking should receive a more focused treatment in the FSS Manuals. The close co-operation needed between ASO and RO should be emphasised. In dubious cases the need for consultation should also be emphasised; see paragraph 45(d).
73. The availability of a complete second scientific examination of an article should be considered as an option; see paragraph 60 above.
74. There should be not less than annual evaluation of the performance of each laboratory within the FSS by unannounced inspections by specialist teams from within the FSS; see paragraph 61.
75. Recommendations relating to the Forensic Science Regulator; see paragraphs 65-70 above.



One of Her Majesty's counsel

April 17, 2007



Emeritus Professor of Forensic Science  
University of Strathclyde

## SCHEDULE PART 1

Exhibits in which the Re-examining Laboratory FAL Found Additional Stains which the Review do not believe are Meaningful.

APR/65 Blue Anorak

Bloodstains were found on the left cuff by FAL Ros Hammond, but missed by both the FAL and the FSS assistants. Many other stains were found by FAL inside the garment but the FSS assistants had been directed not to search inside the garments other than those areas that might have been exposed. Finding blood inside garments usually requires that they are turned inside out. Such procedures can result in the contamination of the outside with blood from the inside. Since this mechanism cannot be excluded for this item its significance must be rejected.

IJH/2A Nike Right Trainer

The FSS demonstrated a positive presumptive test for blood on the outer and inner aspects of the sole but the outside and inside gave a general KM negative response. Two areas were sent for DNA testing. FAL found an additional area on the sole but also areas giving weak KM responses on the laces. While the laces gave a partial profile for an identified youth it is probable that this response was from skin cells from tying up the laces and may not have been blood.

GJW/12 Blue hooded Nike Sweat Top

FSS found bloodstains on the outside upper left and right body and the right sleeve. Stains were also found on the middle back, outside upper right and left. General KM testing outside front and back, inside and outside of the hood and inside cuffs and pockets were negative. Areas 27 to 45 were sent for DNA testing. FAL found bloodstains on the outside back, upper left sleeve, and sampled more or less the same areas as the FSS. Additional areas sampled were those above a pocket and the string of the hood areas 3, 4 and 5. Materially there was little difference between these two sets of data.

IJH/2 (IJH/1) Black shoe

While FSS noted a few visible stains, general KM testing and spot testing were negative. FAL found a weak KM positive test under the chain of the shoe. This area was submitted for DNA testing (LCN) but no profile was obtained. The stains may not even have been blood.

MLC/5 Black left foot shoe

FSS spot and general KM testing was negative. FAL found no visible blood but a muddy stain gave a weak KM response that was not reproducible. The general KM test was negative, a sole yellow brownish stain gave a weak momentary general KM response. DNA (STR) analysis gave no information of any evidential value. Any material might not even have been blood.

MLC/30 Black right trainer	Spot tests and general KM testing by the FSS were negative apart from a KM positive red/brown stain on the front of the trainer. FAL saw no visible blood, obtained a weak KM positive that varied from a muddy stain, a non repeatable KM result from an area on the side of the sole and an LCN profile from this that gave a partial match with the profile of Danny Preddie. This latter DNA result might not have been blood but skin cells.
GDG/12 Blue hooded jacket	FSS found many bloodstained areas on the outside front as smears, but not so strong on the back. Areas marked 7 to 27 were submitted for DNA analysis. FAL seemed to have submitted the same areas or those in close proximity to those of the FSS as well as some areas inside the garment not tested by the FSS. It is not always easy to see from laboratory reports. DNA findings reported as of no significance. The FSS DNA result corresponded to three identified youths but excluded Damilola Taylor.
IJH/7 Grey tracksuit top	FSS tested four stains which were KM negative, while FAL found what appeared to be blood on the teeth of the zip which was not KM tested but was submitted for DNA analysis but no profile produced. It may not have been blood.
GJW/40 Jogging bottoms	FSS searched, using fibre optics, the front, back, waist band, and first 3" of legs but found no visible blood and the general KM was negative. FAL found a positive KM area on the bottom of the right leg but no DNA profile was obtained from this. It may not have been blood.
GJW/53 Nike trainers	Using low power microscopy FSS did not find any visible bloodstains and general KM testing of the uppers and outer sole was negative. FAL found a crusty stain in one area on the edge of the outer aspect of the sole of the right shoe but no DNA result was obtained. This may not have been blood.
GJW/54 Nike trainers	No visible bloodstains were seen by the FSS using low power microscopy and general KM testing on the uppers and outer sole was negative. General KM testing by FAL revealed a number of areas on both shoes but none of these gave a DNA profile and may not have been blood.
GJW/57 Black hooded jacket	Using fibre optics, the lower left sleeve front and back gave a strong KM positive response when tested by the FSS. The upper left sleeve, outside front and lower left pocket, both inside and out, gave a strong KM response. The lower right body and inside and outside right pocket, lower right sleeve and inside and outside gave discrete KM positive responses. Areas designated 7-25 were sent for DNA testing. Eleven additional areas were identified by the FAL especially on the right cuff front and bottom of the sleeve. These areas were sent for DNA analysis of which 8 gave a profile of an identified youth and three gave no profile

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but one of these gave a low copy number partial DNA of two identified youths. The FSS DNA result also identified the same two identified youths. There was little material difference in the findings.

GJW/59 Black Jacket

FSS found no visible blood and general KM testing of the outside back and front and inside pockets was negative. FAL found some flecking areas and some staining on the upper left back that gave a positive KM response. In some areas it was difficult to reproduce the KM test. No DNA profile obtained so it may not have been blood.

GJW/62 Reebok trainers

No visible bloodstains seen by the FSS and general KM testing of uppers and outer soles was negative. FAL obtained a weak general KM response to test areas but a muddy stain on the heel gave a positive KM response and an incomplete profile of no-one associated with the case. No profile was obtained from other stains and none may have been blood.

GJW/58 Black Jacket

A stain on the bottom of the back of the garment initially tested KM positive by the FAL later tested negative. The FSS had not spot tested this but it was of no consequence. Areas identified by the FSS gave DNA profiles of two identified youths. There was no material difference between the results of the laboratories.

## SCHEDULE PART 2

### OTHER CASES

- (a) On August 22, 2006 Commander David Johnston, Vice Chair of ACPO Homicide Working Group circulated all Chief Constables and asked them to bring to his attention any concerns about the work undertaken by any forensic provider in homicide investigations since 1999, particularly in cases where a review of the original work brought to light scientific evidence which ought to have been found on first submission.
- (b) The conclusion of the work resulted in a number of items which have been referred to us for consideration. Once again we express our thanks to all those who took part in the exercise and those who have subsequently helped us with our further enquiries by making documents, photographs and case notes available to us. We considered all the items very carefully.
- (c) Our conclusion was that the information from the MPS relating to the murder of Rachel Nickell which was being enquired into by the MPS was outside the scope of our enquiries.
- (d) Information from the North Yorkshire Police arising from the investigation into the death of David Williamson where a blood stain on the back of the deceased's trousers [from an innocent witness] was said to have been missed by the FSS originally, and was about a year later found by the FSS on re-examination. The object of the investigation was to discover whether the deceased had died by accident or whether he had been attacked and killed. The submission was to establish the blood pattern analysis on the clothing and scuff marks on the clothing and shoes. The main injuries to the deceased were to the left and rear of his head. There was a lot of blood on his head and a lot of blood on the grass. The FSS representative was highly thought of by the police throughout the enquiry. She visited the scene, spoke with the crime scene manager and was made aware of the circumstances and the need for a blood pattern analysis. The FSS case is that the smear of blood on the trousers was identified during a preliminary examination but the decision was made at that time not to submit it for DNA profiling as it was not part of a pattern and was probably the deceased's blood. The subsequent analysis of the jacket and trousers of the deceased was only undertaken when a man allegedly confessed to the murder. He was acquitted. We do not think that this case should be categorised as an error by the FSS.
- (e) Material from the West Mercia Police raises a complaint that the FSS having been sent among other things a ligature to which a significant hair or hairs attached failed to find the hairs. We are only in fact concerned with a failure to find blood and this case does not come within our remit. The FSS wholly disagree with the accusation; they say they found the hairs but did not initially profile them because they were obviously from the deceased. Later they did so at the request of the police and confirmed that they were from the deceased. Originally cellular material from the ligature had been profiled to try to find a link with the suspect but without success. Both ROs were thanked for their excellent support on the case in a letter dated November 9 2004 from DI Neil Jamieson.
- (f) Material from the Dorset Police. In the investigation into the murder of Beatrice Wilson the FSS failed to find blood on a pair of tracksuit trousers. The FSS conducted both spot KM tests on stains and a general KM test on the article. Both proved negative. The FSS were not commissioned to take tapings. The FAL KM spot tests and general KM test were also negative. Later FAL examined fibres from tapings they were commissioned to do. They found blood; they examined the relevant area under low power magnification and a very small stain was found on the leg. Once located the stain did not produce a KM positive by the filter paper test. Only when a very small fragment of the blood was recovered did this produce what was a weak KM positive. DNA profiling established that the blood could not have come

from the deceased or the owner of the tracksuit bottoms. So neither the FSS nor FAL found the stain by conventional methods; it was only found after taping which FSS were not commissioned to do.

This was a case in which Dorset Police were dissatisfied with the performance of the Chepstow Laboratory of the FSS. There were a number of different matters (one of which was lost swabs) which gave rise to the complaint additional to the blood on the tracksuit trousers. The two most important were:-

- (i) The inadequate DNA profiles obtained from blood on a pair of trainers : the FSS case is that they were only permitted to profile for DNA one stain per item. So far as we are aware no such limitation was placed on FAL.
- (ii) Recovery of paint flakes from the left pocket of the tracksuit trousers which FAL matched to a metal box itself linked to the incident. The linking of the box to the incident did not occur until after the clothing from early suspects had been submitted for examination. The recovery of paint flakes was not, according to the FSS, part of the agreed clothing search strategy while the FSS were employed.

The Dorset Police paid a total of £43,443 to the FSS; they asked for a refund in view of the performance of the Chepstow Laboratory; they were offered and accepted £10,000 by way of refund.

We can see no issue of systemic failure here; only misunderstandings and human fallibility.

- (g) Various matters were referred to us from the Lancashire Constabulary. The Lancashire police have their own inhouse screening laboratory for blood. Their practice has been to examine all violent crime blood cases and submit what they believe are positive items to the FSS Chorley Laboratory. A document drawn up by the FSS in January 2006 laid down a new procedure for Lancashire Blood Case Submissions because there had been a number of recent instances where blood, located by Lancashire Forensic Submissions during the prescreen of the submission, had not subsequently been located by scientists at the FSS Chorley Laboratory. This was treated as a very serious issue by the FSS and the document deals with the problems involved in a very sensible way. The potential for small blood stains to be lost (or possibly re-distributed) in transit or repackaging between Lancashire Forensic Submissions to the Officer on Division and thence to the Chorley Laboratory had to be overcome. It was decided that if the Lancashire scientists found a very small amount of blood that might easily become dislodged or might be difficult to find or an area giving a KM positive result with no visible staining, a sticker would be placed on the outer packaging indicating that the RO, on receiving the article must contact Lancashire Forensic Submissions to discuss the problem. We believe that this document was possibly treated by the Lancashire Police as an admission by the FSS that they had missed blood on 5 or 6 occasions each year for several years. We do not read the document in this sense. The FSS case is that since 1999 there have been 5 matters drawn to their attention by Lancashire including the Bell, Smith and Robinson cases dealt with below.

- (i) Darren Bell : the back door  
The FSS originally missed very small spots of blood on a back door at the scene of the shooting of Darren Bell. Before it was submitted to the FSS, bloodstaining had been found by the Lancashire Forensic Submissions Officer near the draft excluder on the dark green outer surface of the door. She had obtained a KM positive. No blood was found on first inspection by the FSS. A general LMG test was not done as it was believed that a fingerprint examination was required. Spot LMG tests were done on rust like stains but were negative. The FSS RO wrongly believed that the rust like stains were the blood referred to. There was then an investigation by the FSS and it was concluded that the RO had made wrong

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assumptions and had failed to discover from Lancashire where they had found the blood. Improvement actions were agreed. The blood was found by the FSS on re-examination.

(ii) Keith Laycock : the Knife

The results of tests on the knife were wholly inconclusive and it would not be right to conclude that any blood had been missed.

(iii) Robinson and Smith : the Shoe

This was not a homicide case. Whether the various KM, LMG and Haemastix reactions obtained on the right shoe by the FSS Chorley Laboratory, by the Lancashire FSU and by FAL were indicative of blood or some other fluid or matter giving an unknown DNA profile is uncertain. The stains tested certainly did not have the appearance of blood. The packaging was not sealed when it arrived at FAL. Lancashire FSU and the FSS (who fully investigated the case) had meetings at which it was agreed that the FSS had acted properly and that in future where the FSS obtained a negative on an item on which Lancashire obtained a positive the FSS would be authorised to swab the stain and submit for profiling as they had originally offered to do but their offer had been declined.

Accordingly the material from the Lancashire Police throws up one clear case (the back door) where blood was missed although the reasons why it was missed are such that the FSS have some mitigation for their failure.