

ORGANISATIONAL CULTURE

TRAINING

Report Reference	Comment	Source
2.3.9	In certain countries, notably in North America, experts use non-numerical standards or threshold values and employ a theory of identification which relates to the science of ridgeology. This theory is very similar to the existing procedures and practices that all experts carry out when establishing a fingerprint identification. However, the training and documentation is implemented in such a way as to determine the quality and sufficiency of the friction ridge detail rather than by a direct reference to numerical sufficiency	Unattributed
2.3.10	In the UK there is a will to move towards a non-numerical standard and the Fingerprint Bureaux of England and Wales have been progressing the training of their fingerprint experts towards the implementation of this new concept in October 2000. This was originally scheduled for April 2000 but has been deferred further to 2001	Unattributed
2.5.1	<p>Qualification as a fingerprint expert within SCRO is subject to</p> <p>Successful completion of internal/external (SCRO/NTCSCI respectively) fingerprint training courses</p> <p>Satisfactory assessment by supervisors who have the responsibility of mentoring the trainee during their work based experience</p> <p>Having satisfied the criterion of a minimum qualifying period (currently 5 years). Note – experts who qualified prior to 1980</p>	Unattributed

	had a minimum qualifying period of 7 years	
7.16.3.7	A fingerprint expert observes in his report that the fingerprint science is in transition and a need for quality control and proficiency testing has been identified in the United Kingdom. He observes that this case clearly illustrates why these issues were identified in the first place	Report and CV from fingerprint expert containing his involvement in the Shirley McKie case
14.3 (Recommendations)	<p>Whilst not falling within the remit of this inquiry, it was apparent that training of various individuals within SCRO could have been less insular and more objective. When individuals from SCRO attend conferences and seminars, the emerging issues and procedures and findings should be promulgated to the entire staff rather than confined to those attending the seminar</p> <p>We realise that training is a wider sphere highlighted by Mr McInnes and Mr Taylor, but nevertheless it was an issue identified in our inquiry</p>	Author's conclusions
14.9 (Recommendations)	<p>This inquiry has identified even within expertise from SCRO or identification branches there is a dichotomy of opinion as to procedures to be adopted in the forensic examination of specific loci</p> <p>Firstly there is the utilization of fingerprint evidence. The dilemma comes as to whether to use the aluminium powder, magna or black powder at the initial stage and we have found varying opinions on this aspect. This is a matter for experts but we feel there needs to be a scientific seminar in order that the Scottish Police Service progress this matter in a professional manner. Police Scientific Development Branch (PSDB) Fingerprint Development Handbook, April 2000 addresses these issues</p>	Author's conclusions

	<p>The second aspect is the emerging advances in DNA which compounds the decision making situation in regard to the foregoing paragraph relevant to fingerprinting. DNA is vastly emerging and expertise in this field now dictates that, particularly with the advance of the science in respect of LCN (low copy number) whereupon DNA is being traced and identified from the sweat on steering wheels, gearsticks and other such surfaces, the dilemma arises of either dusting for fingerprints or swabbing for DNA. In most cases the utilization of fingerprint powder does not alter the finding of DNA nor contaminate it to any degree but there needs to be a scientific and collegiate approach to this issue throughout Scotland</p>	
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STANDARDS

PRESENTATION OF FINGERPRINT IDENTIFICATIONS IN COURT

Report Reference	Comment	Source
2.9.1 – 2.9.6	<p>In terms of Section 280 of the Criminal Procedure (Scotland) Act 1995, the Certificate of Identification is required where fingerprint experts identify a fingerprint for court purposes. This is best explained as per HMCIC's report which states</p> <p>“The experts who are allocated the case for court prepare a joint report, under the terms of Section 280 of the Criminal Procedure (Scotland) Act 1995, which is effectively a certification of the identification. It details the marks received, the prints received and the results of the comparison process</p> <p>In 1997 the expert to whom a case was allocated on receipt of the request from the Procurator Fiscal prepared the report. In summary cases two experts signed the report. In solemn cases, however, four experts signed the report - two to be cited as witnesses and the other two to be used as substitute should the first two not be available to attend court. The number of experts utilized in solemn procedure cases has now been reduced to three. Similar arrangements exist in other Scottish bureaux</p> <p>Experts who are given cases which they have not previously worked on make their comparisons in the full knowledge that a previous expert has made an identification. This could result in indirect pressure being exerted on the expert to make the identification and means that the expert is not approaching the case in a completely objective manner, free from influence or preconceptions as should be the case</p>	HMCIC Report

	<p>This latter situation is not one that is confined to SCRO, and HMCIC accepts the practical difficulties in changing this procedure. Nonetheless, it is an area which should be examined to determine whether this potential compromise of objectivity could be avoided</p>	
2.11	<p>HMCIC makes reference to the standard and content of joint reports as follows</p> <p>“The joint report is an effective means of presenting expert evidence. The content of many of these reports is agreed between the Crown and the defence before the case comes to court. This increase in court efficiency and reduces the amount of time wasted by expert witnesses attending court and not being called to give evidence</p> <p>The standard content and quality of joint reports submitted to court by fingerprint experts was found to vary across Scotland. This may be due to the expectations of individual Procurators Fiscal who request the reports. Generally, however, the report contains scant detail and largely consist of a statement by two fingerprint experts that 16 identical characteristics were found in both the crime scene mark concerned and the fingerprint of the accused person”.</p>	HMCIC Report
2.12	<p>In 1996, prior to the Marion Ross murder, SCRO Fingerprint Bureau purchased a Sagem charting personal computer for use in preparing fingerprint enlargements for court purposes. Previously all photographic enlargements utilized by SCRO in the production of “illustration documents” were prepared by the Identification Branch of Strathclyde Police. These illustrations were normally only required for petition cases</p> <p>The charting computer process involved scanning in a photograph of the crime scene mark, irrespective if it were a lift or a photograph. The relevant digit or section of palm impression from the fingerprint/palm form taken from the accused/witness is also scanned into the system. The</p>	

	<p>scene of crime impression and the digit then appeared side by side on the display screen.</p> <p>The crime scene mark is then enlarged to the requisite size and examined by the fingerprint expert. Prior to this a physical examination will be completed by the identifying expert. The expert can then mark up 16 points of comparison on the scene of crime mark and the corresponding digit from the fingerprint form thus enabling the expert to draw a line to the margin and number each point accordingly. It is this style of reproduction which is produced in court and indeed was used in the trial of David Asbury and in the trial of Shirley McKie</p> <p>It is understood that adjustments to this computer can only be made by contrast, enlargement and brightness</p> <p>It is fair to say that a member of SCRO states that the quality of the illustrations prepared on this computer were, in his opinion, poor. This was due to the reproduction limitations of what he calls a now ageing piece of equipment. Further to this, he states that it would have been better if traditional photographic enlargements had been used</p> <p>The Sagem charting personal computer was discontinued from use by SCRO in June 2000 following the completion of a "review of existing fingerprint enlargement process" by temporary Inspector Andrew Tatnell</p> <p>The review was commissioned following criticism of the quality of enlargements produced by SCRO using the charting computer</p>	<p>Statement from member of SCRO</p> <p>X249 - Review of existing fingerprint enlargement process dated May 2000</p>
6.1.10	<p>(Rudrud and Zeelenberg) made reference to the demonstration and charting facilities based on the reproductions and feel that they were of insufficient quality and this hampered the identification. They state that those are possible contributing factors to the error but are not meant to be excuses. They further believe that the error made is not typical for any of</p>	<p>Report by Rudrud & Zeelenberg. Evidence given to Committee by Zeelenberg.</p>

	the methods and that professional assessment of the fingerprint information and impartial comparison would have led to the conclusion of non-identity	
7.8.20	In a case of a full identification for court purposes, in 1997, 16 points of comparison had to be identified and independently agreed by a total of four experts who then signed a joint report detailing their findings. A folder was also prepared containing an actual size photograph of the mark as well as "marked up" digital enlargements of the crime scene mark against the identified digits	S1 and S1A – statements of Robert McKenzie, SCRO. Evidence given to Committee.
7.14.1.19	Witness Wertheim states that the three sets of charted enlargements prepared by SCRO appear to be highly unusual. It is apparently standard practice in the United States of America to use a single set of charts and indeed he has been advised that even in the UK, this practice is highly unusual and therefore he feels that utilization of multiple sets of charts is, again, highly questionable	X204 – precognition of Pat A Wertheim dated 26/5/2000. Evidence given to Committee.
7.14.2.5	Rudrud and Zeelenberg made reference to the demonstration and charting facilities based on the reproductions and feel that they were of insufficient quality and this hampered the identification. They state that there are possible contributing factors to the error but are not meant to be excuses. They further believe that the error made is not typical for any of the methods and that professional assessment of the fingerprint information and impartial comparison would have led to the conclusion of non-identity	X229 – original Rudrud/ Zeelenberg report No 1 Fingerprint Analysis and Comparison dated 28 July 2000. Evidence given to Committee by Zeelenberg
7.14.7.2	A fingerprint expert with over 30 years experience was given material from Witness Wertheim in July 1999 and is of the opinion that Y7 is a single touch, mostly likely made by a left hand. At best he found 5 characteristics of comparison between the mark and Witness Shirley McKie's left thumb and numerous points of disagreement leading to the conclusion the mark was not made by Witness Shirley McKie. He was also critical of the SCRO marking up on the copies of the Crown productions as some of the lines shown did not identify any particular characteristics. He was surprised to learn that the standard of charting had	Statement of fingerprint expert

	been presented in evidence	
7.14.7.8	The witness Bayle is of the opinion that the marking up on the court productions had been done on a computer system resulting in dire consequences for the following reasons. The lines pointing to the ridge characteristics are not accurate and point to nothing. The lines should be at 90 degree angle to the ridge characteristics which they are not in this case. The images are not in focus and are showing pixels which flies in the face of the rules of best evidence, ie the quality of the image has been made poorer	S82 – statement of Allan Bayle. Evidence given to Committee.
7.16.6.1	Although Witness Wertheim and others make adverse comment on the fact that there were three court presentations prepared in respect of Y7, it is fair to say that there are valid reasons for this. The first presentation was prepared for the Asbury trial and utilised the first set of elimination fingerprints supplied by Witness Shirley McKie. The reason for the second folder which was apparently also prepared in respect of the Asbury trial are unclear, but may stem from the re-photographing of the mark. A third folder was quite properly prepared for the Shirley McKie trial as Scots law requires the use of arrest prints during criminal proceedings	Author's conclusions
7.22.5	The standard of court evidence provided by SCRO fingerprint experts is sadly lacking in professionalism and borders on an arrogance that the witness is an expert and not subject to the rigours of robust cross-examination. The <i>laissez faire</i> attitude has been compounded over a number of years by the defence being devoid of expertise with the ability to challenge. Having regard to this there has developed a complacency and empirical approach earlier in the chain of events and one clearly detects an entrenched institutionalised philosophy compounded by an insular attitude towards the professional sphere of fingerprints	Author's conclusions
Section 7 – Appendix C, page 129	Where SCRO Fingerprint Bureau are requested to prepare evidence for court in summary cases the trial date will be known and two fingerprint experts who will be on duty that date are identified to prepare a joint report covering all aspects of that case. Those two experts would not necessarily	Unattributed

	<p>be the same experts who made an initial identification and would have to independently satisfy themselves of those identifications prior to preparing the joint report. In solemn proceedings where there is generally no trial date known, two fingerprint experts would be allocated to prepare the case, including a joint report of all the identifications and a book containing the original crime scene lift, obtained from the identification bureau or crime scene photograph. Enlargements would also be prepared of one crime scene mark in the case for each accused, and enlargements of the corresponding identification digit or area of palm on which 16 characteristics would be identified. Fingerprint experts at SCRO view these enlargements not as evidence but as an illustration only of the methods they use to make identifications. Those two fingerprint experts would have to satisfy themselves of the identifications prior to completing any report in draft form. Added to that report (draft) would be the names of a further two fingerprint experts, identified as substitutes for the first named due to their annual leave dates not being in conflict. That draft report would then be typed and checked by either of the first two nominated experts. Thereafter all four experts should sign the productions and/or joint report, each having independently confirmed any identifications</p> <p>In 1997 therefore it was possible that four fingerprint experts could make an identification in a serious case and that another four experts, not previously involved in that identification, could be utilised as witnesses to that identification at court</p>	
14.4 (Recommendation)	<p>Traditional presentation methods utilized by SCRO have not been conducive to recent ECHR legislation or indeed demonstratively transparent. It is probably generous to say that SCRO presentations were not traditionally explanatory and tended to create a mystique and probably a fear of the unknown by court officials as well as the defence agents. It would be fair to say that such presentations have never really been</p>	Author's conclusions

	<p>challenged in any professional way and if allowed to continue, likely to create avenues for arrogance, apathy and a blasé approach. If there is no clear presentation from the outset and a challenge occurs, which was rarely the case, there is the opportunity to resort to technical jargon which normally tends to prevent in-depth interrogation</p> <p>It is fair to say that the introduction in the McKie case of defence witness Pat Wertheim was a new experience for the Scottish Judicial system. It would appear that Wertheim's presentational skills impacted on the entire courtroom. He was apparently readily understood by all, modern in style and, compared with the SCRO presentation, light years ahead</p> <p>It is also fair to say that SCRO have, since that trial, altered their presentations but there needs to be a review of what is required in order to ensure a fair and equitable trial, transparency, and an understanding by all of fingerprint identification. The customer base in fingerprint identifications is wider than merely SCRO and the police. The Crown must be consulted as to style of presentations as well as defence agents via the Law Society</p> <p>It is recommended that ACPOS, Crown Office, SCRO and the Law Society ensure that SCRO fingerprint identification presentations are carried out in accordance with the ethos of ECHR which, as Article 6 states "The principle of entitlement to a fair and public hearing and adequate time and facilities for the preparation of defence ..."</p>	
14.6	<p>The police service must operate within an ethos of transparency and an audit trail which is all too important in the era of appeals and investigations. This inquiry has found that fingerprint photograph does not necessarily utilize labels containing dates and times when the photograph was taken. This is not conducive to an understanding of sequences of events at the scene of a serious crime. It is recommended that</p>	Unattributed

	identification branches and SCRO utilize advanced technology in cameras which would superimpose onto any photograph taken the date and time and if available, the second the photograph was taken. This would assist and prove to be of immense benefit in any allegation raised or subsequent inquiry and patently demonstrate the sequence of events	
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PROCESSES

CONTESTED FINGERPRINTS

Rep Ref	Comment	Source
2.10	<p>As previously stated, fingerprint comparison is a matter of opinion, not an exact science. Paragraph 5.20 of the HMCIC's report addresses issues related to interpretation and subsequent disagreement between experts.</p> <p>'The most common disagreements are over the suitability of marks for comparison or the number of points found. This is often the result of differing levels of skill. However, there will also be occasions where the disagreement is over the identification itself. The possibility of this type of disagreement arising has to be recognised and procedures established to deal with it and, where possible, to learn from it. Presently at SCRO, if the second or third checker does not agree with an identification, they discuss it with one another and the first expert may show them the points he or she found. If they continue to disagree the matter is referred to the Quality Assurance Officer who reports the matter to the Chief Inspector. The case is then put to 2 further experts for their opinion. If agreement is not reached then it is recorded as a mark which cannot be identified. If an expert is of the opinion that an identification is a misidentification then it is immediately referred to the Quality Assurance Officer, the Chief Inspector and the Deputy Head of the Bureau. The matter is discussed and a resolution sought. The Deputy Head counsels the individual and this is recorded in their personal file. Should the mistake be considered serious enough, or more than one mistake is made, then formal action would be considered under the Discipline Code. This latter action has never been taken by SCRO</p> <p>HMCIC was informed that misidentifications are rare and that management is aware of them. These disputes are not recorded at a central point. However, HMCIC understands that SCRO are aware of the need for this process to be</p>	HMCIC Report

	<p>documented and formalized in a policy. It is intended that this will be done as part of the process of achieving ISO 9002 accreditation</p> <p>Disagreements between experts are always a possibility in an area of opinion rather than fact. To deny the existence of occasional contrary opinions is more likely to damage the credibility of fingerprint evidence than to insist that disagreements do not occur when they can. Provided that the basis for these opinions are explored to determine the reason behind them and, if appropriate, training needs are identified and met or processes are amended and change is recorded, then credibility can be maintained</p> <p>The resolution of erroneous and disputed fingerprint identifications is a key part of the credibility of fingerprinting. It is also an issue which is not confined to SCRO but for all Fingerprint Bureaux.'</p>	
6.1.11 –6.1.14	<p>In HMCIC report, paragraph 5.19, refers to 'hard cases' and makes the following comments</p> <p>'The concept of a 'hard case' has its basis in legal philosophy. A 'hard case' in the context of jurisprudence has been described as one in which lawyers disagree, where no settled rules to dispose of the case and where matters are subject to competing interpretations. In essence it has come to mean a paradigm case which focuses attention on the judicial role in its most important form. It is suggested that some analogy can be drawn here between the hard legal case and the hard fingerprint case. Some cases involving complex crime scene marks can result in fingerprinting experts making an identification bases on sixteen points which may then be disputed by colleagues. The dispute is most often not over whether the mark was made by that person, but over the number of points which can be identified. HMIC established through speaking to experts that this situation is not unusual. Nor would it be fatal to a valid identification. What is required is a standard process to deal with such cases. What is more unusual is the situation where some experts identify a mark as having been made by a particular person and other experts disagree. This happened in the case of</p>	HMCIC Report

	<p>Shirley McKie. This was not simply a challenge to the number of points 'identified' by SCRO experts but an opposing opinion stating that SCRO experts were wrong. The expert opinion given in court to that effect has since been confirmed by the independent experts consulted by HMIC. It is suggested, however, that neither of these two examples fall into the category of 'hard cases' as described above, because each has a means of resolution. They are hard in the sense that the experts disagree and there may be aspects open to interpretation. It is notable that just as lawyers and legal theorists are divided over the 'hard case' theory, some claiming that all cases are 'hard cases, this was also found to be the position with fingerprint experts. One expert said there was no such thing as a 'hard case', but just that some take longer than others.</p> <p>Given the two situations described above, there are ways to dispose of the problems. Where the dispute is over the number of points, the experts who 'sees' the additional points can literally show the doubter where the points are. Where the dispute is over the identity, then the experts who dispute the identification can explain, using their expertise, why the mark was not made by that person, in order to convince those who opine that it was. In some cases, this debate will be held in court because fingerprint evidence is evidence of opinion and not an absolute. There is a third type of case however which falls into neither of the above two scenarios and that is where there is a dispute between experts over the 'sufficiency' of a mark for identification.</p> <p>It is relevant to mention that the opinion of experts who disagree with the findings of SCRO experts in the Shirley McKie case do not result from the sufficiency of the crime scene mark. The independent experts consulted by HMIC agree with SCRO experts that, although it is a complex mark, there is sufficient detail in it to make an identification. Their disagreement is over the identification of Shirley McKie as the person who made the mark.</p>	
7.8.21 & 7.8.22	It is accepted by SCRO personnel that any points of disagreement between a mark and an inked impression would mean any elimination or identification could not proceed	S1 and S1A – statements of Robert Mackenzie. Evidence given to Committee.

	In respect of any disagreement between experts or disputed identification, the mark would normally be compared by the Quality Assurance Officer, Alan Dunbar, who would also inform the Depute Head of Bureau, Robert Mackenzie	
7.8.23	It is also worthy of note that Alan Dunbar, Quality Assurance Officer, states that SCRO routinely examine marks that other bureaux would “dismiss as insufficient” with some degree of success	S19, S19A and S19B – statements of Alan Dunbar. Evidence given to Committee.
7.14.3.2	In correspondence from a fingerprint expert, he relates that the process of identification should have gone through various stages of checking and rechecking, particularly when there was a challenge to the authenticity of the identification and, in particular, when faced with a court challenge. Accordingly, he can only place criminal connotations on the process that took place and relates it to a series of misidentifications in New York by fingerprint experts which resulted in criminal charges. The New York experience spoke of “willful blindness” with a criminal attitude of “taking bad guys off the street”	Correspondence from fingerprint expert
7.17.4 – 7.21.3	<p>In an effort to establish the reasons for the misidentifications arising (in the McKie case), this investigation has explored possible explanations/theories with fingerprint expert witnesses during interview. In addition reference is made to the conclusions in a report entitled “Interpol European Expert Group of Fingerprint Identification” which identified common causes for erroneous identifications</p> <p>The Interpol report highlights a number of concerns which include the following</p> <p>Paragraph 4.4.1 – the setting of fingerprint expertise as outlined in previous sections contains a number of potential risks. Blind acceptance, dualism in the function, positioning in the organization and non-scientific origin of its investigators generate a “field of force” that in itself is not ideal and excludes unbiased investigation</p> <p>Paragraph 4.4.2 – reported mistaken identifications are likely to find their origin in an unhealthy culture, grown in an environment in which those forces do not</p>	Report entitled European Expert Group on Fingerprint Identification.

	<p>have a quality control process. Mistakes in fingerprint identification can be avoided but they do occur nevertheless. Their occurrence damages the image of the reliability of fingerprints as an institution</p> <p>The Interpol report also identifies issues associated with the work environment and the hierarchy as being contributory factors which lead to misidentifications. These issues are expanded upon in the report in the following terms</p> <p>Paragraph 5.4.1 – mistaken identifications have some common causes. The (latent's) fingerprints being examined were of bad quality, the expert was biased and there was pressure involved. The experts were sure to be right and could most of the time not be convinced of the opposite. Independent experts investigating the print later judged, most of the times, the prints to show insufficient detail for identification or even for comparison. Real verification did not take place</p> <p>Paragraph 5.4.2 – false identifications are human errors but errors are human. If man were able to judge independently and free of bias, mistakes would be virtually impossible. The fingerprint expert is working in a field of force that generates pressure towards results. Open pressure but mostly hidden, pressure from outside but also from the inside. The need for a result can be considerable in high profile cases. The longing for a result leads to guided perception and biased evaluation. More subtle is the mechanism of subconsciously deciding while comparing. If one has found 6 points in agreement and gets the “warm feeling”, the perception and validation are guided, often leading to upgrading information, ignoring differences and stretching tolerances</p> <p>Paragraph 5.5.1 – Hierarchy (rank) in scientific decision making is considered to be inappropriate. The danger of such a process, which must be recognised and overcome, if a hierarchical system is used, are that</p>	
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	<p>(a) the junior tunes his or her opinion to that of the senior (b) the culture of the longer serving expert “sees more” (c) the pressure on the junior to please the senior</p> <p>Causes/Concerns associated with misidentification highlighted in the Interpol report can be considered in tandem with views expressed by the fingerprint expert witnesses who have contributed to this inquiry</p> <p>In relation to Mark Y7, Witness Wertheim concludes “I believe in the first examination the erroneous identification arose as a result of pure carelessness and applying a low standard of identification, in other words a 5 point standard, to what they believed at that time was an inconsequential officer elimination. But I believe once they discovered their own mistake, they refused to believe they were wrong, even though they knew it to be so”</p> <p>Another fingerprint expert states</p> <p>“Initially, my opinion was that responsibility for the error involving Shirley McKie centred round the issue of competency. From the information provided to me, I believe that the quality control measures employed by SCRO have been inadequate. I believe the intent of triple check as a quality control mechanism had been subverted into a meaningless rubber stamp procedure instead of independent examinations”</p> <p>Witness Zeelenberg has views in relation to Mark Y7 –</p> <p>“From my understanding of the facts of the case, I can see two areas where such an erroneous identification could start. Firstly the standard for elimination purposes is less than one when comparing suspects and that in such circumstances if the elimination process is not separated from the normal identification process then a quick assessment may lead to the assumption of</p>	<p>Precognition from witness Wertheim. Evidence given to Committee.</p> <p>Statement from fingerprint expert</p> <p>Evidence given to Committee.</p>
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	<p>As outlined in the Interpol report, reported mistaken identifications are likely to find their origin in an unhealthy culture linked to an environment devoid of a quality control process. The report highlights the following concerns associated with the environment and the hierarchy</p> <p>Environment – Poor quality marks, expertise bias, pressure, belief from experts that they are sure to be right, the need for results in high profile cases, warm feeling resulting in upgrading information, ignoring differences and stretching tolerances</p> <p>Hierarchy – Rank in the scientific decision making process is inappropriate, the junior tunes his or her opinion to that of the senior, culture of the longer serving expert seeing more, pressure on the junior to please the senior</p> <p>When analyzing the issues associated with the environment and hierarchy in relation to the arrangements at SCRO, a number of links can be established –</p> <p>The quality of crime scene marks Q12 and Y7 place them in the difficult category</p> <p>The Marion Ross murder was a high profile case and in respect of Q12 the need for a result was significant</p> <p>Rank within SCRO was a recognised factor</p> <p>Junior staff within SCRO appear to ingratiate themselves to senior experts</p> <p>When Y7 was challenged pressure was exerted by senior management to resolve the issue. This in turn resulted in a concerted belief from the experts that they were right</p> <p>The culture of the longer serving expert seeing more is also established by</p>	
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	be referred to the Quality Assurance Officer. He in turn would make his own independent assessment and attempt to resolve the matter. If, however, the matter remained unresolved, the circumstances would be made known to the Senior Investigating Officer and the Procurator Fiscal, although that situation is apparently very rare	
14.8 (Recommendations)	In all cases where fingerprint identifications are challenged or are likely to be challenged and in particular those cases on indictment, some form of confirmation should be achieved from another fingerprint bureau. It may be that a statement is not submitted from members of that other fingerprint bureau, but that would give a confidence in respect of the identification and is worthy of consideration for implementation	Author's conclusions

STANDARDS

CROPPING

Report Reference	Comment	Source
7.14.1.9 – 7.14.1.11	<p>Witness Wertheim then elaborates on his finding (referring to his precognition), which are as follows</p> <ul style="list-style-type: none"> (a) Witness Wertheim expressed the view that the practice of cropping was, in some parts of the fingerprint world, considered irregular and contrary to the established protocols of best evidence. (The practice of cropping is not uncommon in the United Kingdom.) (b) When giving evidence in the trial of Shirley McKie, Witness Wertheim was cross-examined by the trial judge, Lord Johnson, regarding the cropping of Production Nos 152, 180 and 189. He was informed that SCRO experts had testified to the effect that the proportion of the image deleted from those 3 productions was unrelated to the crime scene mark actually included in the Crown productions. (c) Witness Wertheim, through detailed analysis of the ridges in the entire mark, demonstrated to the court that the ridges from bottom to top exhibited none of the characteristics of a “double tap” as suggested by SCRO but on the contrary indicated a single touch 	X204 – precognition of Pat A Wertheim dated 26 May 2000. Evidence given to Committee.
7.14.1.14	Witness Wertheim considers that the mark represents one touch, and only one touch and it is free from smudging and must be compared in totality. He regards it as scientifically invalid to exclude any part of the mark from comparison with an ink print in attempting to correctly identify the mark	X204 – as above
7.14.1.18	Wertheim states that the rule of best evidence makes the cropping of the image highly questionable. He then relates to the cropping of the mark in all 3 sets of charted enlargements and the image used in the charts prepared on a digital system rather than by traditional photography. It would appear that the supposed major advantage of utilization of a digital system is to enhance unclear images. He then states the features in the mark are much clearer in the photographs in	X204 – as above

	possession of SCRO than in the charts. He relates to the fact that the images of Mark Y7 were blurred and indistinct and leads to a conclusion that the images were “degraded rather than enhanced”	
7.14.1.21	Wertheim states that when reviewing Production No 180, the first obvious fact is that the scale of enlargement of the mark has been altered and part of the doorframe has been cropped from the image. He states that the cropping of the doorframe photograph is not a concern, but the altering of the scale is a serious concern. Charted enlargements must always be prepared using the same proportion of enlargement for both the mark and the inked print. If Production No 152 was prepared to the correct scale, then that scale was changed in preparing Production No 180	X204
7.14.3.1	A fingerprint expert, in his precognition, speaks about SCRO severely cropping the photograph which is a practice condemned in the United State of America, if not world-wide. He then speaks about the fact that the photograph of the print was, in his opinion, deliberately blurred, darkened and obscured thus making differing opinions were difficult. He also relates to the ink being smeared for no apparent reason and he feels that this process “conceals mistakes by virtue of manipulation”. He relates that the mark was made by a right digit and not a left thumb print and certainly not that of Shirley McKie	Correspondence from fingerprint expert setting out his involvement in the Shirley McKie inquiry
7.14.7.9	In a report by Allan Bayle, he states that the images presented were cut down to suit the computer which is very irregular in practice. The images appear to be of different sizes which again is totally irregular. They must always be presented in the same scale. Clearly the system is not good enough for taking enlargements of ridge detail to court. Further to this, to produce 3 cropped versions of this same mark for court is highly irregular and suspicious. He observes that in this day and age marks should not be “cropped”	S82 – statement from Allan Bayle Evidence given to Committee
7.16.5	The Inquiry Team consulted with experts from the other independent Scottish bureau, to address the allegations made in respect of cropping and the court presentations. It emerged that there are some variations throughout Scotland dependant on the preference of the Procurator Fiscal. It was established that cropping is not unique to SCRO or the Asbury case and that there is a perception	Statement from Photographer Fingerprint Officer, Central Scotland Police Statement from Senior

<p>amongst experts that the enlargements are produced simply as an illustration to assist the court</p> <p>Two fingerprint experts who appeared on Frontline Scotland, also state that they have previously used cropped prints for court purposes</p> <p>Central Scotland Police only prepare actual size illustrations which are unmarked. All crime scene marks whether identified, eliminated or insufficient are included in the court presentation</p> <p>Lothian and Borders Police prepare a folder containing actual size photographs and marked up enlargements in respect of petition cases. They state that they would try to show as much of the crime scene mark as possible</p> <p>Fife, Grampian and Tayside Police only produced marked up illustrations if specifically requested by the Fiscal. These would contain the original photographs or lifts and photographic enlargements. The enlargements could show a smaller portion of the mark to demonstrate the marked up points, ie they would be cropped, however they claim this would be kept to a minimum</p> <p>Northern Constabulary have a fingerprint expert, however, should he make an identification he forwards all relevant material to SCRO, who prepare any court presentation, which is submitted directly to the Procurator Fiscal</p> <p>Several members of SCRO stated that they had been unhappy with the standard of enlargements produced by the charting PC from the outset but continued to use it because they believed the enlargements were simply an illustration for the jury and the actual size photographs and tenprints were "best" evidence</p> <p>Witness Chief Inspector Griffiths stated that he became aware (following a Frontline Scotland programme on Monday, 15 May 2000) that there was heavy</p>	<p>Identification Officer, Lothian and Borders Police</p> <p>Statement from Chief Fingerprint Officer, Grampian Police</p> <p>Statement from Senior Fingerprint Officer, Tayside Police</p> <p>Statement from Senior Fingerprint Officer, Fife Constabulary</p> <p>Statement from Fingerprint Officer, Northern Constabulary</p> <p>Statement from Retired Fingerprint Expert</p> <p>Statement from Fingerprint Expert</p> <p>Statements from Christopher Griffiths, Head Fingerprint Bureau, SCRO</p> <p>X249 – Review of existing fingerprint enlargement process dated May 2000</p>
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	<p>criticism of the enlargements made on the charting PC by Witness Wertheim. He was already aware that some experts found the equipment difficult to use and requested that the process be reviewed. A report was submitted and a copy has been given to the Inquiry Team and is referred to as "Review of Existing Fingerprint Enlargement Process dated May 2000"</p> <p>As a result of that review, SCRO suspended use of the charting PC on Tuesday, 30 May 2000</p>	
14.2 (recommendations)	<p>The practice of cropping (reducing the area of a photograph to focus on the highlighted identified point only) is not unique to SCRO and our experience is that virtually every bureau carries out cropping to some degree or another. A professional review of such procedures requires to be undertaken</p>	Author's conclusions

STANDARDS

ELIMINATION STANDARDS

Report Reference	Comment	Source
2.7.1 – 2.7.2	<p>HMCIC in his inspection of the Fingerprint Bureau of SCRO makes the following comments –</p> <p>“The taking of fingerprints for the purpose of elimination is still regarded in Scotland as a basic action during the investigation of a crime where fingerprints have been found at the scene. It is not unusual for a police officer’s fingerprints to be found at the scene of a crime that he or she has attended in the course of their duty and most fingerprint experts have experience of this”</p>	HMCIC report
6.1.9	<p>It is interesting to note that there are two aspects that they (Rudrud & Zeelenberg) learned during their investigation that may have contributed to the error which eventually resulted in criminality. The first being that the mark started as an elimination and they state that it is good practice to separate eliminations from identifications and only identify elimination prints on special request via the normal procedure. It is understandable for elimination, one does not always follow the steps of the identification process in detail or with rigour</p>	Evidence given to Committee
7.8.12	<p>A priority is to have “elimination” prints taken from the deceased. Thereafter “elimination” prints are taken from persons with legitimate access to the house, such as relatives, friends, tradesmen and the Emergency Services. In normal events this significantly reduces the number of outstanding marks. One is then left with unaccounted marks which, in the absence of an explanation, places such identified marks in the “suspicious” category</p>	Unattributed
7.8.16	<p>In the case of a serious crime elimination, the mark is examined by</p>	S1 and S1A – statement of Robert McKenzie

	two experts who must independently agree the comparison. In 1997, the experts who made the elimination would record their findings on the back of the photograph and would notify the Inquiry Team by telephone. They would also update the copy log, ie on Crimescene Marks Worksheet that the mark had been eliminated	X60 – Crimescene Marks Worksheet. Evidence given to Committee
7.8.17	A further record is kept of marks checked against persons to be eliminated on an Elimination Worksheet which shows names against batches of crimescene marks to be checked, ie A-N. The worksheet provides columns to record the first and second checkers along with the dates checked	S1, S1A as above
7.8.1.8	If a mark has been eliminated or identified as described previously, it is removed from the batch and would therefore not necessarily be examined by the second checker shown on the Elimination Worksheet. It would however be subject to validation by other experts following the elimination or identification	S126 – statement of Alistair Geddes, Fingerprint Officer, SCRO. Evidence given to Committee
7.8.19	There is some variation amongst the SCRO experts interviewed in respect of what identification standard was applied to elimination fingerprints. In essence, it appears that the number of points required to satisfy some experts fell short of the 16 required for a full identification and in some instances this could be as low as 10. Opinions were also articulated that an elimination could be made if “there is sufficient detail or information available to conclude that the supplied impressions could not belong to any other person”. Other experts expressed the view that the standard for elimination prints may be significantly lower than 10 points	S1 and S1A – statement of Robert McKenzie S19, 19A and 19B – statements of Alan Dunbar, Quality Assurance Officer, SCRO Author’s conclusions on evidence provided Evidence given to Committee
7.14.2.4	There are two aspects that (Rudrud & Zeelenber) learned during their investigation that may have contributed to the error. The first being that the print started as an elimination and they state that it is good practice to separate eliminations from identifications and only identify elimination prints on special request via the normal	X229 – original Rudrud/Zeeleberg report No 1 – Fingerprint Analysis and Comparison dated 28 July 2000. Evidence given to Committee

	<p>procedure. It is understandable that for elimination one does not always follow the vigorous steps of the identification process in detail</p>	
7.14.7.3	<p>A fingerprint expert received material from Witness Parker of Frontline Scotland. On examining this material he states that he quickly became aware that there were 5 or 6 characteristics that could be construed as being in sequence but a number of others that were not in agreement. He believes it to be a single print possibly made by a right thumb. He concludes that in his opinion it was not made by Witness Shirley McKie and the reason for the mistake could arise from someone applying a lower standard on their identification and events have escalated and they have been unable to retract</p>	Statement of Fingerprint Expert
Section 7, Appendix C, page 128	<p>A nominated fingerprint expert is given the responsibility of administering a particular case and his first priority is to examine all the submitted crime scene marks to assess which of those are of a quality to be examined. If any mark is considered to be of too poor a quality for examination, the Crime Scene Log should be updated for that mark indicating that it is "insufficient". Any remaining crime scene marks are thereafter compared against any suggested suspect or elimination prints</p> <p>In 1997, as is still the case, any crime scene mark from a murder inquiry and considered to be eliminated by a fingerprint expert, had to be independently checked by a second fingerprint expert to confirm that elimination. If a mark was so eliminated, the Crime Scene Log and Case Envelope should be updated. The Senior Investigating Officer in the case would normally be notified immediately of that elimination by telephone and that fact also recorded on the case envelope</p>	Unattributed

	<p>The elimination criteria is non-numeric and varies greatly between experts, even within the same Bureau. Some apply the same 16 point numerical system they would apply to an identification, others apply their own numerical system of lesser points, but the majority apply a non-numeric system whereby they look for sufficient detail in a crime scene mark to satisfy themselves that it could not belong to anyone, other than the person who supplied the fingerprint form used for that comparison. In volume crime cases only one expert was required to make an elimination</p>	
<p>14.7 (Recommendations)</p>	<p>This inquiry has found that fingerprints eliminated did not necessarily have a high standard of identification points. Indeed, in this particular case it would appear that at the outset, when a decision was given as to the identity in an elimination case, this elimination was based on a single figure standard and probably not on the scale of 1 to 10. Based on the premise that "today's elimination could be tomorrow's accused", this standard must be at the outset beyond reasonable doubt</p> <p>It was felt by this Inquiry Team that the standard should be equivalent to the current 16 point standard and with the transition to a non-numerical standard equal to that of an identification. However, when discussing the matter with experts such as Messrs Rudrud and Zeelenberg, the Inquiry Team were apprised that to achieve such a high standard in elimination points then this would place a considerable unacceptable and unnecessary burden on the staffing of a Fingerprint Bureau. What has to be achieved at an early stage and is of paramount importance is that the standard of eliminations takes such identifications beyond reasonable doubt</p>	<p>Author's conclusions</p>

STANDARDS

TRAINING IN PRESENTATION OF EVIDENCE

Report Reference	Comment	Source
7.16.4.1	Advocate involved in the Shirley McKie trial opines that his perception of the SCRO experts' evidence was they believed in the accuracy of what they were describing in relation to their 16 point identification but had difficulty in explaining their positions in relation to the distorted part of Y7	Statement of Advocate
7.16.4.2	The same Advocate also apportions no blame to the SCRO experts as to the quality of evidence presented as difficulties experienced enlarging Y7 in court were unforeseen	As above
7.16.4.3	A further Advocate recalls the SCRO experts' evidence as sound and convincing but felt their presentation could have been better	Statement of Advocate
7.16.4.4	A further Advocate was of the opinion that there was no obvious sign of collusion or corruption in the manner the SCRO experts gave their evidence. He did voice concerns regarding the arrogant manner of the SCRO experts when giving evidence	Statement of Advocate
14.5 (Recommendation)	In terms of giving evidence in court, training must be provided for SCRO fingerprint experts to enhance their presentation skills. This must be in tandem with Recommendation 3. This conclusion is reached as a result of information gleaned from court transcripts from trials involving SCRO experts which indicate a reliance on the fact they are experts when faced with challenges to their evidence. What in essence happened was that when the	Author's conclusion. No further detail of transcript analysis provided.

	<p>Defence or indeed the Prosecution asked them why they looked at a particular part of a fingerprint and negated other parts, they made reference to the fact that they were “experts” and that was the full reason. During cross-examination they did not give sufficiency of reason for the action taken and the sequence of events in which they reached their ultimate decision or as to why they took a particular route in arriving at that decision. Indeed when the trial judge asked questions the transcripts show a less than satisfactory response coming from SCRO personnel. Again, consultation with other customers, ie Crown Office, is paramount</p>	
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