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Witness Statement

(C.J. Act 1967, s. 9 MC Act 1980, ss 5A (3a) and 5B, MC Rules 1981, r. 70)

Statement of Anthony Peter Brian LARKIN MSc (Hons)

Age of Witness Over 18

Occupation Forensic Scientist

with

Forensic Alliance Limited
Culham Science Centre, Abingdon, Oxfordshire OX14 3ED

This statement, consisting of 23 pages each signed by me, is true to the best of my knowledge and belief and I make it knowing that, if it is tendered in evidence, I shall be liable to prosecution if I have wilfully stated in it anything which I know to be false or do not believe to be true.

Dated the 1st day of July 2004

Signature [redacted]

Qualifications and Experience

I hold a Bachelor of Science Degree with a double major in Biochemistry and Cellular and Molecular Biology and a Master of Science Degree with Honours in Forensic Science, both obtained from the University of Auckland, New Zealand. I hold a diploma of Bloodstain Evidence Interpretation achieved from Swinburne University of Technology, Melbourne, Australia. I have been a Forensic Scientist for six years, working first for the Institute of Environmental Science and Research Limited, New Zealand. I was then employed by Forensic Alliance Limited, as a Forensic Scientist in June 2001. During these times, I have been to and examined several hundred crime scenes and have encountered the evidence types involved in this case on numerous occasions.

Case Reference Number: FAL – 04965 – 03
Royal Military Police Reference: 64658/03

Information Received

The information I have received alleges that on 11 May 2003, coalition forces attacked a number of unarmed Iraqi civilians. I understand that the victims are Nadhem IL MAHAMADAWI and Sougheir IL MAHAMADAWI, Kathim IL MAHAMADAWI, Dalal IL MAHAMADAWI and Athar IL MAHAMADAWI. It is my understanding that it is alleged that the victims were attacked and struck with rifle butts, helmets, fists and boots.

It is alleged that as a result of this incident Nadhem IL MAHAMADAWI suffered serious head injuries [redacted] the Al Amarah Hospital.

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Inquiries made by officers from the Royal Military Police, identified that a patrol from 8 Platoon, 3rd Parachute Regiment was active in the area of Al U'Zayra village on the day of the incident.

Soldiers, S001 [redacted], S003 [redacted], S002 [redacted], S007 [redacted], S004 [redacted], S005 [redacted] and S006 [redacted] were identified as members of this patrol.

On 24 May 2003, I understand that they were each cautioned and all consented to a search during, which items that were believed to have been worn and used during the alleged assault were seized. I also understand that items of clothing, such as combat fatigues, had been washed prior to being seized by the Royal Military Police.

The Iraqi civilians were also approached and reference DNA samples were taken from all of the victims, except Nadhem IL MAHAMADAWI, who had been buried within 24 hours of his death, in keeping with Muslim religious custom. It is unclear whether a post mortem examination of Nadhem IL MAHAMADAWI was conducted.

His parents, Abdullah MANAA and Jusm Al MOHHADAWI, have provided reference DNA samples that have been used to generate a possible STR (DNA) profile of the deceased. Additionally, clothing (a 'dish-dash') worn by Athar IL MAHAMADAWI during the alleged assault was seized for examination.

Receipt of Items

On 17 June 2003, and 7 August 2003, numerous items were received at the Forensic Alliance, Culham Laboratory from the Special Investigation Branch, Royal Military Police at Bulford, Wiltshire. A full list of these items is provided in Appendix [1] of this statement.

Purpose of Examination

I have been asked to examine the submitted clothing, equipment and weaponry seized from the British soldiers, for the presence of bloodstaining, to comment on any blood distribution observed and to sample appropriate bloodstains for STR analysis, in order to determine who could be a possible source of the bloodstains tested.

Additionally I have been asked to examine the 'dish-dash' taken from Athar FENJANN SADDAM for the presence of bloodstaining, shoeprints and damage to this item of clothing.

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Evidential Issues

Interpretation of blood distributions

When a person has injuries that bleed, their blood may be transferred onto nearby surfaces, such as an assailant's clothing and any weapon that may have been used. This can occur by a number of different methods. The nature and distribution of the bloodstain(s) on an item can help in evaluating how the bloodstaining arose. Direct contact with a surface stained with wet blood will result in a *contact* bloodstain or *smear* of blood. Application of force to wet blood can cause the blood to break up and form into droplets which become airborne and produce *spots* and/ or splashes on the surface(s) on which they land. This is often known as spattered blood. Generally the greater the force of the impact the smaller the resultant blood spots. The amount and distribution of blood transferred will depend upon such factors as the nature of the contact, the duration of the contact, the proximity of the people/ objects involved and the amount of blood that was shed.

If a boot has been used to kick an already bloodstained surface, then blood may get transferred onto the boot. However, it is possible that a boot worn during an attack may not become bloodstained if, for example, a non-bloodstained area is struck. Therefore the absence of blood on a boot or other clothing does not mean that the wearer did not take part in an attack.

Enhancement of non-visible bloodstaining

This examination involved the enhancement of non-visible bloodstaining with the use of a chemical reagent called luminol. Luminol is applied as a spray and reacts with blood to produce a blue-green glow that can be seen in darkened environments. Luminol is extremely sensitive and reacts with very small amounts of blood that have been diluted and bloodstaining that is not visible to the naked eye.

Following luminol screening, positive areas are tested with other presumptive chemical tests for blood. Such areas that provide positive presumptive tests for blood, in the absence of a visual bloodstain, will be referred to as probable bloodstains.

STR profiling

STR profiling is a sensitive DNA analysis technique. An STR profile obtained from a human body fluid such as blood or saliva can be compared with an STR profile of a given person. If the profiles are different, then the body fluid could not have originated from the person in question. If, on the other hand, the STR profiles are the same then that individual, and anyone else who shares the same profile, can be considered as a possible source of the body fluid. The significance of finding such a match can then be assessed. A more detailed explanation is provided in Appendix [2] to this statement.

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STR analysis and parentage

DNA is inherited, half comes from the mother and half comes from the father. Therefore, it is possible to calculate the probability that an individual is the legitimate offspring of the parents. In this case this calculation has been conducted on a bloodstain tested from the butt of a rifle.

Fabric Damage

Areas of evidential textile damage are examined using a low power microscope to observe characteristics of the damage such as dimensions, shape and appearance as well as to observe the fibre ends at the damage sites. The appearance of these fibre ends aids in determining whether the damage resulted from a cut, tear, seam separation or a burn; and in some instances it may be possible to determine, the type of instrument that could have produced the damage. The appearance of the fibre ends may also indicate whether the damage is "fresh in appearance". The term "fresh in appearance" does not designate a time period, rather, it indicates that the damaged item has not been laundered or worn extensively since the damage occurred.

Shoeprints on Clothing

By comparing the soles of shoes (boots) to shoeprints (boot prints) it is often possible to determine whether or not a particular shoe could have made a print. Factors that are considered are the size, pattern, wear and random damage seen in the sole of a shoe. These are compared to any features visible in the shoeprint to establish whether or not there is any correspondence.

Impressions on clothing made by footwear are generally encountered in violent crimes as the result of kicking or stamping on the victim. Generally the detail retained is not of a high detail, particularly if the impact occurs to an area of the body where the garment is creased or folded and also where the natural curvature of the body reduces the area of impact.

The combining factors of shoe design, force of impact, angle of the shoe relative to the skin, presence of soft tissue or bony structure beneath the skin, interference from clothing between the sole of the shoe and the skin all affect the visibility, detail and presence of footwear impressions on clothing.

By making test impressions of the soles of the shoes, or areas of interest on the shoes, it is possible to compare a true size (1:1) photograph of the questioned shoeprint recovered from the scene, clothing or from bruising on bodies with the shoes submitted for comparison.

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Use of Assistants

In undertaking the work connected with this case, I was assisted by trained members of staff. Their involvement is outlined in the Forensic Examination Record (APBL100), which is attached to this statement. A full record of the work undertaken is contained within case notes made at the time of the examination and these are available, for inspection if necessary, at the laboratory.

Reference STR Profiles

The mouth swabs items DM1, JM1, KA1, ZM1, AF2 and item BGS1, from Dalal IL MAHAMADAWI, Jusm IL MAHAMADAWI, Kathim IL MAHAMADAWI, Sougheir IL MAHAMADAWI, Athar IL MAHAMADAWI and Abdullah MANAA, respectively, were used to determine their STR profiles. I have used the results obtained from these to determine the possible source of the bloodstains I have tested. These results are in a table in Appendix [3] of this statement along with other results obtained in this case.

The STR profiles of Abdullah MANAA and Jusm IL MAHAMADAWI have been used in a parentage calculation to determine the possible STR profile of the deceased, Nadhem IL MAHAMADAWI, and also to determine whether or not bloodstains tested could have originated from the son of Abdullah MANAA and Jusm IL MAHAMADAWI.

Item taken from Athar IL MAHAMADAWI

Item AF1 was a grey coloured 'dish-dash' (robe). This garment was in poor condition and there were large areas of recent tearing damage, particularly around the seams of the dish-dash. Both sleeves had been recently torn from the body of the garment. There was further recent tearing damage to the stitching across the shoulders and down the front of the dish-dash. The buttons on the front collar area had also been recently torn from the dish-dash. The damage was such that this garment could not be worn in this condition. I cannot exclude the possibility that some of this damage was the extension of old damage.

The presence of this recent tearing damage is what I may expect to see had the wearer of this garment been roughly handled, as I might expect to occur in an assault. However, the fabric of the dish-dash was a lightweight material, therefore in my opinion, this item could have been easily torn.

There were brown-black stains on the back of the dish-dash, particularly on the right shoulder area. These stains have not been analysed but, in my opinion, have the appearance of bitumen, or another road surfacing material.

Close to this area of staining on the right shoulder, was an area of visible black markings that appeared to have been made by the sole of a boot or similar object. This mark consisted of a series

of blocks, with square edges. In my opinion the sole of a boot had made this mark. The mark appeared to have been disrupted by folds in the fabric, and probably also by the curvature of the body, assuming that this mark was inflicted when the dish-dash was being worn.

On the inside of the left side of the chest area of the dish-dash a second mark, which appeared to have been made by the sole of a boot, was visible. An examination of this mark using low powered microscopy revealed that the threads of the fabric were damaged across the tops of their surfaces.

In my opinion, this was abrasion damage that was caused by the movement of the dish-dash material, using the sole of a boot, across a rough surface. One possible explanation of this mark may be that during the alleged assault someone stood on the dish-dash when this area was against the ground. There may have been some movement of the material during this action, therefore I cannot exclude the possibility that this mark was inflicted during a kicking or stamping action.

As with the mark visible on the back of the dish-dash the pattern of the mark appeared to have been disrupted by folds in the material.

I compared the tread patterns of the boots taken from the named soldiers to these marks. Due to the partial nature of these apparent boot marks, I have not been able to identify a specific boot, if any, taken from the soldiers, as being the boot(s) that made these marks. However, I can exclude the left and right boots, item S0047, and the left and right boots, item S0066, taken from S004[redacted] and S006[redacted], respectively, as being the boots that made these marks, but I cannot exclude any of the boots taken from the remaining soldiers as having made these marks.

Bloodstains were present near the cuffs of both of the sleeves. A sample of bloodstaining was taken from each of the sleeves, and these were submitted as separate samples for STR analysis. A partial STR profile was obtained from one of the bloodstains tested, and a full STR profile was obtained from the second bloodstain tested, where the components present in each STR profile were in the corresponding positions in the STR profile of Athar IL MAHAMADAWI, therefore these bloodstains could have come from himself. I have considered the possibility that these bloodstains did not come from Athar IL MAHAMADAWI and that the match observed was coincidental. I estimate that the probability of obtaining this matching STR profile if the bloodstains tested came from another person who is unrelated to Athar IL MAHAMADAWI is less than 1 in 1 billion (a billion is a thousand million).

Items taken from S003[redacted]

Bloodstains were visible on the front and back of the body-armour cover, item S0034. A bloodstain was present on the front left side of the body-armour cover and a spot of blood was present on the

back of the right shoulder. A spot of blood indicates that the blood was moving through the air prior to landing on the body armour cover, as I might expect to occur in an assault. There were further areas of bloodstaining on the back of the item. A total of five bloodstains were sampled and submitted as separate samples for STR analysis. Partial STR profiles were obtained from each of the bloodstains tested, and in some cases the results of the STR analysis indicated the presence of more than one person's DNA. However, in each instance the components present in these partial STR profiles indicated that the named victims did not contribute DNA to these results. Without reference DNA samples from the soldiers in this case I cannot comment on whether or not they could be a source of the bloodstains tested. These results are referred to as 'Unknown Person 2' and as 'Unknown Person 3' in Appendix [3] of this statement.

Item S0036 was a pair of combat boots. Numerous fine spots of blood were present on both boots. In my opinion, this pattern of blood spots was the result of at least one impact to an already bleeding person or a bloodied object. The source of the blood would have to be close to the ground. I cannot exclude the possibility that these boots have been used to kick a bleeding person or a bloodied object.

A total of five blood spots were sampled from each boot and submitted as separate samples for STR analysis. Matching STR profiles were obtained from the blood spots tested which indicated that this blood had come from a unknown female, referred to as 'Unknown Person 1' in Appendix [3] of this statement.

In my opinion, S003 has been close to a female when she, or a bloodied object wet with her blood, was struck at least once to an already bleeding or bloodied area. The female, or object, would have to be close to the ground to create the blood pattern observed. Furthermore, I cannot exclude the possibility that S003 was kicking or involved in an assault on this female.

No bloodstaining was detected on the following items:-

- S0031 Helmet;
- S0032 Webbing;
- S0033 SA80 rifle;
- S0035 Communication head set and battery pack;
- S0037 Two T-shirts;
- S0038 Two combat shirts;
- S0039 Combat trousers.

Item S00310, six pairs of socks were not examined.

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Items taken from S001[redacted]

No blood was detected on the following items:-

- S001[redacted]2 Helmet;
- S001[redacted]3 Body armour cover;
- S001[redacted]4 Webbing;
- S001[redacted]5 Combat jacket;
- S001[redacted]5a Combat trousers;
- S001[redacted]6 Left boot;
- S001[redacted]7 Right boot;
- S001[redacted]8 Two pairs of combat trousers;
- S001[redacted]9 Combat Jacket;
- S001[redacted]10 SA80 rifle.

Items taken from S002[redacted]

Possible bloodstaining was detected on the helmet, item S002[redacted]2, particularly on a black rubber band that was around the outside of the helmet. Three areas of possible bloodstaining were sampled and submitted as separate samples for STR analysis, however no STR profiles were obtained from these samples. It is possible that these stains were not human blood and could have been other material such as insects etc.

A small bloodstain was present on the strap of the SA80 rifle, item S002[redacted]8. This was sampled and submitted for STR analysis, however no STR profile was obtained.

Two small bloodstains were visible on the body armour cover, item S002[redacted]9. These were located on a scabbard for a knife and on an ammunition pouch on the front left of this item. Both bloodstains were sampled and submitted as separate samples for STR analysis, however no STR profile was obtained from either sample.

No blood was detected on the following items:-

- S002[redacted]3 Goggles;
- S002[redacted]4 Combat suit;
- S002[redacted]5 Combat suit;
- S002[redacted]6 Left boot;
- S002[redacted]7 Right boot;

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Items taken from S007 [redacted]

Two small possible bloodstains were detected on the front and back of the trousers of the combat suit, item [redacted]5. These bloodstains had been washed out of the item prior to my examination. These were not sampled following discussions with officers from the Royal Military Police.

A diluted bloodstain was detected on the back of the trousers of the combat suit, item SJ6. As these items had been washed prior to my examination, it is my opinion, that this bloodstaining was not related to the alleged murder and therefore this bloodstaining was not sampled.

No blood was detected on the following items:-

- [redacted]1 Helmet;
- [redacted]2 Webbing;
- [redacted]3 SA80 rifle;
- [redacted]4 Body armour cover;
- [redacted]7 Left boot;
- [redacted]8 Right boot.

Items taken from S004 [redacted]

A small bloodstain was visible on the inside back of the body armour cover, item [redacted]1. This was sampled and submitted for STR analysis. A partial STR profile was obtained from this sample and the components present indicated that this blood could not have come from the victims in this case. This blood originated from an Unknown male, referred to as 'Unknown Person 4' in Appendix [3] of this statement.

A spot of blood was present in the recessed area of a screw hole in the butt of the SA80 rifle, item [redacted]2. The spot of blood indicates that blood was moving through the air prior to landing in the screw hole. Spots arise due to force, such as an impact, being applied to a surface stained with wet blood. The impact breaks the blood up into spots that will travel through the air and land on near by surfaces. The amount of force applied will affect the size of the spots of blood and also how far the blood will travel through the air. Generally, the greater the impact the smaller the spots of blood and the further the blood spots will travel.

The other bloodstains within this screw hole may have been spots of blood that have run i.e. the blood was deposited and due to movement of the rifle this has formed a run of blood. These stains do not appear to have been smeared and none of the bloodstains appear to have been diluted by cleaning or wiping.

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I cannot exclude the possibility that the butt of this rifle has been used to strike a bloodied surface such as a human head or body. The person would need to be bleeding when they were struck in the same location.

A sample of this bloodstaining was taken for STR (DNA) analysis and a full male STR profile was obtained.

As there is no reference DNA sample from the deceased, reference DNA samples from his parents, Jusm IL MAHAMADAWI (mother) and Abdullah MANAA (father), were used in a paternity calculation.

DNA is inherited from each of the parents, half comes from the mother and half comes from the father. Therefore, it is possible to calculate the probability of the STR profiling results if a bloodstain tested came from the son of Jusm IL MAHAMADAWI and Abdullah MANAA, rather than from someone else who is unrelated to them. In this case this calculation has been conducted on the bloodstain tested from the butt of the rifle, item [redacted]2.

I have considered the possibility that this blood did not originate from the offspring of Jusm IL MAHAMADAWI and Abdullah MANAA, and that the match observed was co-incidental. I estimate that the probability of obtaining this STR profile if the blood tested came from another person who is not the son of Jusm IL MAHAMADAWI and Abdullah MANAA as being approximately 1 in 20 million.

Item SAM6 consisted of two pairs of combat trousers. No blood was detected on one pair, whilst an area of bloodstaining was detected on the front of the right leg of the other pair. I understand that these items had been washed prior to my examination and this bloodstain was not sampled.

No blood was detected on the following items:-

- [redacted]3 Helmet;
- [redacted]4 Webbing;
- [redacted]5 Two combat shirts;
- [redacted]7 Boots.

Items taken from [redacted]

Item [redacted]7 was a body armour cover. A small bloodstain was present on the front right of the item. This was sampled and submitted for STR analysis. A partial STR profile was obtained from this bloodstain where the components present indicated that this bloodstaining could not have

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originated from any of the alleged victims. Without reference DNA samples from the accused soldiers I cannot comment on whether or not they could be a source of this bloodstaining. This result is referred to as 'Unknown Person 5' in Appendix [3]of this statement.

No blood was detected on the following items:-

- S0052 Machine Gun;
- S0053 Two pair of combat trousers;
- S0054 Combat shirt;
- S0055 Helmet;
- S0056 Webbing;
- S0058 Right boot;
- S0059 Left boot.

Items taken from S006

Item S0065 was a ammunition link bag. A small area of bloodstaining was detected on the outside of this bag that was sampled and submitted for STR analysis, however no STR profile was obtained from this bloodstaining.

Bloodstains were present on the front and back of the body armour cover, item S0067. A total of seven areas of bloodstaining were sampled from the outside of the front and back of this item and submitted as separate samples for STR analysis. No STR profiles were obtained from six of these samples. A partial STR profile was obtained from a bloodstain tested on the back of the body armour cover which indicated that this blood could not have come from any of the alleged victims. This result is referred to as 'Unknown Person 6' in Appendix [3] of this statement.

No blood was detected on the following items:-

- S0061 Combat trousers;
- S0062 Combat shirt;
- S0063 Helmet;
- S0064 Minime machine gun;
- S0066 Boots;
- S0068 Webbing.

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Conclusions

[My opinion as to the strength of the DNA evidence is provided here for the benefit of the prosecution and defence. In the event of a not guilty plea, all the words within these square brackets should be deleted from my statement to avoid contravening the Court of Appeal ruling in Doheny (1997).

In expressing the evidential significance of my findings, I have used the following scale: no scientific support, limited, moderate, moderately strong, strong, very strong and extremely strong scientific support.

In my opinion, the STR profiling results provide **extremely strong scientific support** for the assertion that the blood spot tested from the recessed screw hole of the butt of the SA80 rifle, item S0042, taken from S004[redacted], originated from a male child of Jusm IL MAHAMADAWI and Abdullah MANAA, rather than someone unrelated to them.]

The presence of a spot of blood in this location, indicates that this blood was airborne prior to landing here, as I might expect to occur in an assault where there has been an impact into a source of wet blood. I cannot exclude the possibility that the butt of this rifle was used to strike a bloodied surface such as a human head or body. The absence of blood on the remaining area of the butt of the gun indicates that the butt of the gun had not been placed in a pool of blood on a hard surface, such as the road.

There is evidence of impact spattered blood on the boots, item S0036, taken from S003[redacted]. This blood has originated from an unknown female. The nature and distribution of the blood spots is what I would expect to see had these boots been involved in kicking a bleeding female when she was close to the ground, however I cannot exclude the possibility that S003[redacted] was close to this female whilst she was being struck by another person when she was close to the ground.

The grey 'dish-dash', item AF1, had been substantially damaged and would not have been worn in this condition. Both sleeves had been torn from the body of the garment and there was recent tearing damage to the shoulders and front of the dish-dash and also the buttons had recently been torn from the item. These findings are all what I might expect to occur in an assault or struggle.

There were brown-black stains on the back of the dish-dash, particularly on the right shoulder area. These stains have not been identified, but have the appearance of bitumen, or another road surfacing material.

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Two partial boot prints were present on the right shoulder and the left chest area. I have not been able to identify a specific boot(s) which could have made these marks however, I can exclude the left and right boots, item S0047, and the left and right boots, item S0066, taken from S004[redacted] and S006[redacted], respectively, as being the boots that made these marks, but I cannot exclude any of the boots taken from the remaining soldiers as having made these marks.

I have not been able to attribute any of the remaining bloodstains tested on the items taken from the suspects in this case as having originated from any of the named victims, and in the absence of reference DNA profiles of the suspects in this case I cannot exclude them as being a possible source of these bloodstains.

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Appendix [1] Receipt of Items

On the dates listed below, the following items were received at the Forensic Alliance, Culham laboratory from the Royal Military Police at Bulford, Wiltshire:-

17 June 2003:

S003[redacted]1	Helmet	from S003[redacted]
S003[redacted]2	Webbing	
S003[redacted]3	SA80 rifle	
S003[redacted]4	Body armour cover	
S003[redacted]5	Headset and battery pack (PRR)	
S003[redacted]6	Boots	
S003[redacted]7	Two T-shirts	
S003[redacted]8	Two DPM T-shirts	
S003[redacted]9	DPM trousers	
S003[redacted]10	6 pairs of socks	
S001[redacted]2	Helmet	from S001[redacted]
S001[redacted]3	Body armour cover	
S001[redacted]4	Webbing	
S001[redacted]5	Jacket	
S001[redacted]5a	Trousers	
S001[redacted]6	Left boot	
S001[redacted]7	Right boot	
S001[redacted]8	2 pairs combat trousers	
S001[redacted]9	Jacket	
S001[redacted]10	SA80 rifle	
S002[redacted]2	Helmet	from S002[redacted]
S002[redacted]3	Goggles	
S002[redacted]4	Combat suit	
S002[redacted]5	Combat suit	
S002[redacted]6	Left boot	
S002[redacted]7	Right boot	
S002[redacted]8	SA80 rifle	
S002[redacted]9	Body armour cover	

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S007[redacted]1	Helmet	from S007[redacted]
S007[redacted]2	Webbing	
S007[redacted]3	SA80 A2 rifle	
S007[redacted]4	Body armour cover	
S007[redacted]5	Set of desert combats	
S007[redacted]6	Set of combats	
S007[redacted]	Left boot	
S007[redacted]8	Right boot	
S004[redacted]1	Body armour cover	from S004[redacted]
S004[redacted]2	SA80 rifle	
S004[redacted]3	Helmet	
S004[redacted]4	Webbing	
S004[redacted]5	Two combat shirts	
S004[redacted]6	Two combat trousers	
S004[redacted]7	Desert boots	
S005[redacted]2	Machine gun (GPMG)	from S005[redacted]
S005[redacted]3	Two combat trousers	
S005[redacted]4	Combat shirt	
S005[redacted]5	Helmet	
S005[redacted]6	Webbing	
S005[redacted]7	Body armour cover	
S005[redacted]8	Right boot	
S005[redacted]9	Left boot	
S006[redacted]1	Combat trousers	from S006[redacted]
S006[redacted]2	Combat shirt	
S006[redacted]3	Helmet	
S006[redacted]4	MINIME 5.56mm rifle	
S006[redacted]5	MINIME link bag	
S006[redacted]6	Pair boots	
S006[redacted]7	Body armour cover	
S006[redacted]8	Webbing	
DM1	Mouth swabs	both from Dalal IL MAHAMADAWI
DM2	Plucked head hair	

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JM1	Mouth swabs	
JM2	Plucked head hair	both from Jusm IL MAHAMADAWI
KA1	Mouth swab	
KA2	Plucked head hair	both from Kathim IL MAHAMADAWI
ZM1	Mouth swabs	
ZM2	Plucked head hair	both from Sougheir IL MAHAMADAWI
AF1	Dish dash	from Athar IL MAHAMADAWI
AF2	Mouth swabs	
AF3	Plucked head hair	

7 August 2003:

BGS1	Mouth swabs	from Abdullah MANAA

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Appendix [2]

STR profiling

STR (Short Tandem Repeat) profiling is a form of DNA analysis. DNA is a complex chemical found in most cells of the human body. It carries genetic information that determines the physical characteristics of a person. This information is carried in coded form and half is inherited from each parent. Except in the case of identical twins, each person's DNA is unique, although STR profiling does not enable us to analyse every part of an individual's DNA. Each person's DNA is the same in all their cells so DNA recovered from blood cells will be the same as cellular DNA from hair roots, saliva or semen.

STR profiling uses the technique of DNA amplification in which specific areas of DNA are targeted and copied many times.

In this case a technique called SGM Plus was used. The STR profiles were produced by amplifying eleven different areas of DNA. Ten of these areas contain an STR. These are called D3, VWA, D16, D2, D8, D21, D18, D19, THO1 and FGA. The eleventh area, known as amelogenin, indicates the sex of the donor. These regions are used to produce an STR profile that appears as a series of peaks. A person will have two peaks for each STR, one inherited from each parent. If the same peak is inherited from both parents then only one peak will be observed. The positions in which these peaks appear can be measured and have been found to vary widely between individuals.

A statistical estimate can be made of the significance of a match in the circumstances of the case. This is done by estimating the probability of occurrence of each peak in the STR profile and using a formula to multiply these probabilities together. This is known as the product rule calculation. The estimates of peak probability are increased to allow for possible associations between peaks and within populations, using established methods.

There are three databases available to refer to when estimating the probability of occurrence of an STR profile. These are taken from the White Caucasian, Afro-Caribbean and Indo-Pakistani populations of this country. Where the racial origin of the person who left the body fluid is not known then the most conservative of the results obtained from the three databases is quoted.

As DNA is inherited related persons are more likely to have similar STR profiles than those who are unrelated.

Signature [redacted] .....

Appendix [3]: Table of STR profiling results

ITEM	STR PROFILE											PROFILE MATCHES	PROBABILITY OF OBTAINING MATCH (♥)
	D3	VWA	D16	D2	AMEL (♣)	D8	D21	D18	D19	THO 1	FGA		
Reference STR profiles													
JM1 Jusm IL MAHAMADAWI	16, 16	14, 19	11, 11	17, 23	X, X	13, 13	29, 30.2	13, 13	12, 14	7, 7	20, 21		
BGS1 Abdullah MANAA	16, 17	17, 19	11, 12	17, 23	X, Y	11, 13	29, 33.2	12, 20	12, 14	8, 9	21.2, 23		
AF2 Athar IL MAHAMADAWI	15, 17	15, 18	9, 11	19, 24	X, Y	13, 14	28, 29	13, 13	14, 16.2	7, 10	23, 23		
KA1 Kathim IL MAHAMADAWI	15, 16	15, 19	9, 12	18, 21	X, Y	12, 16	30, 32.2	17, 17	11, 14	6, 7	22, 25		
ZM1 Sougheir IL MAHAMADAWI	15, 16	19, 19	11, 12	18, 21	X, Y	12, 16	30, 32.2	16, 17	11, 14	6, 7	22, 22		
DM1 Dalal IL MAHAMADAWI	15, 17	14, 17	8, 9	19, 24	X, X	11, 13	28, 29	13, 13	12, 14	6, 7	19, 24		

Continued...

Signatur [redacted] .....

Appendix [3]: **Table of STR profiling results continued...**

ITEM	STR PROFILE											PROFILE MATCHES	PROBABILITY OF OBTAINING MATCH (♥)
	D3	VWA	D16	D2	AMEL (♣)	D8	D21	D18	D19	THO 1	FGA		
Item from Athar IL MAHAMADAWI													
AF1 Dish-dash Bloodstain	15, 17	15, 18	9, 11	19, F	X, Y	13, 14	28, 29	13, F	14, 16.2	7, 10	23, F	Athar IL MAHAMADAWI	Less than 1 in 1 billion
Bloodstain	15, 17	15, 18	9, 11	19, 24	X, Y	13, 14	28, 29	13, 13	14, 16.2	7, 10	23, 23	Athar IL MAHAMADAWI	Less than 1 in 1 billion
Items from S003[redacted]													
S0034 Combat Vest Bloodstain	15, 17	16, F	F, F	F, F	X, X, Y	10, 15	F, F	F, F	12, F	F, F	F, F	See Text	
Bloodstain	15, 15	F, F	F, F	F, F	X, Y	12, 15	F, F	F, F	15, F	F, F	F, F	Unknown Person 2	
Bloodstain	15, F	17, F	13, F	17, F	X, Y	12, 13, 15	F, F	F, F	15, F	F, F	F, F	See Text	
Bloodstain	15, 16, 17	16, 17	F, F	F, F	X, Y	12, 13, 15	28, 30	13, F	12, F	F, F	F, F	See Text	

Continued...

(♣) X, X indicates the source of the DNA is female. X, Y indicates the source of the DNA is male. X, X, Y indicates a mixture of DNA from a male and female.

(♥) The probability of occurrence quoted is the most common of those estimated for unrelated individuals of the major ethnic groups in this country (White Caucasian, Afro-Caribbean and Indo-Pakistani). 1 billion is a thousand million.

F The results obtained for this part of the test was inconclusive or no result was obtained.

Signatur[redacted].....

Appendix [3]: Table of STR profiling results continued...

ITEM	STR PROFILE											PROFILE MATCHES	PROBABILITY OF OBTAINING MATCH (♥)
	D3	VWA	D16	D2	AMEL (♣)	D8	D21	D18	D19	THO 1	FGA		
Items from S003 [redacted] continued...													
S003 [redacted] Body armour cover Bloodstain	15, F	16, 17	F, F	F, F	X, Y	13, 15	F, F	F, F	12, F	F, F	F, F	Unknown Person 3	
S003 [redacted]6 Left boot Bloodstain	16, 18	14, 18	12, 12	19, 23	X, X	14, 15	29, 31.2	12, 16	13, 14	6, 9	21, 25	Unknown Person 1	
Bloodstain	16, 18	14, 18	12, 12	19, 23	X, X	14, 15	29, 31.2	12, 16	13, 14	6, 9	F, 25	Unknown Person 1	
Right boot Bloodstain	16, 18	14, 18	12, 12	19, 23	X, X	14, 15	29, 31.2	12, 16	13, 14	6, 9	21, 25	Unknown Person 1	
Bloodstain	16, 18	14, 18	12, 12	19, 23	X, X	14, 15	29, 31.2	12, 16	13, 14	6, 9	21, 25	Unknown Person 1	
Bloodstain	16, 18	14, 18	12, 12	19, 23	X, X	14, 15	29, 31.2	12, 16	13, 14	6, 9	21, 25	Unknown Person 1	

Continued...

(♣) X, X indicates the source of the DNA is female. X, Y indicates the source of the DNA is male.

(♥) The probability of occurrence quoted is the most common of those estimated for unrelated individuals of the major ethnic groups in this country (White Caucasian, Afro-Caribbean and Indo-Pakistani). 1 billion is a thousand million.

F The results obtained for this part of the test was inconclusive or no result was obtained.

Signature [redacted]

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Appendix [3]: **Table of STR profiling results continued...**

ITEM	STR PROFILE											PROFILE MATCHES	PROBABILITY OF OBTAINING MATCH (♥)
	D3	VWA	D16	D2	AMEL (♣)	D8	D21	D18	D19	THO 1	FGA		
Items from S002[redacted]													
S002[redacted]2 Helmet Bloodstain	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F		
Bloodstain	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F		
Bloodstain	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F		
S002[redacted]3 Rifle Bloodstain on strap	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F		
S002[redacted]9 Body armour cover Bloodstain	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F		
Bloodstain	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F		

Continued...

(♣) X, X indicates the source of the DNA is female. X, Y indicates the source of the DNA is male.

(♥) The probability of occurrence quoted is the most common of those estimated for unrelated individuals of the major ethnic groups in this country (White Caucasian, Afro-Caribbean and Indo-Pakistani). 1 billion is a thousand million.

F The results obtained for this part of the test was inconclusive or no result was obtained.

Signature [redacted]...

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Appendix [3]: Table of STR profiling results continued...

ITEM	STR PROFILE											PROFILE MATCHES	PROBABILITY OF OBTAINING MATCH (♥)
	D3	VWA	D16	D2	AMEL (♣)	D8	D21	D18	D19	THO 1	FGA		
Items from S004 [redacted]													
S004 [redacted] 1 Body armour cover Bloodstain	16, 17	19, F	13, F	F, F	X, Y	14, 14	28, F	F, F	14, 15	9, 9.3	F, F	Unknown Person 4	
S004 [redacted] 2 Rifle Bloodstain – butt of rifle	16, 17	14, 17	11, 12	17, 17	X, Y	13, 13	29, 30.2	12, 13	12, 12	7, 9	21, 23	See Text	Less than 1 in 1 billion
Items from S005 [redacted]													
S005 [redacted] 7 Body armour cover Bloodstain	F, F	F, F	F, F	F, F	X, F	15, F	F, F	F, F	13, 15	F, F	F, F	Unknown Person 5	
Items from S006 [redacted]													
S006 [redacted] 5 Ammunition Holder Bloodstain	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F		
S006 [redacted] 7 Body armour cover Bloodstain	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F		
Bloodstain	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F		

Continued...

(♣) X, X indicates the source of the DNA is female. X, Y indicates the source of the DNA is male.

(♥) The probability of occurrence quoted is the most common of those estimated for unrelated individuals of the major ethnic groups in this country (White Caucasian, Afro-Caribbean and Indo-Pakistani). 1 billion is a thousand million.

F The results obtained for this part of the test was inconclusive or no result was obtained.

Signatur [redacted] .....

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Appendix [3]: **Table of STR profiling results continued...**

ITEM	STR PROFILE											PROFILE MATCHES	PROBABILITY OF OBTAINING MATCH (♥)
	D3	VWA	D16	D2	AMEL (♣)	D8	D21	D18	D19	THO 1	FGA		
Items from S006[redacted] continued...													
S0067 Body armour cover Bloodstain	17, 18	F, F	F, F	F, F	F, Y	13, 15	F, F	F, F	15, F	F, F	F, F	Unknown Person 6	
Bloodstain	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F		
Bloodstain	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F		
Bloodstain	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F		
Bloodstain	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F	F, F		

(♣) X, X indicates the source of the DNA is female. X, Y indicates the source of the DNA is male.

(♥) The probability of occurrence quoted is the most common of those estimated for unrelated individuals of the major ethnic groups in this country (White Caucasian, Afro-Caribbean and Indo-Pakistani). 1 billion is a thousand million.

F The results obtained for this part of the test was inconclusive or no result was obtained.

Signatur[redacted]...

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[redacted] S003 [redacted], S001 [redacted] S002 [redacted] S007 [redacted], S004 [redacted], S005 [redacted] & S006 [redacted]

FORENSIC EXAMINATION RECORD

The following work was carried out by trained staff at my request using established procedures. I reviewed the progress of the work, issued fresh instructions as appropriate and checked the findings. A case file, comprising notes made at the time of the examinations, represents a full record of the contributions of assisting members of staff.

NAME	OUTLINE OF WORK UNDERTAKEN
N LOWE	Examination of scene
J LAKER R TALBOT	Examination of items and preparation of STR samples
R SHERWOOD M PATTALWAR J ANDREWS	STR analysis
W CHILDS	Leader of team undertaking STR profiling of reference samples (A list of individuals who have worked on the reference samples can be provided on request)
EXHIBIT NUMBER	APBL.100

POLICE REFERENCE	64658/03		
POLICE OFFICER IN CASE	Captain Sean HENDY		
FORCE, STATION & DIVISION	Royal Military Police	Colchester	SIB
OFFENCE TYPE	Murder		
LABORATORY REFERENCE	FAL – 04965 – 03		
FORENSIC SCIENTIST	Anthony LARKIN (MSc – Hons)	SIGNATURE:- [redacted]	
DATE	1st July 2004		

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S003 [redacted], S001 [redacted], S002 [redacted], S007 [redacted], S004 [redacted], S005 [redacted] & S006 [redacted]

DISCLOSURE SCHEDULE A
(Sensitive Material)

LABORATORY USE ONLY		C.P.S. USE ONLY		
SENSITIVE MATERIAL – DO NOT DISCLOSE A tick (✓) in the left hand box indicates that material in this case, which is believed to be sensitive, is in the possession of Forensic Alliance Limited.		COMMENT	SENSITIVE MATERIAL AGREED Yes/No	COURT APPLICATION Yes/No
DESCRIPTION				
X	Intelligence Information			
X	Records concerning other suspects			
X	Records concerning *modus operandi*			
✓	Case conference notes			
✓	Notes of conversations and correspondence with police			
X	Notes of conversations and correspondence with CPS			
X	Confidential commercial information			
✓	Administration e.g. estimates, time sheets, invoices etc.			
X	Other (specify):			

CPS REFERENCE	
REVIEWING LAWYER	
DATE REVIEWED	

CONTINUATION SHEET	YES / NO

POLICE REFERENCE	64658/03		
POLICE OFFICER IN CASE	Captain Sean HENDY		
FORCE, STATION & DIVISION	Royal Military Police	Colchester	SIB
OFFENCE TYPE	Murder		
LABORATORY REFERENCE	FAL – 04965 – 03		
FORENSIC SCIENTIST	Anthony LARKIN (MSc – Hons)	SIGNATURE:- [redacted]	
DATE	1st July 2004		

FAL-SF-128

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S003 [redacted], S001 [redacted] S002 [redacted], S007 [redacted], S004 [redacted], S005 [redacted] & S006 [redacted]

DISCLOSURE SCHEDULE B
(Non – Sensitive Material)

LABORATORY USE ONLY		C.P.S. USE ONLY			
UNUSED MATERIAL A tick (✓) in the left hand box indicates that material in this case, which is provisionally deemed non-sensitive, is held by Forensic Alliance Limited.		* (D) Disclose (C) Copy (W) Withhold			
	DESCRIPTION	D*	C*	W*	REASON FOR NON – DISCLOSURE
✓	Records of information gathered at the scene				
✓	Records of continuity of items				
✓	Dates of examinations				
✓	Details of packaging and sealing of items				
✓	Records of material not examined				
✓	Examination records of work carried out at the laboratory				
✓	Draft statements				
✓	Documentation of procedures and technical methods				
✓	Databases and surveys: SGM+ frequency database				
✓	Records of work done by assistants and checkers				
	Other (specify				

REVIEWING LAWYER		DATE REVIEWED	

CONTINUATION SHEET	YES / NO ✓

POLICE REFERENCE	64658/03		
POLICE OFFICER IN CASE	Captain Sean HENDY		
FORCE, STATION & DIVISION	Royal Military Police	Colchester	SIB
OFFENCE TYPE	Murder		
LABORATORY REFERENCE	FAL – 04965 – 03		
FORENSIC SCIENTIST	Anthony LARKIN (MSc – Hons)	SIGNATURE:- [redacted]	
DATE	1st July 2004		

FAL-SF-129

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[redacted], [redacted], [redacted] [redacted], [redacted]; [redacted] & [redacted]

RETENTION / DESTRUCTION OF ITEMS

Perishable items (Eppendorfs/ supernatants listed below)/Toxicology Exhibits submitted in the above case have been retained at this laboratory. The items will be retained in accordance with 'ACPO/FSS Memorandum of understanding', and charges made. However, if the items can be returned or destroyed, please complete and return this form. Retained material will be destroyed at the completion of the initial retention period unless FAL is specifically notified to the contrary.

Exhibit Ref	*Description*	*Return/destroy*
	Extracted DNA will be retained for 30 years as per	
	above agreement. All exhibits to be returned.	

Forensic Alliance Limited, F5 Culham Science Centre, Abingdon, OXON, OX14 3ED

Signed..... Print Name..... Rank.....

RETENTION PERIOD..... FREEZER.....

POLICE REFERENCE	64658/03		
POLICE OFFICER IN CASE	Captain Sean HENDY		
FORCE, STATION & DIVISION	Royal Military Police	Colchester	SIB
OFFENCE TYPE	Murder		
LABORATORY REFERENCE	FAL – 04965 – 03		
FORENSIC SCIENTIST	Anthony LARKIN (MSc – Hons)	SIGNATURE:- [redacted]	
DATE	1st July 2004		

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S003 [redacted] S001 [redacted] S002 [redacted] S007 [redacted] S004 [redacted] S005 [redacted] & S006 [redacted]

EXPERT WITNESS AVAILABILITY

Please note that owing to previous commitments the forensic scientist detailed below will not be available to attend court on the dates indicated

APRIL 2004						
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	[redacted]					
22	[redacted]					
[redacted]						

MAY 2004						
[redacted]						
[redacted]						
[redacted]						
22	23	24	25	26	27	28
29	30	31				

JUNE 2004						
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

JULY 2004						
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

AUGUST 2004						
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

SEPTEMBER 2004						
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

OCTOBER 2004						
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

NOVEMBER 2004						
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

DECEMBER 2004						
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	[redacted]			
[redacted]						
[redacted]						

This witness is frequently required at court to present forensic evidence. For an up-to-date record of availability please contact :-

Forensic Alliance Ltd, F5 Culham Science Centre, Abingdon, OXON. OX14 3ED

Tel: 01235 551800 Fax: 01865 407431

POLICE REFERENCE	64658/03		
POLICE OFFICER IN CASE	Captain Sean HENDY		
FORCE, STATION & DIVISION	Royal Military Police	Colchester	SIB
OFFENCE TYPE	Murder		
LABORATORY REFERENCE	FAL – 04965 – 03		
FORENSIC SCIENTIST	Anthony LARKIN (MSc – Hons)	SIGNATURE:- [redacted]	
DATE	1st July 2004		

FAL-SF-131

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S003 [redacted] S001 [redacted], S002 [redacted], S007 [redacted], S004 [redacted], S005 [redacted] & S006 [redacted]

FORENSIC FEEDBACK FORM

For The Attention of the Investigating Officer

Forensic Alliance is working to assist your force in monitoring the effectiveness of forensic submissions and to enable the comparison of the service and results from forensic providers with regard to quality and value. In order to provide this information, and to continue to improve our performance, we need just a few minutes of your time to complete this form and send it to The Operations Director, by post to Forensic Alliance Ltd, F5 Culham Science Centre, Abingdon, OX14 3ED or by Fax: on 01865 407431

How would you rate the apparent usefulness of the forensic evidence in this case? (Please tick box)			☐
1	Very Useful	Forensic evidence was conclusive or provided extremely/very strong support. Sufficient to charge alone or with other limited evidence. Used to eliminate a suspect or redirect the investigation	
2	Useful	Forensic evidence was strong, moderately strong or moderate. Sufficient to charge or eliminate with other supporting evidence.	
3	Limited Use	Forensic evidence provided only limited support. Insufficient evidence to support charge, or to eliminate by itself or with other evidence	■
4	No Value	Forensic evidence provided no assistance to the investigation	
5	Intelligence	Forensic evidence provided links between incidents, potential value if a suspect is found, provided information which has the potential to help identify the offender.	■

How would you rate the overall service that you received from Forensic Alliance in this case?

6	Excellent		7	Good		8	Acceptable		9	Poor	

If poor please state major failing :-

Did you receive the forensic evidence when you needed it / on the date agreed with the scientist?

11	Yes		12	No	

Was the forensic statement/report clear and easy to understand?

13	Yes		14	No	

Comments :-

POLICE REFERENCE	64658/03		
POLICE OFFICER IN CASE	Captain Sean HENDY		
FORCE, STATION & DIVISION	Royal Military Police	Colchester	SIB
OFFENCE TYPE	Murder		
LABORATORY REFERENCE	FAL – 04965 – 03		
FORENSIC SCIENTIST	Anthony LARKIN (MSc – Hons)	SIGNATURE: [redacted]	
DATE	1st July 2004		

FAL-SF-132