

Final Report

(April 2020)

Proficiencytesting@forensicfoundations

Biological Examination Bloodstain Pattern Analysis 2019-1

Authorised by Anna Davey, Director, Forensic Foundations
14/04/2020.

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Introduction

Design

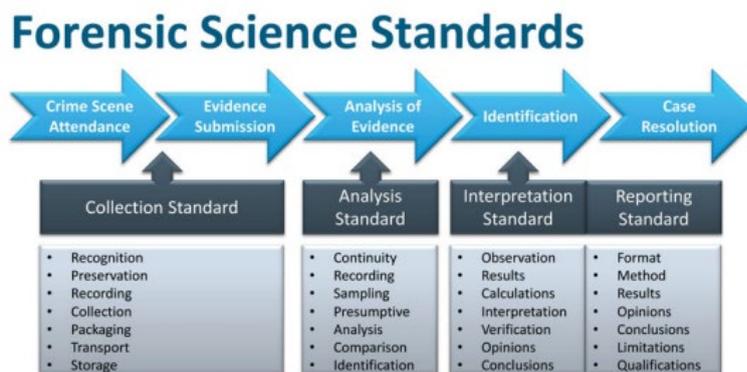
Forensic Foundations' Proficiency Tests are designed to address the following points:

- Relevance to forensic science laboratories;
- Limitation of any potential context information;
- Knowledge of the 'ground truth' of samples;
- Importance of consistency between tests; and
- Cost affordability for the laboratories.

In addition to this exercise being a test of your laboratory procedures using controlled items, we also anticipated that it will enable participants to evaluate the quality of their analytical results against those from other laboratories and observe how other laboratories express their opinions or advice to clients. To enable this, we requested that participants submit the following:

- An outline of the methodology used; and
- Their opinion in the format that they would provide to court.

Forensic Foundations' Proficiency Tests are designed to test the end-to-end forensic examination process. The AS5388 and the ISO21043 series of Standards describe the forensic examination process from collection to reporting. This figure¹ illustrates the inter-relatedness of all steps in this process and was used as the basis of the Australian Standards' development. The figure is also used as the basis of the development of Forensic Foundations' Proficiency Tests.



Thus, all Forensic Foundations' Proficiency Tests commence with item collection and/or receipt and all the subsequent examination / analysis steps, culminating in the reporting, therefore reflecting actual forensic casework.

Individual laboratory results remain confidential.

The Final Reports of this 2019 round of Proficiency Tests will be publicly available via Forensic Foundations web site. Participating laboratories may use the report as outlined in their respective laboratory policies.

¹James Robertson, Karl Kent & Linzi Wilson-Wilde (2013) The Development of a Core Forensic Standards Framework for Australia, Forensic Science Policy & Management: An International Journal, 4:3-4, 59-67
Report No: 2019-1- BPA

Forensic Biology Bloodstain Pattern Analysis 2019-1

This test was distributed to three agencies, only one agency submitted results during this round of testing. As this is a specific report for that one laboratory, Forensic Foundations is unable to formulate comparative analysis on the results.

The manufacture, distribution, assessment and reporting of this proficiency test has provided, and will provide, the basis for continuous improvement for both Forensic Foundations and the participating laboratory.

In addition to interpreting the results from a series of photographs, the following questions were posed:

- What form of blood staining is present in the scene?
- Can the deposition mechanism be identified?
- Is it possible to identify the 3 dimensional and 2 dimension location(s) of the blood source at the time of force application(s)
- Minimum number of force application(s)
- Any evidence of objects being removed from the scene/
 - If yes, what was it? The evidence and the object(s)
- Any evidence of clean-up of blood from the scene
 - If yes, then what is it / where from
- Any evidence of a weapon being involved
 - If yes, any information on weapon type
- Any indications of how many offenders might have been involved
- Any additional on-site testing which may be attempted

In order to remove contextual bias in the interpretation, limited case specific information was provided.

Laboratory Response

Continuity, receipt and description of items

Laboratory 10108

The identification of photographs provided by the laboratory concur with identification of the photographs as distributed. The laboratory indicates that the photographs were received by email, but continuity details were not provided.

The descriptions given of the photographs concur with the information photographed.

Examination / Analysis

Laboratory 10108

The 'Examination Notes' and the Case Assessment Notes' outline the preliminary analysis of the information in the individual photographs. This information appears to have been used to inform the 'Results'.

Results

Reviewer comments in green italics

Laboratory 10108

Overall photos of room – photos 4849, 4851

No obvious signs of a disturbance.

It appears that the definition used by participants for a ‘disturbance’ relates to objects broken or tipped over / some form of obvious violence being involved. However the term ‘disturbance’ implies changes to the original condition – the presence of blood would imply a ‘disturbance’ However, attempts to clean up and objects out of place may not be evident until a full scene examination takes place.

Impact spatter – photos 4860, 4878, 4881, 2, 4, 5, 8, 4896, 4922

At least one blow into wet blood. Height approx. 85cm from floor. Angle of some spatter indicates source close to wall. Located between box and tall shelving unit in left corner of room. Spatter extends onto face of shelving unit, boxes and wall around corner. Light, dilute and smeared staining visible underneath spatter – attempts to remove blood staining from wall at a time previous to blow.

Correct interpretation. It is not possible to say that the height was approx. 85cm from the floor, what can be said is that the blow occurred at or below 85cm as the area of 2D convergence

Triangular void in spatter suggest that a weapon may have dealt blow.

If the term ‘triangular void’ is a description of the pattern observed i.e. ‘void triangular in shape’ this is an acceptable description, however a ‘triangular void’ is not a recognised term.

However, using this observation to relate the pattern solely to the use of a weapon cannot be supported by existing research.

Low-level, projected blood behind shelving unit – photos 4861, 4879, 4880, 4897, 4898, 4899, 4900

Predominantly, large horizontally projected stains, at close to floor level.

Image 4899 demonstrates bloodstains which have travelled through the air. The mechanism of their distribution is unknown. The term ‘projected’ is defined by ASB as ‘...ejection of blood under hydraulic pressure, typically from a breach in the circulatory system.’

*Image 4900 demonstrates flow and impact pattern blood having **both** vertical and horizontal components to the flight path at the time of contact with the wall. This may be what was intended using the word ‘predominantly’.*

The blood has also run down walls and looks possibly dilute.

The ASB terminology for the movement of blood under these circumstances as a 'flow'. Blood can appear dilute for many reasons – substrate colour, blood layer thickness, low 'packed cell volume or haematocrit etc. etc.

Drips on floor also evident.

ASB describes these as 'drip stains' however 'drip stains' are defined as 'A bloodstain resulting from a falling drop that formed due to gravity' which would imply that the source was over the position of the bloodstains. It is probable that they are impact and / or ricochet from parent stains that have impacted the wall and ejected small drops due to the collision with the wall.

Difficult to determine how blood projected exactly but not indicative of impact spatter.

The bloodstains present on the wall / floor behind the shelving have been created by blunt force (kicking) and therefore are by definition an 'impact pattern'.

Possible blood has been missed from a clean-up by being hidden by shelving unit. Angle of blood and gap between back of cabinet and wall, indicates that it could have been deposited whilst cabinet still in this position. Alternatively, the cabinet was moved to cover the blood after deposition.

Correct interpretation

Contact stain on floor near basket – photos 4862, 4863, 4865, 4867

Contact with a blood-stained object on floor. Size and shape could indicate footwear but not enough detail to be sure.

Contact stain near doorway – photo 4868

Difficult to see clearly but possible that this is a contact stain and another possible footwear mark.

L-shape contact stain on floor near desk – photos 4864, 4919

Contact stain from bloodied object, with two straight edges and a square corner – object has then been removed. Need to consider if this could be the bloodied weapon?

Drips on floor towards doorway end of room – photos 4870, 4871, 4872, 4873, 4874

Downward drips of blood from a bloodied object or injured person.

Reponses to specific questions:

- **What form of blood staining is present in the scene?**

Impact spatter – e.g. photo 4878

Smeared & dilute blood staining underneath the impact spatter – e.g. photo 4881

Contact stain with a bloodied object – possibly footwear – photo 4865

Contact stain from the edges / square corner of a bloodied object – 4864

Drips of blood on floor e.g. photo 4871

Blood flows and stains related to the wall and floor behind the cupboard photo 4879 & 4880

- **Can the deposition mechanism be identified?**

The impact spatter has been created by at least one blow into wet blood.

How might the other identified forms of blood staining (see previous question) have been created?

- **Is it possible to identify the 3 dimensional and 2 dimension location(s) of the blood source at the time of force application(s)**

The blow was dealt in the far-left corner, in the area between the box and the tall cabinet. It was struck into an object at approximately 85cm from the floor and very close to the left wall.

As a general descriptor for blood source location, the above statement is correct.

- **Minimum number of force application(s)**

Usually there is at least one blow to start the bleeding and then there has been at least one further blow into the wet blood, causing the impact spatter. There is a slight triangular void in the impact spatter which might suggest use of a weapon, but alternately it could be two separate blows into wet blood. See photo 4878.

The above statement regarding number of blows is essentially correct. Please see previous comments regarding the term 'slight triangular void'.

- **Any evidence of objects being removed from the scene/**

- **If yes, what was it? The evidence and the object(s)**

There is an L-shaped transfer stain on the floor near the basket (photo 4864) which suggests that an object (with a corner) was blood stained and on the floor, before being removed and leaving the L-shaped contact stain.

Correct description

- **Any evidence of clean-up of blood from the scene**

- **If yes, then what is it / where from**

There is dilute / smeared blood evident on the wall beneath the impact spatter. Some of the other blood also shows evidence of dilution – e.g. the edges of the L-shaped transfer stain (4864) and the runs of blood hidden behind the tall cabinet (4900).

The clean-up occurred following the deposition of the blood spatter, therefore the dilute/smeared blood was sequenced after, and therefore over the impact spatter. Extreme caution should be used when attempting to determine the order of deposition of sequenced bloodstains from photographs alone.

There are many reasons for neat blood to appear 'diluted' when it is in fact not. Please see previous comments.

The blood hidden behind the tall cabinet could be part of an original and larger distribution of blood which was removed from the wall but left behind the cabinet.

Overall, from the photos only, it is difficult to be certain on a specific clean-up but there are certainly indications, *that a clean-up may have occurred.*

- **Any evidence of a weapon being involved**
- **If yes, any information on weapon type**

There is a triangular shaped void in the impact spatter which could be caused by the use of a weapon. The L-shaped transfer stain on the floor could potentially have been transferred from the weapon and if this was the case it would suggest one with a square corner.

See previous comments regarding the use of term 'triangular void'.

The 'L-shaped transfer' stain on the floor could have been formed in a number of different ways – transfer from a weapon is only one way and in this particular scenario is not the correct one.

- **Any indications of how many offenders might have been involved**

Not from the photos only.

Statement is correct

- **Any additional on-site testing which may be attempted**

Confirmatory testing of the possible blood staining could be carried out (if any remains?). Blood enhancement could be attempted to address the extent of any clean-up and possibly could enhance footwear marks or fingerprints in blood.

Correct. Ideally the on-site testing would have occurred when the first officer attended, and the photographs were taken.

2 weeks later following thorough cleaning only trace amount of blood may potentially be located, however this may show the extent of any clean-up and the existence of marks missed during the clean-up process. Trace samples may provide a DNA profile indicating whether the victim may be the source of the blood.

An expert in shoe impressions may be asked to review the impressions to determine if shoes could have been the source of the impression and if so, what additional detail may have been obtained.

Interpretation and Conclusions (please include the wording you would use in your report)

Laboratory 10108

Information and purpose

I understand that a disturbance took place at 23 Avis Avenue on 25th June 2019. The owner of the property (Gregory Banks) was not present. Photographs were taken of the scene. Gregory Banks was found deceased in a shallow grave two weeks later. I understand that the scene had been cleaned in the intervening time.

I have been provided with the scene photographs, taken at the time of the original attendance. I have been requested to provide an interpretation of the blood staining seen in the photographs. I have also been asked to respond to a set of specific questions raised by the investigating team.

It should be noted that making interpretations from photographs can be limited and some fine detail in the staining can be difficult to discern. For this interpretation, I have had to assume that all staining that has the appearance of blood, is in fact blood and that all of the blood present (*at the time of recording*) has been captured in the photographs provided.

Interpretation

The room is an office type room with shelving units, filing cabinets, a desk, a basket and some cardboard boxes. There are no clear signs of a disturbance. There is impact spatter on the left-hand wall in the far-left corner, between the box on the pallet and the tall shelving unit. The distribution of spatter indicates that at least one blow was dealt into wet blood at a height *at or below* 85cm from the floor, very close to the wall itself. The spatter extends onto the wall around the corner, onto the cardboard box in the corner, onto the side of the shelving unit and some of it has landed on the floor. There is smeared, *altered (possibly diluted)* blood staining evident beneath the spatter on the wall, which suggests that additional blood staining was present and then an attempt to remove it has possibly been undertaken, prior to the blows into wet blood occurring.

Splashes [*the ASB Terminology document defines a splash as a large volume of blood deposited on a surface. The bloodstains present on the wall have been caused by blood that has travelled through the air prior to contact with the wall or floor and as such are not splashes*], runs [flows] and drips [*the ASB Terminology document defines a drip stain as a bloodstain resulting from a falling drop due to gravity. Although gravity would have acted on the blood traveling by through air, the bloodstains present on the wall should not be described as drip stains*] blood were found at skirting board level and below, behind the shelving unit; it is possible that this blood was part of the original blood on the wall but that it was missed in the subsequent clean-up. The blood at this level suggests that it was projected at a low level but does not have the appearance of a further blow into wet blood.

From the photos there is no evidence of impact on the floor however, there is a small amount of impact staining on the wall just above the skirting board.

There is a contact blood staining on the floor near the basket. The size and shape of the staining is what I might expect from a footwear mark in blood but there may be other explanations as the staining does not contain fine detail. There is some further contact staining which could also have resulted from footwear, on the floor near the doorway, although the photo does not contain enough detail to be conclusive

There is an L-shaped contact stain on the floor near the desk. This staining suggests that a blood stained object was placed on the floor in this position and then removed. The shape suggest that the object has two straight edges and a square corner.

Or on the floor and later removed

There are a few drips of blood on the floor of the office, particularly in the area towards the doorway end of the room.

Summary

- The smeared and dilute staining on the left wall in the far-left corner suggests that an attempt to remove blood from this wall may have taken place
- Impact spatter in the same area indicates that at last one blow has been dealt close to the wall and at approximately (*at or below*) 85cm from the floor. It appears that this blow has been dealt after the smeared blood was deposited. Most assaults require at least one additional blow to begin blood flow, before a subsequent blow produces impact spatter *Extreme care needs to be taken when assessing the order of deposition – in this case the smears were formed as part of the clean-up process following the deposition and drying of the spatter.*
- Although not diagnostic, the pattern of the impact spatter suggests that a weapon may have been used.
- There is a L-shaped contact stain on the floor of the office near the basket; this has resulted from contact with a blood-stained object with straight edges and a square corner, which has since been removed. A possible explanation for this blood staining is that it is from the blood-stained weapon; if this was the case then the weapon would have at least two straight edges and one square corner [*too much weight is being given to one hypothesis*]
- There is projected blood [*the ASB Terminology document defines 'projected as resulting from the ejection of blood under hydraulic pressure, typically from a breach in the circulatory system – it is not clear from the information provided in this scenario that this is the mechanism of deposition*] on the wall behind the shelving unit at a low level. The blood has run [*flowed*], possibly as a result of being dilute. This blood was hidden behind the shelving unit and it is possible that it was part of the original staining on this wall but that any clean-up missed it.
- There are contact stains on the floor, which could potentially be footwear marks. These marks could relate to offenders making off from the scene with blood on their footwear. I would recommend that a footwear expert view these photographs for further interpretation.
- There are a few drips of blood on the floor, near the doorway. These drips could have dripped from the weapon, from the victim as they fled (or was removed) or from an injured offender.

My interpretations and conclusions are based on the background information available to me at present. If any of this information changes, or is found to be incorrect, then I may need to reassess my findings.

Conclusion and Summary of the Test

The test was designed to replicate a fatal scene followed by the removal of the body and subsequent clean up of the scene.

The examiner was asked to examine and analyse 32 photographs of the scene and to provide information regarding the possible mechanisms for the deposition of the blood and any subsequent actions made relating to these blood stains

Continuity, receipt, and description of items

This test was designed to test the end-to-end forensic process.

As the chain of custody for items, subject to forensic examination and analysis, is significant to the final outcome, information pertaining to receipt, continuity and a description of the items formed part of this test.

The participating laboratory provided some of this information, and it is understood that the laboratory may hold further information.

Examination / Analysis

The laboratory relied on examination of the photographs. No calculations were made regarding the area of convergence. The use of terminology was inconsistent.

Interpretation and Conclusions

The participants interpreted the scene and formed a number of conclusions. The participant laboratory should be more cautious with interpretation and conclusions formed. For example, the use of a weapon in association with the triangular void, the L-shaped mark on the floor possibly being associated with the weapon. There is a need to consider other possibilities, be aware of confirmation bias.

The participant laboratory should ensure the correct use of terminology.

Proficiency Test conclusions

The data provided by this laboratory, in this round of proficiency testing demonstrates the importance of the analysis and interpretation of scenes where the ground truth is known. It is unfortunate, that there was only one participant laboratory and the approach, interpretation and conclusions reached cannot be compared with other laboratories' approaches, interpretations and conclusions.

APPENDIX A

Form No: WEF-03-A

Proficiencytesting@forensicfoundations

PROGRAM PLAN

Program	Bloodstain Pattern Analysis		
Round	2019-1		
Program Coordinator /Technical Manager	Mrs. Anna Davey Director Forensic Foundations PO Box 2279 North Ringwood, 3134		
Discipline specific expert(s)	Prof Tony Raymond C/- Forensic Foundations	Dr Mark Reynolds Reynolds Consulting	
Providers(s)	Test design & production Results interpretation.	Initial sample collection	Production site
	Forensic Foundations PO Box 2279 North Ringwood, Victoria 3134	Serum Australis Pty Ltd Curragundi	University of Western Sydney Hawkesbury Campus
	Sample distribution to government facilities within Australia & NZ by ANZPAA-NIFS 637 Flinders St Docklands		
Aims/Objectives	The aim of the program is to assess the forensic laboratories/services' ability to interpret photographs of blood staining taken in ambient lighting conditions.		
Purpose	To assist the forensic laboratories/services by ensuring their methods/procedures are performing adequately.		
Program Design			
Number of Rounds	1		
Number and type of samples	High resolution photographs and information/ data		
Hazards Involved	No known hazards involved with completing the test. Normal safety precautions should be taken when setting up the scene for photography		
Scenario	A serious assault has occurred. Photographs have been taken at the scene showing what appears to be blood staining. Participants will be provided with a number of high-resolution colour images.		
Sample size/ volume	NA		
Range of values/assigned values for reporting	NA		
Traceability/origin of assigned values	The scene will be generated and photographs taken contemporaneously		
Design and Methods	Horse blood in Heparin will be deposited either manually or with the use of an ice hockey puck. The scenario and scene set up is designed to represent a typical bloodstain scenario		

Selection Criteria	Once the scene and all recordings are finalized, a selection of photographs will be made, enabling a reconstruction / interpretation to be commenced.
Potential Major Sources of Error	Failure to identify relevant features within the photographs leading to incorrect interpretation / reconstruction.
Participants	
Reporting Criteria, Accuracy	Crime Scene and/or Forensic Biology laboratories/services.
Analysis	NA
	Correctly identify bloodstain patterns and possible mechanism of deposition, and that cleanup had been attempted
Pre-testing	
Homogeneity Testing criteria	NA digital images are reproducible.
Stability Testing criteria	NA
Technical Review (internal)	
Participant Instructions	Provide copy of instructions and evidence of Technical Review
Results Sheet	Provide copy of Results and evidence of Technical Review
Report	Provide copy of Reports and evidence of Technical Review
Sample Preparation	
Special conditions	Nil
Storage requirements	Horse blood to be stored at 4°C, until use
Distribution requirements	Photographs and information to be distributed via Forensic Foundations or NIFS on USB devices.
Sample checks	USBs will be checked to ensure correct copying of data
Program Dates	
Invitation letter	August 2018
Sample distribution	March 2019
Results due	31 st May 2019
Manufacturing Information to be sent	14 th June 2019
Final report due date	First week August 2019
Statistical Analysis	
Homogeneity Testing	NA
Stability Testing	NA
Data Entry	NA
Review by Statistician	NA
Reporting	
Report No:	2019-1
Master copy	Reports folder
Availability	Website

Program Coordinator signature:

Date:



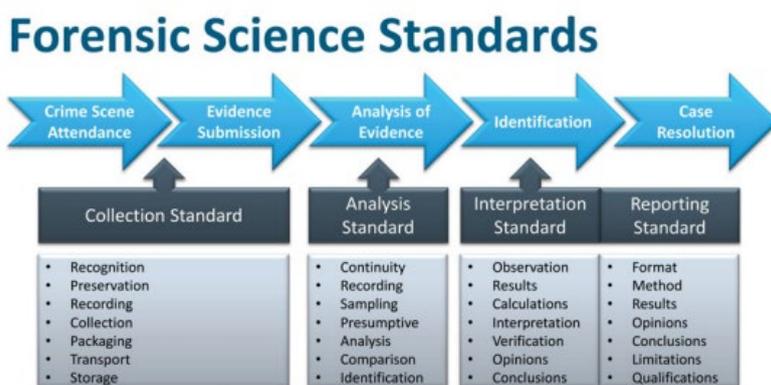
Proficiencytesting@forensicfoundations
Forensic Biology
Bloodstain Pattern Analysis
2019-1

Thank you for participating in this Proficiency Test. We hope that you find this test useful and welcome any feedback which can be used in the design of further Proficiency Tests. As you are aware this test was originally planned to be shipped in March, but due to unforeseen circumstances the shipment of the test has been delay and scenario abridged. Participants in this test will be registered for the 2020 test free of charge.

In addition to this exercise being a test of your procedures in a controlled environment, we also anticipate that it will enable participants to evaluate the quality of their analysis and interpretation against those from other laboratories and observe how other participants express their opinions or advice to clients. To enable this, we request that participants submit the following:

- An outline of the methodology used;
- An indication of the BPA glossary used; and
- Their opinion in the format that they would provide to court.

Forensic Foundations’ Proficiency Tests are designed to test the end-to-end forensic examination process. The AS5388 and the ISO21043 series of Standards describe the forensic examination process from collection to reporting. This figure² illustrates the inter-relatedness of all steps in this process and was used as the basis of the Australian Standards’ development. The figure is also used as the basis of the development of Forensic Foundations’ Proficiency Tests.



Thus, all Forensic Foundations’ Proficiency Tests commence with item collection and/or receipt and all the subsequent examination / analysis steps, culminating in the reporting, therefore reflecting actual forensic casework.

Attached you will find the case ‘Examination Request and Item Submission’ form and the test commences with the receipt of the items followed by your routine processes- item description, examination, analysis and interpretation.

²James Robertson, Karl Kent & Linzi Wilson-Wilde (2013) The Development of a Core Forensic Standards Framework for Australia, Forensic Science Policy & Management: An International Journal, 4:3-4, 59-67
 Report No: 2019-1- BPA

The information submitted to the participants on the examination request form will direct what analysis needs to be undertaken. Please use the attached results sheets. Additional pages may be added if required. An electronic copy of the results sheet can be downloaded from <https://www.forensicfoundations.com.au/download/>

The results sheets should be returned to Forensic Foundations by Friday 4th October 2019. Hardcopy can be returned to PO Box 2279, Ringwood, Victoria, 3134, Australia or a soft copy can be uploaded to <https://www.forensicfoundations.com.au/upload/>

Qualitative feedback will be provided to participants. Feedback will be both participant-specific (i.e., whether a particular participant 'got the right answer') and group specific (e.g., which techniques seemed to perform better than others).

Following the conclusion of the testing participants will be advised of the expected results and details regarding the production of the test.

APPENDIX C

EXAMINATION REQUEST AND ITEM SUBMISSION	EASTERN AUSTRALIAN POLICE SERVICE
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OFFENCE:	Homicide
DATE OF OFFENCE	Tuesday 25 th June 2019

BRIEF STATEMENT OF FACTS

A disturbance occurred at 23 Avis Ave, Smithville. Police attended and scene photographs were taken. Specialists were not called at the time as the incident did not meet the criteria for crime scene or specialist attendance. The owner of the property (Gregory Banks) had allegedly fled the scene.

Two week later a body, later identified as that of Gregory Banks, was located in a shallow grave.

The scene at 23 Avis Ave, has been thoroughly cleaned by this stage.

ITEMS SUBMITTED FOR EXAMINATION

A series of 32 photographs taken by the attending officers on 25th June. High Resolution images can be downloaded from <https://www.forensicfoundations.com.au/download/>
A summary of the photographs (low resolution) is attached.

EXAMINATION REQUESTED

Bloodstain Pattern Analysis of the blood stains recorded in photographs taken by the attending officers on the 25th June .Specifically:

- What form of blood staining is presence in the scene?
- Can the deposition mechanism be identified?
- Is it possible to Identify the 3 dimensional and 2 dimension location(s) of the blood source at the time of force application(s)
- Minimum number of force application(s)
- Any evidence of objects being removed from the scene/
 - If yes, what was it? The evidence and the object(s)
- Any evidence of clean-up of blood from the scene
 - If yes, then what is it / where from
- Any evidence of a weapon being involved
 - If yes, any information on weapon type
- Any indications of how many offenders might have been involved
- Any additional on-site testing which may be attempted

APPENDIX D



forensic
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PROFICIENCYTESTING@FORENSICFOUNDATIONS BLOODSTAIN PATTERN ANALYSIS 2019-1 MANUFACTURER'S INFORMATION

Introduction

The test was designed to replicate a fatal scene followed by the removal of the body and subsequent clean up of the scene.

Scenario

A disturbance occurred at 23 Avis Ave, Smithville. Police attended and scene photographs were taken. Specialists were not called at the time as the incident did not meet the criteria for crime scene or specialist attendance. The owner of the property (Gregory Banks) had allegedly fled the scene.

Two week later a body, later identified as that of Gregory Banks, was located in a shallow grave.

The scene at 23 Avis Ave, has been thoroughly cleaned by this stage.

Test production

The scene was setup in a room located in the crime scene training facility of the University of Western Sydney.

The blood used for this test was fresh horse blood in a heparin solution obtained from Serum Australis Pty Ltd.

Standard digital photography was used. No enhancement or filters were utilized. The camera was mounted on a tripod for long exposures.

The photographs provided were deliberately not always of the highest quality with appropriately positioned scales, as this reflects the situation often encountered by bloodstain pattern analysts in some jurisdictions.

Scene set up

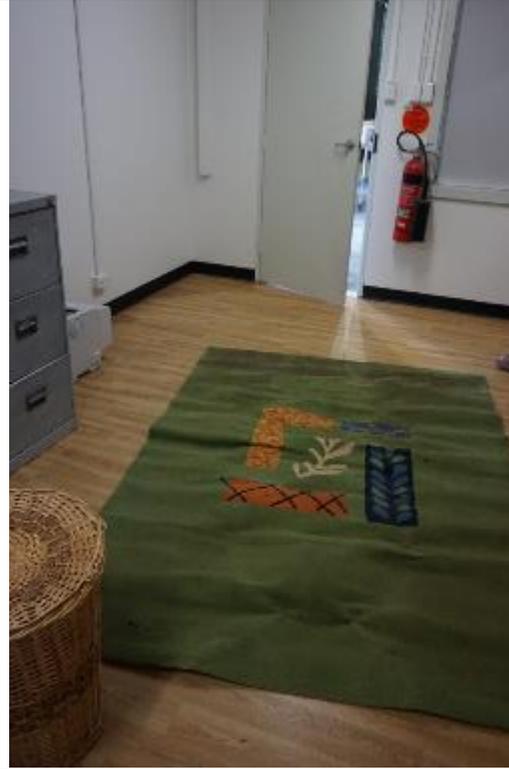
The room was set up as a 'office'.

The window is in the north wall



DSC04778

The entrance door is in the south wall



DSC04783

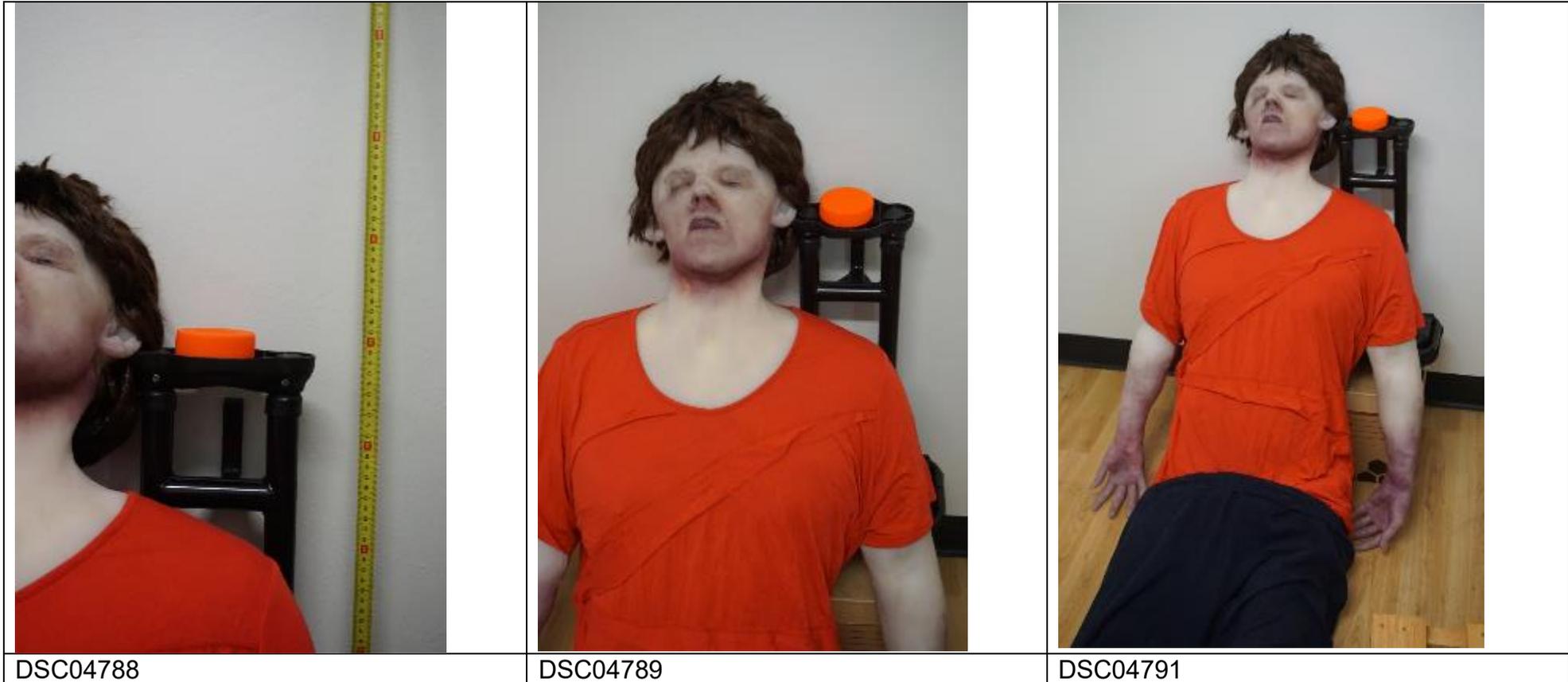
The area in the north west corner of the room



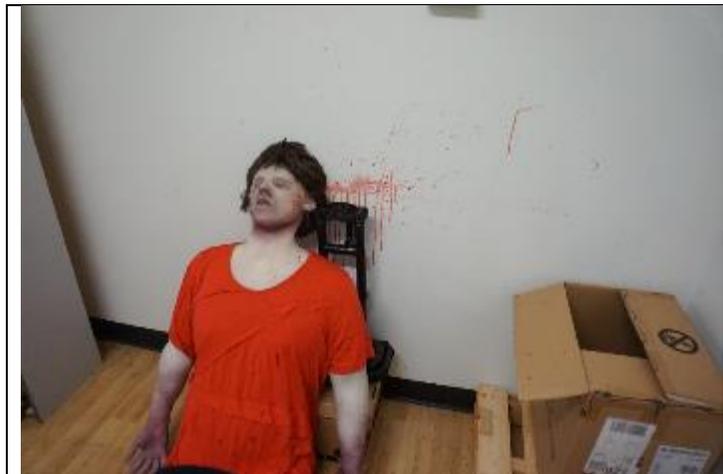
DSC04785

Positioning of the 'body'

A life-sized dummy was placed adjacent to a stand 79cm from ground level. A hockey puck was then placed on the stand.
The height from the ground to the top of the puck was 81.6cm (z).
The distance from the center of the puck to the wall was 8 cm (y).
The distance of the center of the puck to the corner was 102cm (x).



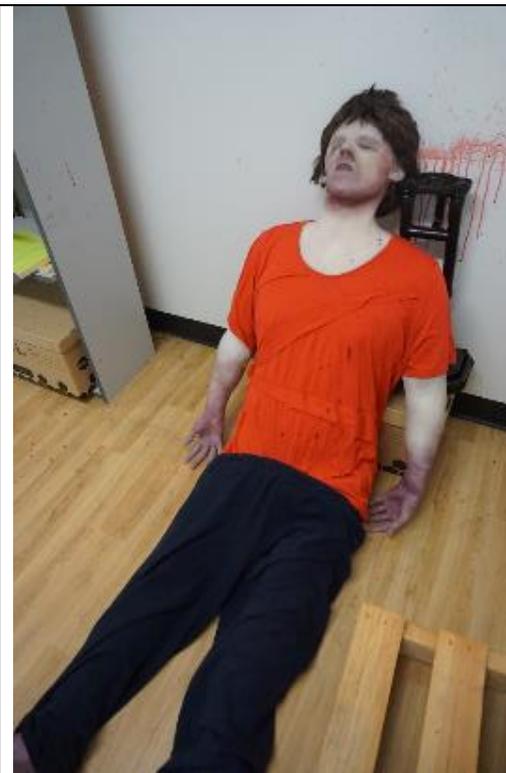
Blood was poured over the center of the puck. The puck was then manually hit (twice) with a hammer with moderate – maximum force.



DSC 04793



DSC 04794



DSC 04795



DSC 04798

Blood was then deposited on the dummy's hair and the dummy dragged onto the green carpet (see DSC04778). A 3Kg 'Medicine ball' was then covered with blood and kicked twice, replicating the kicking of the head of the victim. This resulted in blood being deposited behind the bookcase.



DSC04800



DSC 04801



DSC 04807



DSC04803



DSC04804



DSC04808

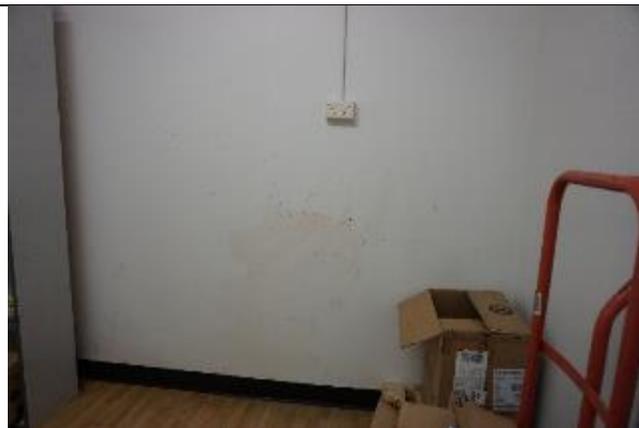
The dummy was then rolled in the carpet and dragged out of the room.
The blood-soaked edge of the carpet can be seen in this photo (DSC04864). Cf DSC04803



3Kg 'Medicine ball'



A deliberately hasty attempt was then made to remove the blood staining.

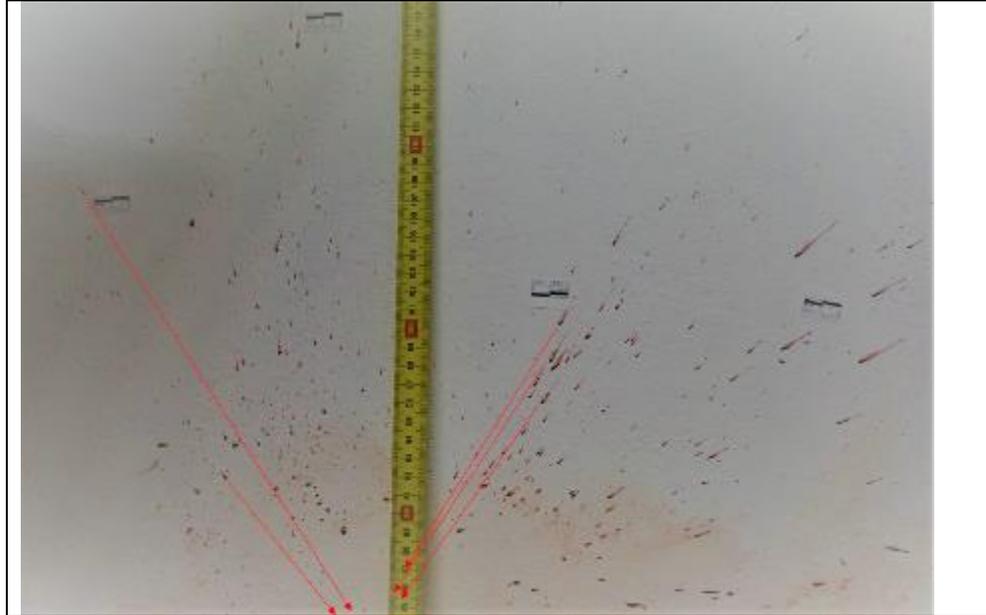


DSC04854

DSC04859

DSC04861.1

From the following photographs, the point of impact can be roughly calculated, using standard trigonometry (sin, tan)

From photograph DSC04884	From photograph DCS04899
	
<p>Interpretation: Blunt force was used Estimated area of origin was +/-83cm from floor (z) and approximately +/-8.5cm away from the wall (y)</p> <p>These approximate figures are in close correspondence to the actual figures.</p>	<p>Interpretation: There were two areas of origin (both very close to one another) and close to the ground (Est. +/-6.5cm above the ground) The approximately distance from the convergence and the points of origin was +/-18cm from the area of impact</p> <p>This approximate figure is in close correspondence to the actual figure (16.5cm).</p>

The location of the green acrylic fiber (DSC04864) and the location of the shoe impression in blood (DSC0911(2)) could have been used to hypothesize a scenario.



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Expected results.

The examiner would be able to calculate an area of impact from the staining on the wall.

The examiner may be able to hypothesize a mechanism to explain the direction of the deposition of blood behind the bookcase (DSC04880). Some comment may have been made regarding the force required to transfer the blood in the manner and the distance shown in DSC04880.

The identification of the fiber in the L-shaped blood staining, indicated that a mat/rug/floor covering was present when the blood was deposited which is no longer in the scene.

The examiners could have reported that there had been a significant clean-up of the scene.

END OF REPORT

Forensic Biology -BPA 2019-1 Feedback

Forensic Foundations prides itself in providing flexible fit-for-purpose forensic programs. This Challenge Test was the second developed by Forensic Foundations and thus the second undertaken by forensic laboratories. The manufacture, distribution and assessment and reporting of this test has provided and will provide the basis for continuous improvement for both Forensic Foundations and the forensic laboratories. To this end we would appreciate your comments to assist us to improve the tests.

Please tick the appropriate box and make any relevant comments.

	Strongly Agree	Agree	Disagree	Strongly Disagree	NA
1. The test was too basic for our facility	<input type="checkbox"/>				
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.....					
2. The samples supplied were suitable	<input type="checkbox"/>				
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3. The results required were not outlined sufficiently	<input type="checkbox"/>				
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4. The final report provided suitable detail	<input type="checkbox"/>				
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5. The tests involved should be more challenging	<input type="checkbox"/>				
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Please comment briefly on the following:

1. Are there additional aspects which could be included in the test?

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2. Any additional comments

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3. Facility (optional)

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4. Would you like us to contact you to discuss your feedback?

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Forensic Foundations' Proficiency Tests are required to be fit-for purpose. To assist us to provide the relevant tests, please use the following form to suggest further tests for development.

Recommendation for Proficiency Test development

Contact	Name	
	Email	
	Phone	
Discipline/ subdiscipline		
Specific issues(s) to be addressed*. Note: The tests can be designed to be multidisciplinary.		
Suggested technical advisor (if known)		
Suggested manufacturer (if known)		

* All Proficiency Tests will include the end to end process (receipt & continuity, triage, description, examination, analysis, data generation, interpretation, reporting) but one aspect may be of particular interest/focus.

This form can be emailed to quality@forensicfoundations.com.au or you can discuss your suggestions on either 03 9018 8919 or 0429 966 012.