

Forensic Ballistic Services

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1.

I was a member of the South African Police Services from 1984, in 1989 I became a member of the Forensic Science Laboratory, and from 1991 was a member of the Ballistic Section of the Forensic Science Laboratory. Beginning May 1998 I left the South African Police Services with the rank of CAPTAIN, with the aim of practicing as a private specialist in the forensic field.

2.

I received in-service training and successfully completed the internal 3-year training course at the unit in theoretical and practical application of the Ballistic Science. The training can be divided into the following:

2.1 Microscopic Identification:

- The use of microscopic equipment
- Microscopic individualisation of firearms, ammunition, fired bullets and cartridge cases;
- Microphotography (comparison microscope, stand as well as table models);
- The investigation of tool marks, the marks they transfer, the comparison

of disputed objects with tool equipment for example - pliers, chisels, and screwdrivers;

- Microscopic individualisation of tool and tool marks
- Identification of ammunition, fired bullet and fired cartridge cases and development of ammunition;
- Identification of hand and shoulder firearms;
- The collection of changed numbers and marks on exhibits;
- Restoration of obliterated marks on metals;

2.2 **Internal Ballistics:**

- The examination and study of firearms mechanisms;
- The different manufacturing processes of firearms and firearm components;
- The examination of homemade devices;
- Reloading of fired ammunition;
- Interactions of firearms and ammunition;
- The transfer of marks on bullets and cartridge cases by firearms;
- The interaction between ammunition and attended mechanical functioning of the firearm;

2.3 **Intermediate Ballistics:**

- The influence of partially burnt propellant and gasses on objects after the bullet has left the firearms;
- The determination of propellant and deposit range by firearms;
- The study of secondary projectile forming during intermediate ballistics;

2.4 **External ballistics:**

- Trajectory determination of bullets and projectiles;

- Shot range determination;
- The study of bullet shapes in ballistic trajectories;
- The determination of bullet velocity;
- Bullet trajectory, distance- and direction determination.

2.5 **Terminal ballistics:**

- Wound Ballistics (wounding effect on tissue);
- Determination of entrance and exit wounds;
- Attendance of post-mortem examinations;
- Translation of post-mortem records;
- The capabilities of projectiles related to velocity, energy, penetration and impact;
- Projectile properties during tissue wounding;
- Influence of projectiles on various target materials;
- Influence of target material on projectiles;
- X-ray photo analysis.

2.6 I visited the following firearm and ammunition manufactures to ascertain for myself which processes are used in the manufacturing of firearms and ammunition:

2.6.1 Lyttelton Engineering works (L.I.W)

2.6.2 Truvello

2.6.3 Somchem

2.6.4 Swartklip

2.6.5 Musgrave

2.6.6 New Generation Ammunition

2.6.7 Diplopoint Ammunition

2.6.8 Nobelteq

2.6.9 PMP

2.6.10 Frontier Bullets

- 2.7 *The investigation of tool marks, the marks that they transfer, the comparison of disputed objects with tool equipment.*
- 2.8 The study of the interactions between internal, external and terminal ballistics.
- 2.9 I also received training in the working and set up of the Hadland system (high-speed photography).
- 2.10 Ballistic examination of a crime scene, crime scene investigation and examination techniques.
- 2.11 Scene photography, developing and printing of photos.
- 2.12 Microphotography (comparison microscope, stand as well as table models).
- 2.13 Documenting of results and findings.

3.

EXPERIENCE AND TRAINING

- 3.1 I have thirty-six - (36) years appropriate police investigation experience of crimes, techniques, and assistance aids. This includes the drawing of scale plans of criminal and civil scenes. Documentation techniques – photography etc.
- 3.2 I have thirty-one (31) year's appropriate experience in Forensic and Forensic Ballistics investigation of crime scenes, scene reconstruction and documentation of investigations and compiling of opinions, results, and findings. This includes scene photography, developing and printing of photos and compiling albums thereof.
- 3.3 I have conducted my own experiments regarding Bloodstain patterns and the determining of incident angles related to body positioning.

- 3.4 I am currently actively involved in an ongoing study of all the latest technologies in the forensic ballistic field using reference material at my disposal, internationally recognised reference books and articles written by other experts listed on the internet.
- 3.5 During 1996-1997 I was involved in the internal training section of the Ballistic unit, where I was responsible for the training of new members in the above-mentioned headings.
- 3.6 I was trained in the selected measure of crime scenes with regards to the vertical and horizontal angles with Theodolite (GTS 4) measuring equipment. I also received training in measuring of contour intervals with the Theodolite, and the documentation of information on a topographical map.
- 3.7 From June 1993 I was exclusively responsible for the training of the ballistic members in the set-up, working and application of the Theodolite GTS 4. I was also tasked to train members to compile scale plans of measurements taken.
- 3.8 I was a member of the external training section of the Forensic Science Laboratory where I gave lectures to other personnel of the SAPS in the Forensics Field workers course. Currently I am tasked to present workshops in the private sector in the field of Forensic – Ballistics. I also gave lectures to members of the Legal Aid Board.
- 3.9 I also acquired a diploma in Firearms Examinations from the Forensic Science Society, which is located in the United Kingdom as a qualified specialist in forensic firearms examinations, no longer a member.
- 3.10 I completed a course “**Advance program in Forensic Criminalistics**” that was presented by the Institution of Criminalistics at **UNISA** with the following subjects:
- Forensic Criminalistics
 - Documentation of the crime

scene

- Forensic Ballistics

- Forensic Law

- 3.11 I have to date investigated more than 3920 forensic related cases.
- 3.12 In my private capacity, I investigate criminal and civil cases and give evidence in the courts of South Africa and neighbouring countries.
- 3.13 From 1984 - 1989 I was stationed at Cleveland SAPS where my responsibilities and duties lay in attending to complaints, drawing of scale plans of scenes of accidents and posting and visiting all other members on my shift. I was also tasked to train members under my supervision, testify in court, and perform other normal duties that coincide with the South African Police Services.
- 3.14 Since 2009 – 2020 I am actively involved in manufacturing of ammunition, and the quality thereof. Worked at New Generation Ammunition and Diplopoint Ammunition as the “Quality Control Manager”.

4.

DIPLOMAS, CERTIFICATES AND MEDALS OBTAINED:

- Certificate and Commemorative Medal op the South African Police Services....1988-04-01
- Riot and Control course and certificate (V2/88).....1988-04-25 tot 1988-05-15
- Safety Representative certificate (NOSA).....1993-01-19
- Certificate and medal for faithful service (10-year).....1994-06-07
- Special Weapons and Tactics course (S.W.A.T. certificate).....1994-09-12 to 1994-09-16
- Junior Commanders course (Level II and certificate).....1995-06-07 to 1995-06-28
- Warrant by the Minister of Safety and Security.....1995-06-20
- Instructors course (SAMDI certificate).....1995-08-09 to 1995-08-13
- Diploma in Firearms examiners (F.S.S dip).....1995-08-27
- Certificate in First aid (Level 1, Grade II).....1996-04-22 to 1995-04-25
- Advance certificate in First aid (Level 2).....1996-08-19 to 1996-08-30
- Certificate of Merit Mechanical (i).....1997-04-27

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|----------|----|---------------------|
| Subjects | 1) | Fitter |
| | 2) | Tuner |
| | 3) | Welding (arc & gas) |
| | 4) | Electrical |

- Mechanical (ii), course subjects – Welding (tig & mig)..... 1997-09-25
- Clock armourer seminar for gun dealers..... 1997-10-27
- Certificate in Forensic Criminalistics (UNISA)..... 1997-12-01
- Certificate in Emergency First Aid Level 1..... 2010-05-14
- Certificate in Fire fighting and prevention..... 2010-05-18

5.

Instructions were received via email from Burak Temiz, Att. At Law, TURKEY to give a short overview and expert opinion regarding a shooting incident that took place in ISTANBUL; ÜSKÜDAR District; KANDILLE Quarter, No:36 YAMAÇLI Street (Hut), where Mert SUCU allegedly fired some shots with a pistol.

Background of incident as supplied by Legal Team

On 11.07.2018 at 05:30 in the early morning, Turkish SWAT teams conducted an operation on different predetermined addresses. At one, an incident of a so-called shooting happened.

At one residence, during the SWAT operation, the accused, Mr. Mert, allegedly shot 10 rounds, and it was alleged that he hit one SWAT police officer at close range two times, one on his ballistic vest. **Mr. Mert** was at least **180-200** cm away from the glass door at the time of the shooting.

After 3 months, the crime scene was wrecked to the ground with the permission of the prosecutor's office. The scene is no longer available for forensic reconstruction and analysis.

6.

I received the following documents and presentation:

6.1 Expert Report – Ballistic Analysis Branch – Document Date and No:

16/11/2018-47909374-59350(22105)2018(2016/169770)-1376551;

- 6.2** Expert Report – **Chemical Analysis Branch** – Document Date and No:
31/07/2018 - 47909374-59350-(22115)-2016/169770;
- 6.3** Expert Report – **Chemical Analysis Branch** – Document Date and No:
19.09.2018 – 47909374.59350(22113);
- 6.4** Crime Scene Investigation Report – **Crime Scene Investigation Branch** –
Report No – 478 – Year 2018; including a **FINDING / EVIDENCE LIST**
Report No: 478;
- 6.5** **APPENDIX TO REPORT NO: 478** – Crime Scene Sketch 1-3;
- 6.6** **APPENDIX TO REPORT NO: 478** – Crime Scene Distance Measurements;
- 6.7** Four (4) Swab forms - **Crime Scene Investigation Branch** – Report No –
478.
- 6.8** Power Point Presentation compiled by Burak Temis – Attorneys at Law

7.

These are my **preliminary views with the information available** to me (as set out in Par 6) and should any other additional information become available, I reserve the right to change or alter this statement / document.

8.

I was tasked to give an expert opinion regarding a few points of concern. My opinion regarding these points is placed on record, in respect of all the current available information supplied:

Can a cartridge just explode inside a magazine without interference of any other external factors / forces. Can I exclude the possibility that a fired projectile hit the spare clip of the police officer's belt?

8.1 According to my expertise and knowledge, a cartridge **CANNOT** just explode. I have found for a cartridge to “explode” that there must be other external factors involved. The “Primer” of the cartridge, which creates the spark to ignite the main charge, must be “HIT” and the priming compound of the primer must ignite for the cartridge to “EXPLODE”. What needs to be kept in mind is that according to what I can see from the photographs at my disposal, the Swat officer is 1) trained – the kit they are wearing 2) the magazine would have been placed in the magazine holster so that it would be easily accessible and is placed inside the holster in such a manner that the “the magazine lips” would be towards the ground. This is common practice for all shooters, police, etc. For the “BULLET” to explode as per say, I would have expected the magazine and the magazine pouch to show damage from another fired bullet.

According to the Expert Report as per Par 6.2 “The magazine pouch only had one hole in it and the report states that it is an **entrance hole**, caused by a **distant shot**. In the same report the expert states that the magazines that were examined showed no damage or holes. According to this evidence one can clearly state that the hole was not caused by an “exploding bullet,” that was inside the magazine, and the magazine inside the magazine pouch. I would have expected a lot more damage, in the form of an exit bullet hole or defect to the pouch and the magazine, and the magazine itself should have corresponding damage which would represent some type of explosion.

8.2 The fact that the magazine showed no visible damage caused by any external factors, indicates to me that there was no exploding bullet.

8.3 Keep in mind if a Cartridge / Bullet were to be hit on the primer via a fired projectile, the cartridge would as per say “EXPLODE”. A few factors must be kept in mind and the following would apply, the Bullet will stay behind inside the magazine, the cartridge case would “explode” and the magazine would have been severely damaged as well as the magazine pouch. Clearly, according to the expert report (My Par 6.2) this is not the case, only an entrance hole was found. The size, appearance and dimensions of this entrance hole could assist to determine if this defect was, in fact, caused by a bullet.

8.4 A further point of concern I found is that according to the information, one can see two small superficial abrasions on the left upper arm of the Swat officer (**Point “A”**) which doesn’t seem to have breached the skin. According to the Swat Officer these marks were caused by an exploding bullet (that was inside a magazine and the magazine inside a magazine pouch – **Point “B”**).



8.4.1 I was informed that Mr. Mert SUCU did not leave the inside of his room. Looking at the angle of shots fired, it is impossible that the two can be linked. The superficial abrasions as per point “A” and the “entrance hole” in the magazine pouch at point “B” with no exit defect noted (no other visible evidence of an exploding bullet), it is impossible for the fired projectile / fragments from the exploding bullet to have caused these abrasions where there is no explosion or exit damage to the magazine or pouch. The magazine is below the left arm which would mean the fragments would have to deviate at a 90 degree angle to cause the abrasions which is highly unlikely.

8.5 *In the photographs we see empty casings standing on the console next to the bed. Is it possible for the casings to stand like that after flying and free falling after being ejected from the handgun?*



Looking at my first photograph it is possible but **HIGHLY UNLIKELY**, I would even state **CLOSE TO IMPOSSIBLE**, because the cartridges would have to have been ejected at the same angle from the firearm, and it **should have** travelled the same distance, same height, and the firearm must have been at the exact same position when it was fired.



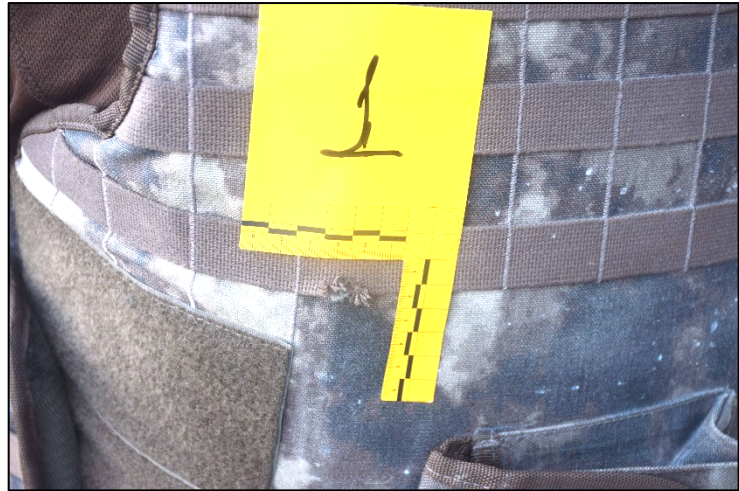
The cartridge cases must have landed on the bedside table (Approximately 50x50cm). HIGHLY UNLIKELY and CLOSE TO IMPOSSIBLE. It further needs to be noted that the first photograph depicts an undisturbed table where only four cartridge cases are visible.

The second photograph depicts six cartridges and a clean table. It is questionable as to where an additional two cartridge cases came from. It looks like the CSI team cleaned the area where all or some of the cartridge casings were found.

8.6 Does the hit mark on the ballistic vest seem to be caused by a 9mm projectile?



I will not be able to determine if a 9mmP fired projectile caused the damage as per photo “1” point “1” due to the fact that **NO BULLET WIPE / RING** is visible. This defect is more consistent with a damaged or deformed fragmented projectile or part thereof. The damage visible appears to be irregular indicating that the damage was further caused by a low velocity projectile /



object. If it were a direct hit / shot I would also expect that the lining of the ballistic vest would have been compromised and **not just the webbing** (See Photo above) of the vest. This indicates a low velocity projectile and or a fragment. According to the forensic report this is a close gunshot where gunshot residue was found. This indicates that the firearm must have been in close proximity to the vest when the shot was fired. This could be a situation where the second police officer accidentally fired on his colleague if this is, in fact, a close gunshot. Unfortunately the bench notes of the forensic examiner who determined the close gunshot have not been provided that may shed light on how he/she came to this conclusion. It is my understanding that Mr. Mert SUCU did not leave his premises and fired through a closed glass door at a distance and I believe that Mr. Mert SUCU could not be responsible for this defect on the vest.

Point 2 as per photo (Previous page), I can clearly see no damage on the vest, indicating that the bullet/ fragment lodged in the belt, had almost no velocity. I could not find any proof in all the evidence / information received (Par6) that this

bullet/ fragment was fired at the vest. The possibility that the bullet was placed on the belt or subsequently landed there, cannot be excluded.

8.7 The glass door is all broken and fell apart, is it possible for a projectile to break the whole glass door?

The glass door will definitely be broken if too many shots were fired through the glass of the door. In some instances after shots are fired through the door the glass will stay intact until pressure is applied such as kicking, bumping, opening or closing. Depending on the composition of the glass it is also possible that the glass would not have broken. Looking at all the evidence at my disposal I am reluctant to say that the possibility even exists that the glass was broken by the Swat Officers. By collecting all the broken pieces of the glass door the CSI team could have reconstructed the glass door which would have considerably helped to determine the directions and trajectories of the bullets. As well as entrance and exit defects. It could have also given an indication of the sequence of the shots fired.

8.8 Both SWAT officers claimed that they did not hear the shots. What is the decibel level of a handgun fired in a small room?

The decibel for a handgun is 160 decibels. I would say that this was highly unlikely. They must have heard some of these shots as they were standing in front of a broken glass door.

9.

A short summary of my findings and conclusion are as follows:

- There is no evidence of an exploding bullet, inside a magazine in a magazine pouch;
- It is highly unlikely that the abrasions on the arm of the swat member were caused by an exploding bullet. There is nothing peculiar nor are there any distinct features of these abrahnsions that would connect them specifically to an exploding magazine.
- The damage to the ballistic vests was caused by low velocity projectiles. These defects are more consistent with a damaged or deformed fragmented projectile or part thereof:
- It is highly unlikely that the cartridge cases landed on the bedside table as depicted in the first photograph.
- There are clear signs that the scene was disturbed during the collection of the exhibits.



2021-01-07

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(J.C. DE KLERK)

Reviewed and concur with the findings



2021-01-07

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JACOBUS STEYL