EXPERT EXAMINATION OF MATERIAL IMPACT OF 130 mm TF /CONTACT-FUSE / PROJECTILE

- Report -

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1. GENERAL INFORMATION

1.1. Subject of testing

The subject of testing is the material impact of a 130 mm contact-fuse projectile, M79, or OF-482, on static activation under the conditions of the explosion on Kapija Square in Tuzla on 25 May 1995. This projectile has a destructive fragmentation effect (contact-fuse projectile).

1.2. Testing request and available material

In its letter, confidential no. 1072-6 of 16 March 2010, the Planning and Development Administration J-5, issued a work order to the TOC /Technical Testing Centre/, which was logged at the TOC under confidential no. 11-928-3 on 18 March 2010.

In it letter int. /intenal/ no. 382-4 of 10 March 2010, the Ministry of Defence of the Republic of Serbia forwarded to the Planning and Development Administration (J-5), GŠ /General Staff/ of the Army of Serbia the necessary work authorisation for this matter.

The job request was made by Attorney Nebojša PANTIĆ who is defence counsel for the accused Novak DUKIĆ in the case H-KR-07/394, and H-KRŽ-07/394, which is being heard before the Court of BH in Sarajevo.

In addition to the job request, Attorney Nebojša PANTIĆ (hereinafter referred to as defence counsel) also forwarded to the TOC an electronic version of the complete files of case KT-RZ169/07 on five discs.

1.3. Assessment for testing

Based on the received files in the case KT-RZ-169/07 and the request by defence counsel dated 15 March 2010, an advisory board of the Weapons Sector Chief in the TOC, which met on 19 March 2010, made an assessment that the job request for the TOC by defence counsel fell within the activities and expert tasks of the TOC and that the activities in connection with the request were feasible.

At the advisory board of the Sector Chief, it was decided to assign pp /Lieutenant Colonel/ Miloš RADOVANOVIĆ as head of the working team and pr /Lieutenant/ Nebojša VUČIĆEVIĆ as a member of the working team.

1.4. Programme and plan of testing

The programme and plan of testing (TOC-12-1320/P) was authorised by the Director of the TOC on 23 March 2010 and is attached to this Report.

1.5. Testing

The testing was conducted on 27 March 2010 at the firing range of the NVO /weapons and military equipment/ Testing Centre, Nikinci.

1.6. Present during testing

In addition to the members of the working team from the TOC, defence counsel Nebojša

PANTIĆ was also present during testing.

1.7. Special remarks

Based on the request by defence counsel and the Plan and Programme of Testing, it can be concluded that all scheduled activities were in accordance with the customary and regular expert activities of the TOC.

2. FINDINGS

2.1. Relevant documents from the case file

Following a review of the case file for KT-RZ-169/07, the following relevant documents were particularly selected for the preparation and execution of the testing:

1. Report and opinion of the expert, Professor Berko ZEČEVIĆ, with associates entitled "Analysis of conditions that resulted in the massacre at Trg Kapija on 25 May 1995 at 20,55 hours",
2. Drawing of the scene produced by the Tuzla Security Services Centre, number 20-1/02-39-175/95 dated 25/26 May 1995,
3. Photo file — "12 Shelling of Tuzla, Kapija 2",
4. Photo file — "13 Shelling of Tuzla, Kapija",
5. "18. Record of on-site investigation 25 May 1995",
6. "01. Report on investigation into shelling",
7. "02 Office of the Commander" (Report by General Hagrup HAUKLAND),
8. "03 Annex A" (Drawing of the scene 20-1/02-3-9-7-195/95),
9. "06 Annex F" (Investigation Report on the Shelling of Tuzla — Mixed Commission of the Sarajevo MUP /Ministry of the Interior/ and UNPROFOR),
10. "07 Annex F, appendix 1 BSC /expansion unknown/",
11. "10 Annex F, appendix 4" (Calculation of minimal angle of descent),
12. Film recording of the incident made immediately afterwards.

2.2. Definition of basic elements and parameters for the experiment

In order to properly define the basic elements and parameters for the experiment following the request by defence counsel, the following was done:

An examination of the matching of the 130 mm projectile impact point in order to establish the accuracy of the defined place of explosion as given by the prosecution's expert witness and the findings set out in the files of the investigating bodies of the Tuzla CSB /Security Services Centre/.

Following the explosion on Kapija Square, the Tuzla Security Services Centre carried out an on-site investigation of the incident and produced a drawing of the scene, number 20-1/02-3-9-175/95 dated 25/26 May 1995 (Figure 1).

In his report and opinion, the prosecution's expert witness determined the centre of the explosion as follows: *"The centre of the explosion has been determined as the intersection of the arcs whose starting points are at the ends of the corners of the building in front of which the explosion occurred, i.e. R1=2.65 and R3=5.6 m. The distance between the corners of the building is 6.5 m.*[1]

[1] Report and opinion of the expert witness, Professor Berko ZEČEVIĆ entitled "Analysis of the conditions that resulted in the massacre of persons at the Kapija Trg on 25 May 1995 at 20,55 hours", page 56, first paragraph.

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In this, the prosecution expert witness does not say where he found this information. A review of the sketch of the scene that was produced by members of the Tuzla CSB shows that the measurements that defined the position of the projectile's centre of explosion are closest to the coordinates of the point of the crater's top edge at the scene of the explosion. In contrast to the measurements taken at the scene, the prosecution's expert witness defined the width of the building, which houses the *NIK* shop, as being 6.50 m, instead of 6,55 m, and the radius from the nearer corner to the place of the explosion as 2,65 m, instead of 2,60 m. The prosecution expert witness did not provide any reasons for the discrepancies of these dimensions.

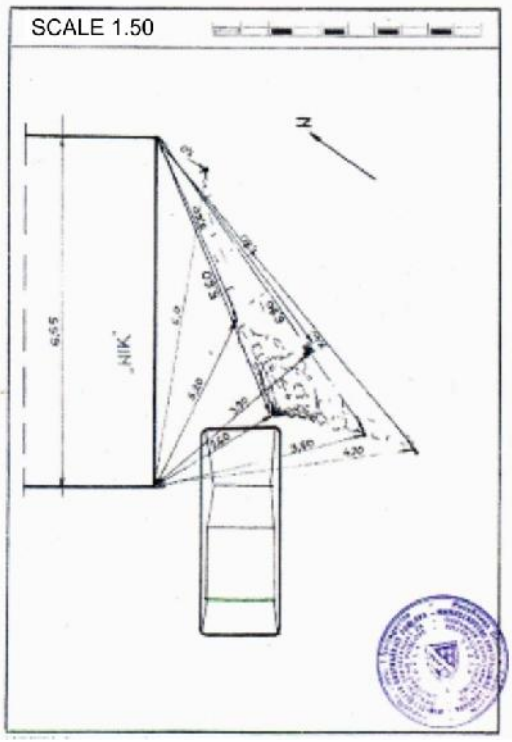

Figure 1 — Drawing of the scene produced during the on-site investigation by the Tuzla CSB

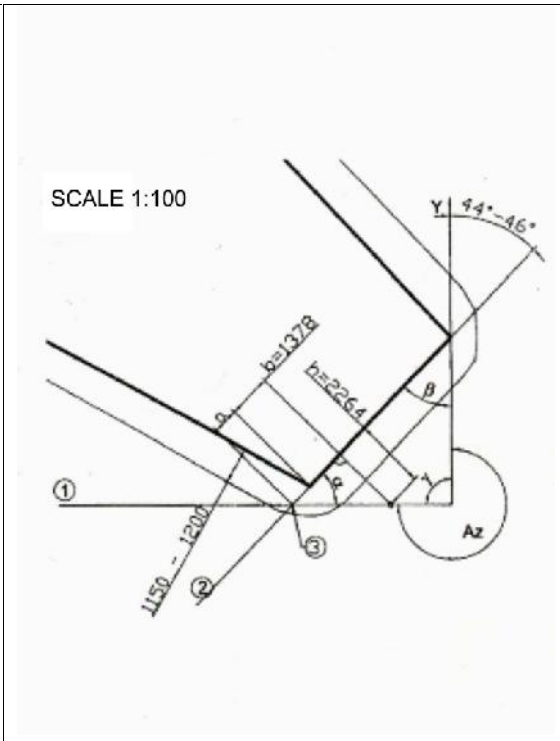

Figure 2 — Sketch of the scene with incoming bearing of the projectile as determined by the prosecution's expert witness

The prosecution's expert witness also failed to explain why he took a point from the edge of the crater as the centre of the explosion, with radiuses of 2,65 m and 5,60 m, although he himself had accepted that the centre of the explosion was the point defined by members of the Tuzla CSB that is at the intersection of the 4,80 m and 3,90 m radiuses described from the end points of the wall, and he marked this point in Figure 3[2] as "Position of projectile impact".

[2] Report and opinion of expert witness, Professor Berko ZEČEVIĆ entitled "Analysis of the conditions that resulted in the massacre of persons at the Kapija Trg on 25 May 1995 at 2055 hours", page 54, Figure 52.

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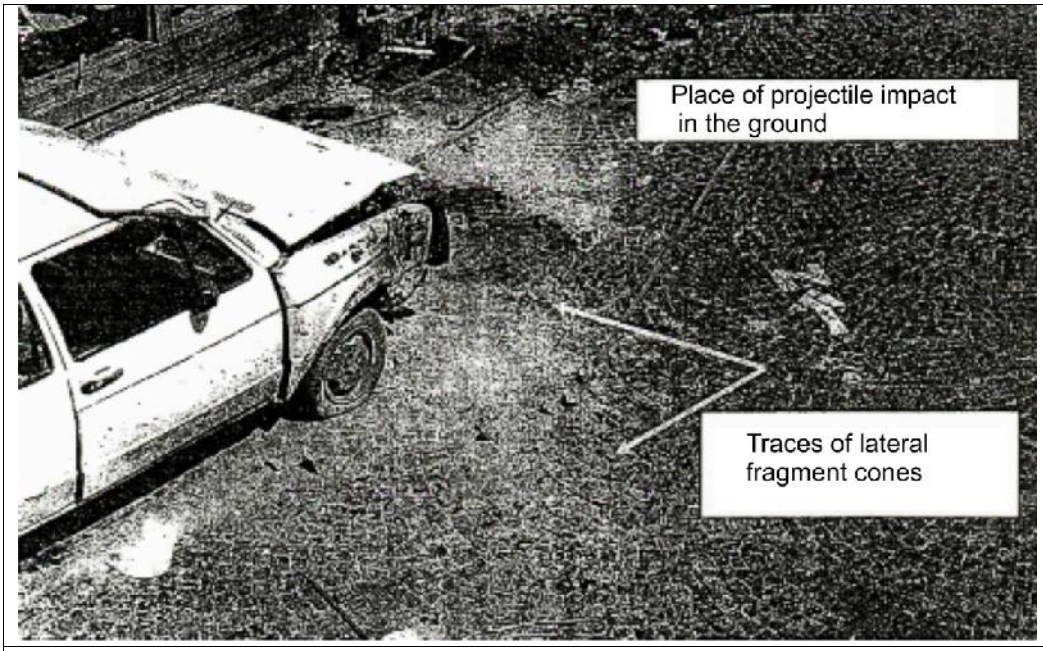

Figure 3 — Position of the car in relation to the building. The place of impact of the projectile in the ground was marked by the prosecution's expert witness

2.4. Checking the matching of the incoming projectile trajectory

The incoming projectile trajectory was checked in order to examine whether the trajectory determined by the prosecution's expert witness matches the trajectory that was determined by the investigating bodies of the Tuzla CSB.

The prosecution's expert witness explained his determination of the incoming projectile trajectory as follows: *"Photograph no. 10 clearly shows the direction of the furrow in the granite cobblestones, with the axis along the furrow extending in the granite cobblestones (mark 1).*

An axis is extended at the bottom of the vertical wall of the building in front of which the projectile exploded (mark 2) to the point of intersection with the previous axis (mark 3).

It is necessary to determine the distance of the point of intersection (mark 3) to the edge of the vertical wall (mark 4)."[3] (Figure 4)

From the same photograph, the prosecution's expert witness determined the distance from the point of intersection (mark 3 on Figure 4) to the edge of the vertical wall (mark 4 on Figure 4) to be 800 mm

From the land survey map of Tuzla, he determined that the bearing of the vertical wall — the facade of the building housing the *NIK* shop — is $45°^{\pm 1°}$.
Based on the geometric parameters of the scene determined in this way (Figure 2), the prosecution's expert witness made a calculated determination of the bearing of the

[3] Report and opinion of expert witness, Professor Berko ZEČEVIĆ entitled "Analysis of the conditions that resulted in the massacre of persons at the Kapija Trg on 25 May 1995 at 20,55 hours", page 59, Figure 68.

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incoming projectile trajectory (as in Figure 6) with values ranging between 268.820° and 273.45°[4],

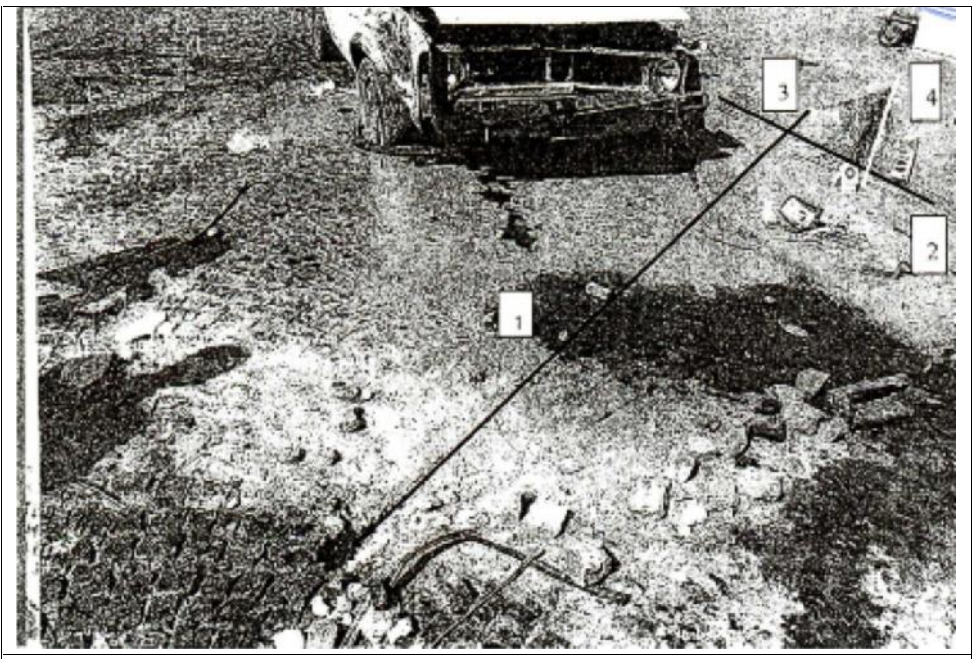

Figure 4 — Incoming projectile trajectory and determining the distance between the point of intersection of the incoming trajectory and the straight line from the wall, according to the prosecution's expert witness

In determining the incoming trajectory, the prosecution's expert witness used the information from the photograph shown in Figure 4, which was taken after the scene was altered in relation to the state immediately after the explosion (Figure 5). It is apparent that on Figure 5 there are no clearly visible traces that could be used as a basis for reliably determining the incoming trajectory, and so it is not clear what the prosecution's expert witness used as a basis for making his assessment of the accuracy of the information for the aforementioned determination of the incoming projectile trajectory.

[4] Report and opinion of expert witness, Professor Berko ZEČEVIĆ entitled "Analysis of the conditions that resulted in the massacre of persons at the Kapija Trg on 25 May 1995 at 2055 hours", page 59, table 4.

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Figure 5 — Photograph of the scene taken immediately after the explosion[5]

As mentioned in item 2,2, the prosecution's expert witness determined the point of impact and explosion of the projectile as a point that he defined based on the edge of the traces of the explosion at the scene, and not based on the sketch of the scene produced by the Tuzla CSB during the on-site investigation. A comparison of Figures 4 and 5 (axis 1 on Figure 4 drawn from the point of the projectile impact) shows that the place of the explosion corresponds to the sketch that was produced during the on-site investigation by the Tuzla CSB, and not to what the prosecution's.

In his calculation, the prosecution's expert witness used the information on the position of the point of impact as he determined (Figure 2), and in so doing he arrived at the results shown in the table in Figure 6.

Table 4. Incoming projectile angle, angle bearin

	Determining the angle (α) which is formed between the incoming projectile trajectory (mark 1) and the axis of the foot of the building wall (mark 2),angle γ and the bearing of the incoming projectile trajectory		
	Distance a = 700 mm	Distance a = 800 mm	Distance a = 900 mm
$tg\alpha=\frac{a+b}{h}$	1.0895091	1.0394857	0.0038545
Angle α	47,45°	46,11°	44,82°
Angle γ(β = 44°)	88,55°	89,89°	91,18°
Angle γ ((β = 46°)	86,55°	87,89°	89,18°
Bearing Az (degrees)	271,45°- 273,45°	270.11°- 272,11°	268.82°- 270,.82°
Bearing range Az (degrees)	268,82°- 273,45°		

Figure 6 — Bearing of incoming projectile trajectory according to the calculation by the prosecution's expert witness[6]

[5] Photo file — "12. Shelling of Tuzla, Kapija 2", Figure 9.

When calculating the bearing for the projectile's point of impact as determined by the Tuzla CSB in the way as was done by the prosecution's expert witness, the results are as follows in Table 1.

Table 1 — Bearing of incoming projectile trajectory according to TOC calculation

	Determining the angle (α) which is formed between the incoming projectile trajectory (mark 1) and the axis of the foot of the building wall (mark 2),angle γ and the bearing of the incoming projectile trajectory		
	Distance a = 700 mm	Distance a = 800 mm	Distance a = 900 mm
$tg\alpha=\frac{a+b}{h}$	0,839799	0,815646	0,792843
Angle α	40,04°	39,22°	38,43°
Angle γ(β = 44°)	95,96°	96,78°	97,57°
Angle γ ((β = 46°)	93,96°	94,78°	95.57°
Bearing Az (degrees)	264,04°- 266,04°	263,22°- 265,22°	262,43°- 264,43°
Bearing range Az (degrees)	262,43°- 266,04°		

The difference between the bearing value as determined by the prosecution's expert witness and the bearing value that was calculated by the working team of the TOC is around 7°. The bearing angle that was determined by the prosecution's expert witness is not within the limits of the bearing that was determined by the working team of the TOC. The angle determined by the mixed commission of the Sarajevo MUP and UNPROFOR is partially within the limits of the bearing that was determined by the working team of the TOC.

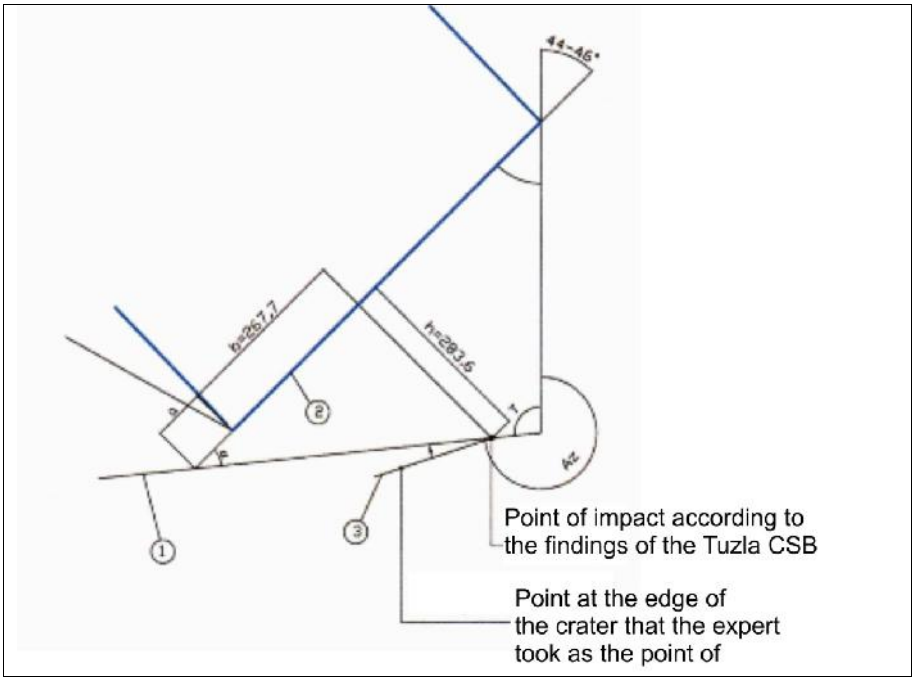

Figure 7 — Bearing of the incoming projectile trajectory according to the point of impact that was determined by the Tuzla CSB

[6] In the table in Figure 6 the prosecution's expert witness incorrectly noted this formula, but correctly calculated the values.

2.4. Checking the angle of descent

The check was conducted in order to determine if the angle of impact as determined by the prosecution's expert witness matched the angle of descent as determined by the investigating bodies of the Tuzla CSB and the mixed commission of investigating bodies of BH and UNPROFOR.

Based on the position of the place of the explosion in relation to the adjacent buildings and the bearing of the incoming projectile trajectory, the prosecution's expert witness determined a minimum angle of descent of 31°[7]. By drawing lines through the penetrations on the right front side of the Golf 1 car (Figure 8), the prosecution's expert witness determined that the angle of descent was greater than 60°.

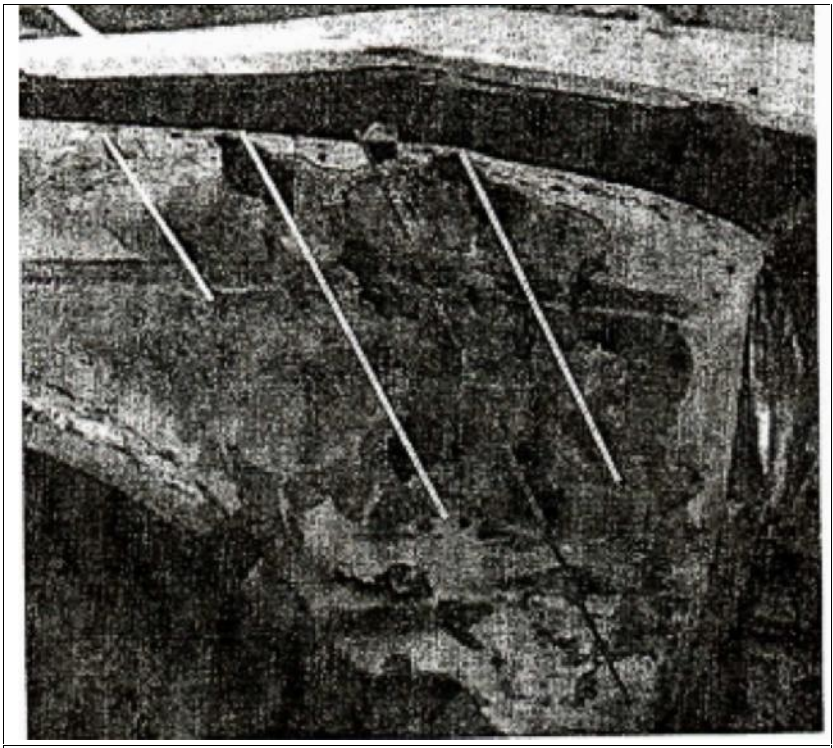

Figure 8 — Determining the projectile's angle of descent based on the traces on the car[8]

The method of determining the angle of descent based on the penetration traces on the wing of the Golf 1 car is unreliable because it is possible to draw an unlimited number of lines in various directions through any point on a plane or in space. This view is confirmed in Figure 9 where in addition to the lines drawn by the expert, for the sake of example the working team of the TOC drew lines at an angle of 41°.

[7] Report and opinion of expert witness, Professor Berko ZEČEVIĆ entitled "Analysis of the conditions that resulted in the massacre of persons at the Kapija Trg on 25 May 1995 at 2055 hours", page 60, last paragraph.

[8] Report and opinion of expert witness, Professor Berko ZEČEVIĆ entitled "Analysis of the conditions that resulted in the massacre of persons at the Kapija Trg on 25 May 1995 at 2055 hours", page 61, Figure 63.

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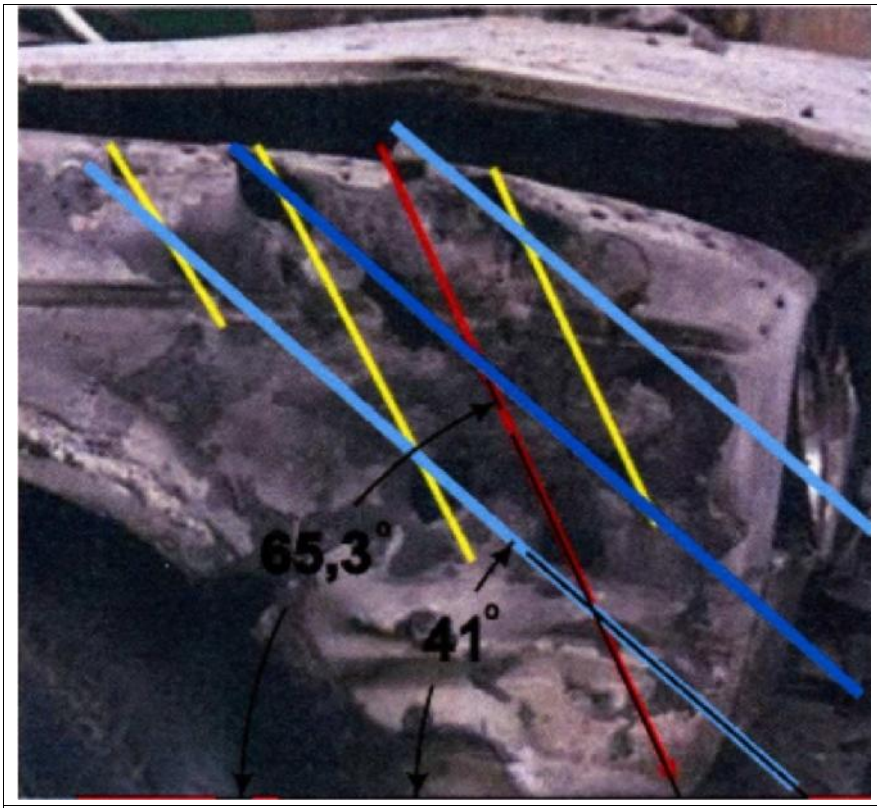

Figure 9 — The lines that, according to the expert, determine the projectile's angle of descent,
- Lines at an angle of 65.3° were drawn by the prosecution's expert witness
- The blue lines at an angle of 41 ° were drawn by the working team of the TOC

2.5. Checking the distance of the Golf 1 car.

The Tuzla CSB did not provide any information on the distance of the Golf 1 car from the wall of the *NIK* shop. On the basis of the photograph of the scene in Figure 5 it is evident that the point of the edge of the damage on the surface, which the Tuzla CSB marked on the sketch of the scene[9], is located below the front fender in the direction of the right front wheel. In this way it is possible to approximately determine the distance of the car from the wall. Based on the distance between the wall and the calculated point on the edge of the surface damage, which is 226,4 cm (Figure 2), a distance between the two of 140 cm, and the width of the Golf 1 car of 163 cm, it was determined that the Golf 1 car was at a distance of between 70 and 80 cm from the wall.

In his report and opinion, the prosecution's expert witness said that the distance of the car to the wall was 47 cm[10] without mentioning how he arrived at this figure.

[9] Drawing of the scene produced by the Tuzla Security Services Centre, number 20-1/02-3-9-175/95 dated 25/26 May 1995

[10] Report and opinion of expert witness, Professor Berko ZEČEVIĆ entitled "Analysis of the conditions that resulted in the massacre of persons at the Kapija Trg on 25 May 1995 at 20,55 hours", page 62.

3. FIRING RANGE TESTING

3.1. Choice of method and scope of testing

Based on the job request that was submitted by defence counsel, the case file, and the report and opinion by the prosecution's expert witness, it was concluded that the following was needed in order to carry out the experiment:

- Check the projectile's minimum angle of descent as used by the prosecution's expert witness during the reconstruction of the incident;
- Activate a 130 mm contact-fuse projectile in accordance with the job request with an angle of between 62° and 67° on a surface of granite cobblestones;
- On a surface covered with granite cobblestones, activate a 130 mm contact-fuse projectile set at an angle of approximately 30°;
- In the vicinity of the place of the explosion, put up deal plank screens that can be used to compare the results of the experiment with the real incident.

Based on these criteria, the following screens were put up:

- Screen at the location of the *NIK* shop, next to which the Golf 1 was positioned;
- Screen of the sidewalk in front of the *NIK* shop;
- Screen at the corner of the building and parts of the adjacent walls at the location of cafe *Leonardo* and the *Kapija STR* /privately-owned store/;
- Screen on the corner of the building in Mustafe Mujbegovića Street;
- Screen (front and right side) of a Zastava 101 car, which was located in Partizanska Street, opposite the centre of the explosion;
- Screen (front and left side) of a car, Fiat 125P, which was located next to the entrance to café *Leonardo.*

The screens are made of 25 mm deal planks, which are normally used in standard testing of projectile bursts in an enclosed area.
The screens simulating the buildings are 3 m high, while for the cars, two screens were used — one 1.5 m high and 1.6 m long, and another one 1,5 m high and 4 m long.
The preparation and execution of the testing were recorded with three video cameras and a digital photo camera.

3.3 Arrangement of the buildings on the testing ground

The buildings were placed on the *Pancir* emplacement[11], which has a road paved with granite cobblestones, as was the case on Kapija Square in Tuzla. The road was constructed in the late seventies and was intended to be used by trucks and mobile cranes transporting reinforced panels. A 6.55 m x 3 m screen was put up next to the granite cobblestone road, and all other buildings were put up in relation to it according to the sketch in Figure 10. The arrangement of the buildings
in this Report was taken from a city map of Tuzla, and the arrangement of the cars from the "Drawing of the scene 20-1/02-3-9-7-195/95".

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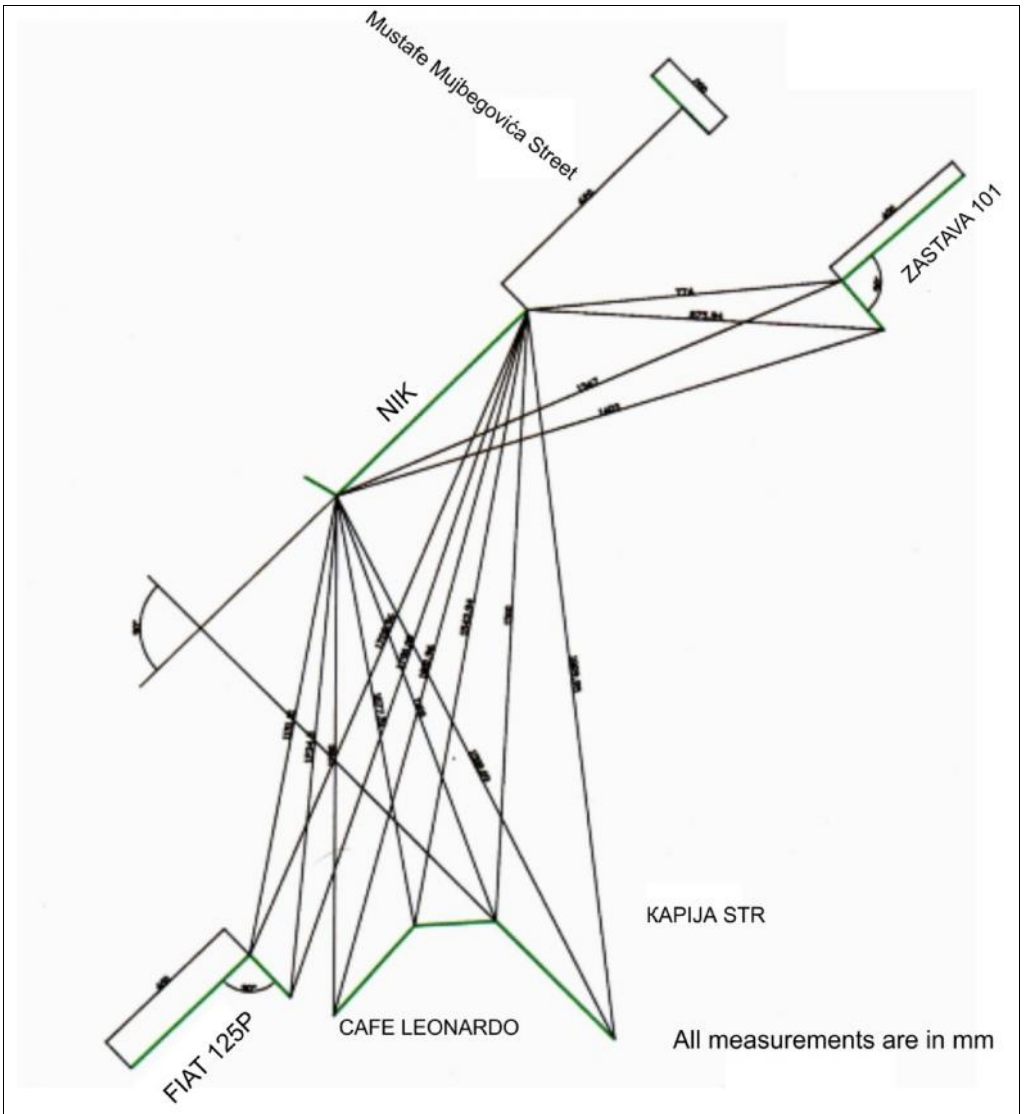

Figure 10 — Sketch showing arrangement of screens

The arrangement of the screens is shown in Figure 11.

[11] An emplacement is a specially-arranged area of a firing range with a firing position and one or more buildings. A firing position is a place for siting artillery pieces/weapons with defined coordinates in a local land survey system.

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Figure 11 — View of the siting of screens

3.3. Determining the minimum angle of descent

The minimum angle of descent was determined by measuring the minimum angle at which the projectile could have hit the ground next to the Golf 1 at a point that was determined in the investigation as the point of projectile impact, without hitting the Golf 1.

Considering that the prosecution's expert witness presented evidence based on a point of impact that was different from the point of impact as determined by the Tuzla CSB at the scene during the investigation, the determination of the angle of descent was conducted with both versions of the location of the point of impact.

3.4. Determining the minimum angle of descent in relation to the point of projectile impact as determined by the Tuzla CSB.

As described in item 2.5., the investigating bodies did not provide any information on the exact position of the Golf 1, but based on Figure 5 the car can be positioned with acceptable error in relation to the point located at the edge of the crater[12]

The car was positioned, as in Figure 5, in such a way that the fender of the car was next to the marked point that corresponds to the point at the edge of the crater according to the findings of the Tuzla CSB (Figure 12). A line running through the point of projectile impact and the marked point at the edge of the crater was taken as the incoming trajectory. This line was fixed based on officially determined characteristic points. This does not include an assessment of how accurately the officially determined points were fixed.

[12] This point is defined as the intersection of the radiuses from the angles of the building rl = 2,60 m and r2 = 5,60 m, Figure 1

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Figure 12 — The Golf 1 was positioned to determine the projectiles minimum angle of descent

After placing the car at the defined position, measurements were taken to determine that the distance of the car's left side to the screen (wall) was 70 cm, and the distance of the front edge of the fender to the corner of the screen was 152 cm. The distance between the screen (wall) and the car matches the estimate of the distance (item 2.5.).

The minimum angle was determined in such a way that the projectile was tied to a plank, and the plank was then leaned against the car at the angle that was measured. In this case an angle of 29.5° was measured. This angle is close to the value of the minimum angle of descent of 31.16° that was determined by the members of the mixed commission of the Sarajevo MUP and UNPROFOR[13] (Figure 13), but it is different to the findings of the prosecution's expert witness, which is understandable since he took a point from the edge of the crater as the place of impact, and not in the crater.

Figure 11— Determining the minimum angle of descent according to the findings of the Tuzla CSB

[13] 06 Annex F (Report — Investigation in relation to the shelling of Tuzla — Mixed Commission of the Sarajevo MUP and UNPROFOR), item 5c.

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3.5 Determining the minimum angle of descent for the point of projectile impact as determined by the expert witness

The Golf 1 was positioned at a distance of 47 cm to the screen (wall), and the front end was at a distance of 130 cm to the edge of the screen[14] (wall). The point of the explosion was determined in such a way as was defined by the prosecution's expert witness[15]

From this point, the projectile, tied to a plank, was leaned against the car in the direction of the bearing of the incoming projectile, which was determined by the prosecutor's expert witness[16] (271°).

For a projectile placed in this way, a gradient angle of 68° was measured. Since this angle is greater than the one measured by the expert witness, the car was moved towards the screen in order to determine the distance that is required to arrive at an angle of 62°, which was determined by the prosecution's expert witness.
An angle of projectile impact of 62° is possible when the distance between the car and the screen is 35 cm (Figures 14 and 15).

Figure 14 — Position of the Golf 1 in the case of a minimum angle of descent of 62°

A comparison of Figure 14 and the image provided by the prosecution's expert witness in his report and opinions shows[17] that on his photograph, the plank, i.e. the projectile, was moved towards the rear end in relation to the corner of the car. In order to easier spot the differences in these photographs, lines were drawn in the

[14] Report and opinion of expert witness, Professor Berko ZEČEVIĆ entitled "Analysis of the conditions that resulted in the massacre of persons at the Kapija Trg on 25 May 1995 at 20,55 hours", page 62.
[15] Report and opinion of expert witness, Professor Berko ZEČEVIC entitled "Analysis of the conditions that resulted in the massacre of persons at the Kapija Trg on 25 May 1995 at 20,55 hours", page 56.
[16] Report and opinion of expert witness, Professor Berko ZEČEVIC entitled "Analysis of the conditions that resulted in the massacre of persons at the Kapija Trg on 25 May 1995 at 20,55 hours", page 59.
[17] Report and opinion of expert witness, Professor Berko ZEČEVIC entitled "Analysis of the conditions that resulted in the massacre of persons at the Kapija Trg on 25 May 1995 at 20,55 hours", page 62, Figure 75.

direction of the bearing from the top of the fuse (line 1) and from the middle of the base of the projectile (line 2). The marked photographs can be seen in Figures 16 and 17.

Figure 15 — Measuring the projectile's minimum angle of descent of 62°

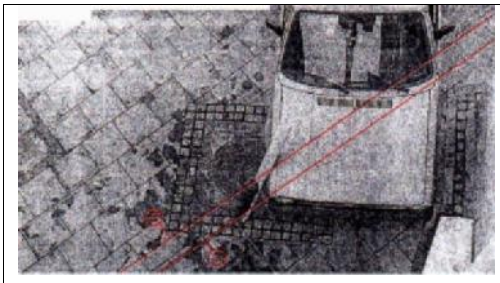

Figure 16 — Position of the projectile and car during the reconstruction conducted by the prosecution's expert witness

Figure 17 — Position of the projectile and car during the reconstruction conducted by the working team of the TOC, according to the information provided by the prosecution's expert

By comparing the position of the cars shown in Figures 16 and 17 it is obvious that the car in Figure 16 is positioned further forwards, which is also indicated by line 1 on both photographs. Considering that the working team of the TOC positioned the car according to the position as defined by the prosecution's expert witness, it is clear that the expert witness had moved the car forward during the reconstruction without clearly mentioning that in his report. The assumption is that the only reason for the prosecution's expert witness moving the car forward would be to bring the projectile in a position that corresponds to a position where it would have the greatest fragmentation effect on the right front wing of the Golf 1 (Figure 8).

3.6. Activating a projectile next to the car

The process of activating a projectile next to the car under the conditions and with the elements from the job request for the working team of the TOC received from the

defence counsel. These elements are identical to the elements that were defined by the prosecution's expert witness in his report to the prosecution.

For the experiment, a Russian-made 130 mm OF-482 projectile (refurbished) was used, with the fuse prepared for activation by an electric detonator cap, EDK-8.

As an object in the experiment an operational Golf 1 was used, manufactured in 1980, which was registered until November 2010. The relevant photo and video documentation was produced about this car.

The car was positioned next to the screen at a lateral distance of 35 cm and 130 cm from the vertical edge of the screen.

The working team of the TOC could not position the car at a distance of 47 cm from the screen (wall), as determined by the prosecution's expert witness[18], because at that distance from the car to the screen the projectile could not be placed at an angle of less than 68° (item 3.5.). Therefore, a distance of 35 cm was fixed, which allows a minimum angle of descent of 62° (the angle that was determined by the expert witness as the minimum angle of descent).

The projectile was placed at an angle of descent of 64° 50', and that is an average angle value among the possible angles of descent determined by the prosecution's expert witness [19](62° to 67°41').

The projectile was placed in such a direction that it was in the same position in relation to the screen (wall) as if the bearing of the direction of fire was 271°. That was achieved by drawing a line through the point that was obtained at the intersection of the radiuses from the corners of the screen (wall) with radiuses of 2.65 m and 5.60 m, and the point on a straight line from the screen (wall) at a distance of 80 cm from the edge of the screen (wall) towards the rear end of the car. In this way, the position of the projectile in relation to the car and the screen (wall) was identical to the report of the prosecution's expert witness.

The projectile was activated electrically, and the entire course of the explosion was recorded with three video cameras.

The position of the car and the projectile just before activation of the projectile can be seen in Figure 18.

Figure 18 - Position of the car and the projectile just before the explosion

[18] Report and opinion of expert witness, Professor Berko ZEČEVIĆ entitled "Analysis of the conditions that resulted in the massacre of persons at the Kapija Trg on 25 May 1995 at 20,55 hours", page 62.

[19] Report and opinion of expert witness, Professor Berko ZEČEVIC entitled "Analysis of the conditions that resulted in the massacre of persons at the Kapija Trg on 25 May 1995 at 20,55 hours", page 62.

Details of the explosion are shown in Figures 19 and 20.

Figure 19 — Explosion detail

Figure 20 — Explosion detail

After the explosion, the position of the point with the tip of the projectile before its activation was measured and determined once again, as well as the end point of the screen (wall), which was largely destroyed in the explosion. Thus, the centre of the explosion and the amount of movement of the car as a result of the explosion were precisely determined.

3.7. Effects of the experimental explosion on the ground The following was determined after the explosion:

- Asa result of the effects of the explosion there was minor damage to the granite cobblestone at the place where the projectile was activated;
- Four minor traces of fragmentation were observed that spread out radially from the centre of the explosion;
- The trace of the explosion on the ground was triangular in form with an angle at the top of around 60°;
- At the same spot there were no visible traces of compression of the granite cobblestones in the surface;
- The effects of the explosion of the projectile on the ground in this experiment have no visual and physical similarities to the crater that was created as a result of the explosion of the projectile on Kapija square in Tuzla. This is also clearly evident from a comparison of the photographs in Figures 21 and 23 of this Report.

Also, at the scene of the experimental explosion there were no interventions that would have changed anything and it was photographed in the state as it was immediately after the explosion.

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Figure 21 — The centre of the explosion of the projectile that was placed at an angle of 64°50'.

The tip of the arrow indicates the spot where the tip of the projectile was before the explosion

Figure 22 — The centre of the explosion of the projectile that was placed at an angle of 64°50'.
The tip of the arrow indicates the spot where the tip of the projectile was before the explosion —
general view

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Figure 23 — The place of the explosion on Kapija square after the explosion

3.8. Position of the car after the explosion Measurements at the scene of the experiment yielded the following results (Figure 24):

- The car was pushed back by about 135 cm and about 92 cm to the side. It was not possible to obtain a more precise value for the car's lateral movement after the experimental explosion because of its evidently major deformation;
- Viewed from above, the car was turned to the left by about 50° in relation to its initial position;
- On the photographs of the scene of the incident in Tuzla it can be plainly seen that there had been no visible turning or lengthwise movement of the Golf 1 with licence plate no. TZ-110 - 777. The same is also clearly visible on the photograph shown in Figure 23 of this report.

Figure 24 — Position of the car after the explosion

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3.9. Effects of the experimental explosion on the Golf 1

The following was observed on the Golf 1 after the explosion (Figures 24 to 26):

- Asa result of the fragmentation effect of the projectile, the front right wing was perforated and ripped off by the shock wave;
- The right side of the fender and the lower valance panel were severed/destroyed due to the fragmentation effect;
- Asa result of the fragmentation effect of the projectile, the right passenger door was perforated, with a line of penetration of between 0° and 30°, measured in relation to the horizontal plane of the ground;
- Asa result of the fragmentation effect of the projectile, the right rear panel was perforated in front of the right back wheel;
- The right front and rear side windows were shattered;
- The windshield was smashed and thrown onto the hood;
- The hood was deformed;
- Asa result of the fragmentation effect, the front left wing was perforated and ripped off by the shock wave;
- The left rear side window was thrown out undamaged;
- All tyres were shredded to a greater or lesser extent;
- Engine oil leaked out.

Figure 25 — The car after the explosion of the projectile (1)

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Figure 26 — The car after the explosion of the projectile (2)

Figure 27 — The car after the explosion of the projectile (3)

A comparison of the photograph of the scene in Tuzla (Figure 23) and the photographs of the car after the experimental explosion (Figures 25 to 27) clearly shows that the instances of damage caused by the experimental explosion are more numerous and greater in scope, i.e. the surface affected by the fragmentation effect is significantly larger in relation to the corresponding surface on the object at the scene.

3.10. Effect of the experimental explosion on the screen and the sidewalk at the *NIK* shop

The following was observed on the screen and the sidewalk at the *NIK* shop after the explosion (Figures 28 and 29):

- Asa result of the fragmentation effect and shock wave effect, about 2/3 of the screen and the sidewalk was destroyed;
- On the remaining part of the screen, at the corner with Mustafe Mujbegovića Street 68, projectile fragment hits were counted (Figure 29), which were mostly found up to a height of about 1.5 m. On the destroyed part of the screen, instances of damage caused by the fragmentation effect were not counted because the screen was destroyed to such a great extent that it was impossible to reliably and accurately determine the spread and number of hits.

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A comparison of the photographs of the scene of this incident in Tuzla (Figure 30) and the photographs of the screens and the sidewalk at location of the *NIK* shop after the experimental explosion (Figures 28 and 29) clearly shows that the damage on the part of the facade to the left of the shop window of the *NIK* shop and at the location of the shop itself were practically unnoticeable, while the corresponding part of the screen was entirely destroyed in the explosion of the projectile during the experiment. This means that the band of fragments in this incident was released under completely different conditions than in the case during the experiment. At the same time, this also means that the projectile that exploded at the scene of this incident was in a completely different position than that of the projectile during the experiment.

The part of the screen that represented the location of the *NIK* shop window (marked and delineated with black paint) was also completely destroyed in the explosion during the experiment, except fora small right piece of the screen. On the photograph of the scene of the incident in Tuzla (Figure 30) it can be clearly seen that the mannequins in the *NIK* shop window are standing, dressed and without visible damage, which also clearly indicates that the projectile that exploded at the scene of the incident was in a completely different position than that of the projectile during the experiment. The screen made for the purpose of the experiment was made of 25 mm deal planks, which is undoubtedly more robust than the material used for manufacturing shop window mannequins.

Figure 28 — The screen and sidewalk at the location of the *NIK* shop after the explosion

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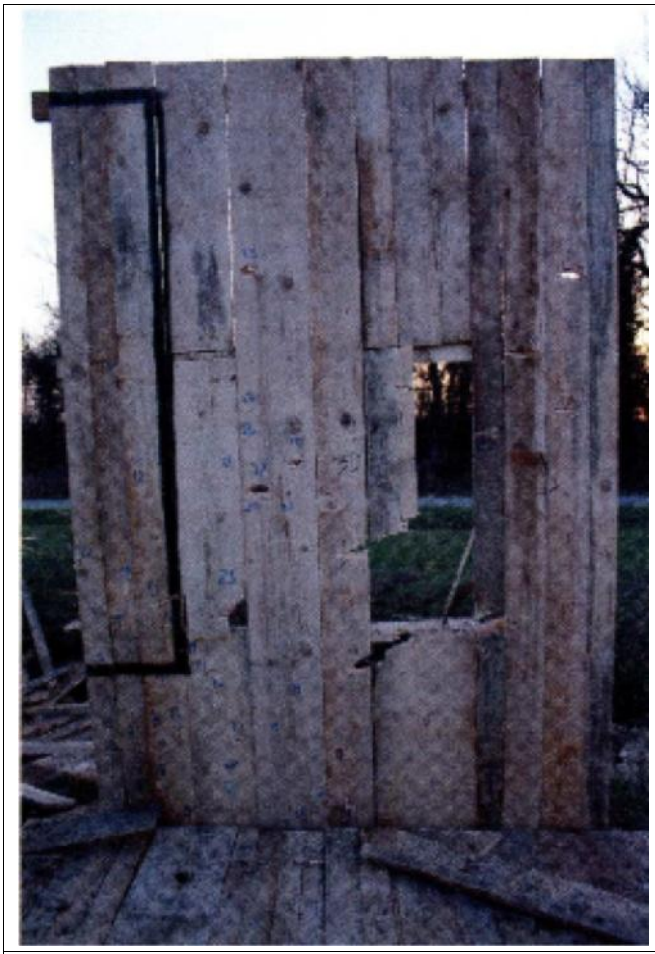

Figure 29 — Remaining part of the screen and sidewalk at the location of the *NIK* shop after the explosion

Figure 30 — The building of the *NIK* shop after the explosion on 25 May 1995

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3.11. Effect of the experimental explosion on the screen (wall) which represents the position of a part of the wall of the building in Mustafe Mujbegovića Street

The following was observed after the explosion on the screen (wall) of the building in Mustafe Mujbegovića Street (Figure 31):

Eighteen hits of projectile fragments were counted, which were spread all over the entire screen above 65 cm from the ground, except one hit that was 30 cm above the ground.

On the photograph of the scene of the incident in Tuzla (Figure 32), 12 hits can be seen on the wall spread to a height of up to 60 cm from the ground.

Based on the fragmentation effect on the screen (wall) caused by the experimental explosion and the explosion on Kapija Square on 25 May 1995, it is evident that the band of fragments in this incident was released under completely different conditions than in the case during the experiment. The working team of the TOC concluded that the projectile that exploded at the scene of this incident was in a completely different position than the one of the projectile during the experiment.

Figure 31 — Screen (wall) of the building on the corner of Mustafe Mujbegovića Street and Partizanska Street after the experimental explosion

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Figure 32 — Buildings on the corner of Mustafe Mujbegovića Street and Partizanska Street after the explosion

3.12. Effect of the experimental explosion on the screen (wall) corresponding to the position of the wall of the building housing the Kapija STR

The following was observed after the explosion on the screen (wall) of the building housing the Kapija STR (Figure 33):

- 31 hits of projectile fragments were counted, which were spread all over the entire surface of the screen and all perforations have an elongated form (Figure 34), which is characteristic for a projectile fragment hitting a target at a small angle;
- On the photographs of the scene of the incident in Tuzla (Figures 35 and 36), hits can be seen along the entire length and height of the wall. The imprints of the strikes have symmetry axes of almost identical size, which is characteristic for hits at angles greater than 80°.

Based on the fragmentation effect on the screen (wall) caused by the experimental explosion and the explosion on Kapija Square on 25 May 1995, it is evident that the band of fragments in this incident was released under completely different conditions than in the case during the experiment. The working team of the TOC concluded that the projectile that exploded at the scene of this incident was in a completely different position than that of the projectile during the experiment.

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Figure 33 — Screen (wall) of the building of the Kapija STR after the experimental explosion

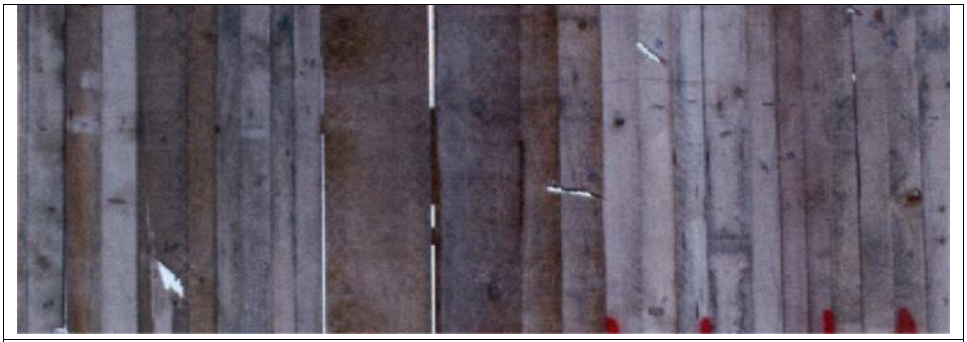

Figure 34 — Detail of the screen (wall) of the building of the Kapija STR with visible elongated perforations made by projectile fragments

Figure 35 — Building of the Kapija STR after the explosion on 25 May 1995

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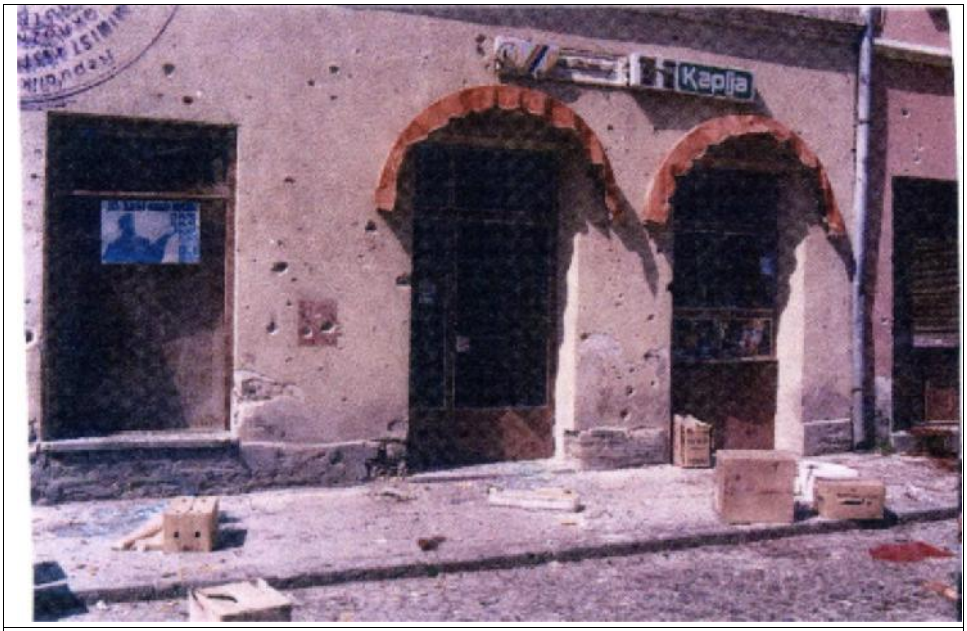

Figure 36 — Building of the Kapija STR after the explosion on 25 May 1995

3.13. Effect of the experimental explosion on the screen (wall) which corresponds to the position of the corner of the building housing the Kapija STR and cafe *Leonardo*

The following was observed after the explosion on the screen (wall) of the building housing the Kapija STR and cafe *Leonardo* (Figure 37):

- A total of 57 hits of projectile fragments were counted, which were mostly spread up to a height of 2 m from the ground. Above 2 m, a few hits of projectile fragments were recorded.

- On the photograph of the scene of the incident in Tuzla (Figure 38), hits can be seen only in the upper left corner of the building.

Based on the fragmentation effect on the screen (wall) caused by the experimental explosion and the explosion on Kapija Square on 25 May 1995, it is evident that the band of fragments in this incident was released under completely different conditions than in the case during the experiment. The working team of the TOC concluded that the projectile that exploded at the scene of this incident was in a completely different position than that of the projectile during the experiment.

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Figure 37 — Screen (of corner part of the building) housing the Kapija STR and cafe *Leonardo* after the experimental explosion

Figure 38 — Corner of the building housing the Kapija STR and cafe *Leonardo* after the explosion on 25 May 1995

3.14. Effect of the experimental explosion on the screen (wall) corresponding to the position of the wall of the building housing cafe *Leonardo*

The following was observed after the explosion on the screen (wall) corresponding to the position of the wall of the building housing cafe *Leonardo* (Figures 39 and 40):

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- 38 hits of projectile fragments were counted, which were spread from the bottom to the top of the screen;

- On the photograph of the scene of the incident in Tuzla (Figure 41), only two fragmentation effect traces can be seen at a height of about 3 m.

Based on the fragmentation effects on the screen (wall) corresponding to the position of the wall of the building housing cafe *Leonardo*, caused by the experimental explosion and the explosion on Kapija Square on 25 May 1995, it is evident that the band of fragments in this incident was released under completely different conditions than in the case during the experiment. The working team of the TOC concluded that the projectile that exploded at the scene of this incident was in a completely different position than that of the projectile during the experiment.

Figure 39 — Screen (building) housing cafe *Leonardo* after the experimental explosion

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Figure 40 — Band of fragments directed against the building housing cafe *Leonardo*

Figure 41 — Facade of the building of cafe *Leonardo* and the Fiat 125 P after the explosion on 25 May 1995

3.15. Effect of the experimental explosion on the screens (car) corresponding to the position of the FIAT 125P car

The following was observed after the explosion on the screens (car) corresponding to the position of the FIAT 125P car (Figures 42 and 43):

- 28 hits of projectile fragments were counted on the front screen and 49 on the side screen;
- On the photograph of the scene of the incident in Tuzla (Figures 41 and 44) there are no fragmentation effect traces that can be seen on the car;
- On the video recording of the explosion during the experiment, a large band of projectile fragments can be clearly seen, which is directed precisely towards the screens corresponding to the position of the FIAT 125P, which indicates that the FIAT 125P was directly exposed to the effect of a large number of fragments whose spatial position corresponds to the position of the projectile in the experiment (Figure 40).

Based on the fragmentation effect of the projectile on the screens (car) corresponding to the position of the FIAT 125P (car), caused by the experimental explosion and the explosion on Kapija Square on 25 May 1995, it is evident that the band of fragments in this incident was released under completely different conditions than in the case during the experiment. The working team of the TOC concluded that the projectile that exploded at the scene of this incident was in a completely different position than that of the projectile during the experiment.

On the video recording of the explosion during the experiment, a large band of fragments, which is directed precisely towards the position corresponding to the position of the FIAT 125P, is clearly visible, indicating that the screens were directly subjected to the effects of a large number of fragments in the explosion of the projectile, whose spatial position corresponded to the position of the projectile in the experiment.

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Figure 42 — Screen (front view of the car) after the explosion

Figure 43 — Screen (side view of the car) after the explosion

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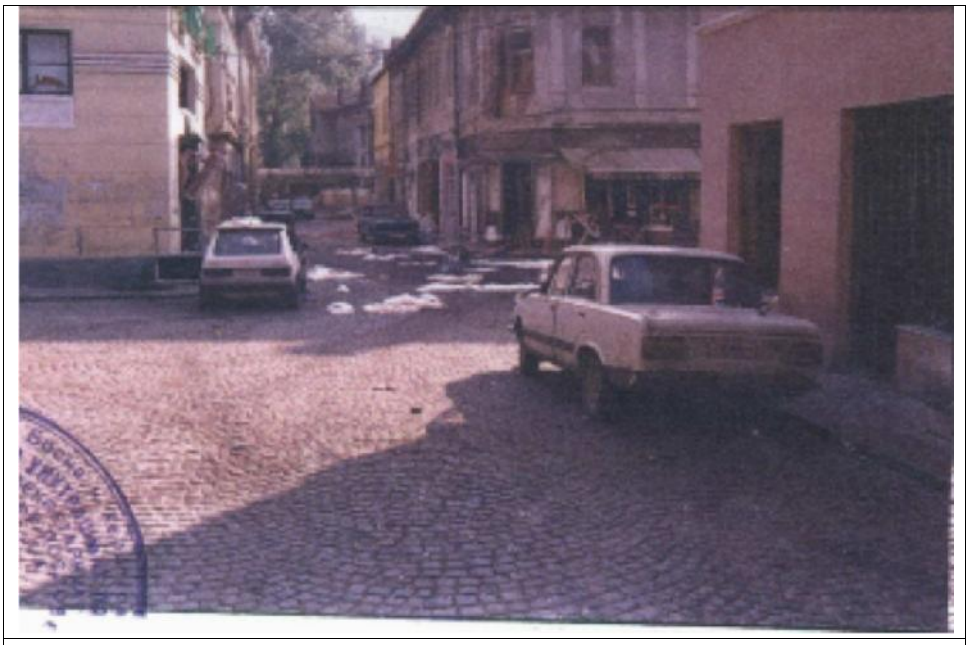

Figure 44 — The Fiat 125 P after the explosion on 25 May 1995

3.16. Effect of the experimental explosion on the screen (car) corresponding to the position of a car, a ZASTAVA 101

The following was observed after the explosion on the screen (car) corresponding to the position of the ZASTAVA 101 (Figures 45 and 46):

- Four hits of projectile fragments were counted on the front and six on the side;
- On the photograph of the scene of the incident in Tuzla (Figure 46) the windshield is intact, the hood has one perforation, while on the side there are some instances of damage and small perforations. It was observed that in the car and around it there were many traces of scattered fresh soil.

Based on the fragmentation effect on the screens (car) corresponding to the position of the ZASTAVA 101, caused by the experimental explosion and the explosion on Kapija Square on 25 May 1995, it is evident that the band of fragments during this incident was released under completely different conditions than in the case during the experiment. The working team of the TOC concluded that the projectile that exploded at the scene of this incident was in a completely different position than that of the projectile during the experiment.

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Figure 45 — Screen (front view of the car) after the explosion

Figure 46 — Screen (side view of the car) after the explosion

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Figure 47 — The Zastava 101 after the explosion on 25 May 1995

Figure 48 — Casualties in front of the Zastava 101 after the explosion on 25 May 1995

3.17. Effect of the projectile with a small angle of descent

The experiment on the effect of a 130 mm projectile on a surface of granite cobblestones was conducted by activating a 130 mm M79 projectile placed at an angle of 30° relative to the subsurface (Figure 49). The activation of the projectile was conducted with an EDK-8 electric detonator cap. The following was concluded after the explosion:

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- At the scene of the explosion damage about 8 cm deep was done to the surface (Figure 50);
- The damage to the surface extended transversally relative to the projectile axis, as was the case at the scene of the explosion on 25 May 1995 (Figure 4);
- The damage to the surface bore no resemblance to the damage to the surface that was caused when activating the projectile at an angle of 64°50' (Figures 21 and 22).

Based on a comparison of the effects of the explosion at a small angle of projectile descent with the effects achieved by the explosion of the projectile at an angle of 64°50' and the effects at the scene of the incident, it is evident that the effect obtained in the experiment was very similar to the effect at the scene. The effect obtained matches the claim of the mixed commission of the Sarajevo MUP and UNPROFOR that the projectile hit the ground at an angle of approximately 31°.

Figure 49 — A 130 mm TF projectile positioned at an angle of 30°

Figure 50 — Crater created by the effect of a 130 mm M79 TF projectile at an angle of 30°

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4. **EXPERT EXAMINATION FINDINGS**

Based on the expert examination of the material impact of the 130 mm TF artillery projectile, the working team of the TOC produced the following findings:

- Asa result of the effects of the explosion there was minor damage to the granite cobblestone at the point where the projectile was activated;
- Four minor traces of fragmentation were observed that spread out radially from the centre of the explosion;
- The trace of the explosion on the ground was triangular in form with an angle at the top of around 60°;
- At the scene of the experimental explosion there were no visible traces of compression of the granite cobblestones into the subsurface;
- After the explosion, the car had been pushed back by about 135 cm and about 50 cm to the side. The car was turned to the left by about 50° in relation to the direction it was positioned before the explosion;
- Asa result of the fragmentation effect of the projectile, the right front wing was perforated and ripped off by the shock wave;
- The right side of the fender and the lower valance panel were severed/destroyed due to the fragmentation effect;
- Asa result of the fragmentation effect of the projectile, the right passenger door was perforated, with the axis of penetration between 0° and 30°, measured in relation to the horizontal plane of the ground;
- Asa result of the fragmentation effect of the projectile, the right rear panel was perforated in front of the right rear wheel;
- The right front and rear side windows were shattered;
- The windshield was smashed and thrown onto the hood;
- The hood was deformed;
- Asa result of the fragmentation effect, the front left wing was perforated and ripped off by the shock wave;
- The left rear side window was thrown out undamaged;
- All tyres were shredded to a greater or lesser extent.
- Engine oil leaked out.

The following was observed after the explosion on the screen and the sidewalk of the location of the *NIK* shop:

- Asa result of the fragmentation effect and the effect of the shock wave, about 2/3 of the screen and the sidewalk were destroyed;

- On the remaining part of the screen, at the corner with Mustafe Mujbegovića Street, 68 projectile fragment hits were counted (Figure 29), which were mostly found up to a height of about 1.5 m. On the destroyed part of the screen, no instances of damage caused by the fragmentation effect were counted because the level of destruction of the screen was so great that it was impossible to reliably and accurately determine the spread and number of hits.

A comparison of the photographs of the scene of the incident in Tuzla (Figure 30) and the photographs of the screens and the sidewalk at the location of the *NIK* shop after the experimental explosion (Figures 28 and 29) clearly shows that instances of damage to the part of the facade to the left of the *NIK* shop window and at the location of the shop itself are practically unnoticeable, while the corresponding part of the screen was entirely destroyed in the explosion of the projectile during the experiment.

The part of the screen that represented the location of the *NIK* shop window (marked and delineated with black paint) was also completely destroyed in the explosion during the experiment, except fora small piece to the right of it.

Asa result of the experimental explosion, the screen (wall) corresponding to the position of part of the wall of the building in Mustafe Mujbegovića Street was hit by 18 projectile fragments (Figure 29), which were evenly spread all over the entire surface.

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5. OPINION

Based on the results of the expert examination and the above findings.

The expert examination showed that theory from the report and opinion of the group of authors provided in the "ANALYSIS OF CONDITIONS THAT LED TO THE MASSACRE OF PERSONS ON KAPIJA SQUARE ON 25 MAY 1995 AT 2055 HOURS" **is not correct.**

The theory of this group of authors is that the projectile that exploded on Kapija Square had *an* angle of descent between 62° and 67°41', and that on this occasion such a projectile caused the effects on the ground, cars and the surrounding buildings as determined by the On-site Investigation Report of the Tuzla High Court no. Kri 29/95 dated 25 May 1995 with a sketch of the scene and a photo file. In the experiment it was determined that if the theory was correct, the explosion would have resulted in far greater damage to the Golf 1 car, it being turned to the left
and moved by more than a metre from its position before the explosion. The damage to the surrounding buildings (building of the *NIK* shop, the building in Mustafe Mujbegovića Street and the building of cafe *LEONARDO)* would have been significantly greater had the explosion of the projectile occurred as claimed by the group of authors. This also holds true for another vehicle at the scene, the Fiat 125 P. The damage to the granite cobblestone would have been precisely as shown in the experiment, i.e. the result of the effect of explosion was some minor damage to the granite cobblestone at the spot where the projectile was activated. In other words, significantly different from what was said in the On-site Investigation Report.

The expert examination also showed that the instances of damage to the granite cobblestone that were the result of activating the projectile at an angle of around 30° relative to the cobblestone (the
theory from the "Report of the Mixed Commission on the Shelling of Tuzla on 25 May 1995, dated 26 may 1995) were similar to the damage that was determined in the On-site Investigation Report of the Tuzla High Court no. Kri 29/95 dated 25 May 1995 with a sketch of the scene and a photo file.

CHIEF OF THE WEAPONS SECTOR
Lieutenant Colonel
Miroslav DJORDJEVIĆ
/signed/

D I R E C T O R
Colonel
Goran STOJANOVIĆ
/signed/

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