Translation

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3.

REPORT ON CRIMINAL/TECHNICAL EXAMINATION OF THE SITE AT THE "MARKALE" MARKET WHERE THE ARTILLERY PROJECTILE FELL
- drafted by expert from the CSB /Security Services Centre/ Sarajevo
on 8 February 1994

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REPORT

ON THE CRIMINAL/TECHNICAL EXAMINATION OF THE ARTILLERY PROJECTILE FALL SITE AT THE "MARKALE" MARKET, MARŠALA TITA STREET, BY MIRZA SABLJICA, BALLISTICS EXPERT FROM THE CSB SARAJEVO - CRIMINAL/TECHNICAL AND KDZ /abbreviation unknown/ DEPARTMENT. A DIAGRAM AND PHOTO FILE HAVE ALSO BEEN MADE AND ARE AN INTEGRAL PART OF THIS REPORT

On 5 February 1994, between 1325 hrs and 1600 hrs, a criminal/technical examination of the site at the "Markale" market where the artillery projectile fell was conducted with the purpose of establishing the direction, type and calibre of the projectile. As a result of the fall of the projectile, 69 persons died and 197 sustained serious and/or minor injuries. The projectile fell around 1220 hrs.

The following were present at the examination of the site: Asim KANLIĆ, investigating judge, Nedin ĆUROVAC and Edin SULJIĆ, operations officers of the CSB Sarajevo, Edin SEFO, Sead BEŠIĆ and Zlatan SADIKOVIĆ, CSB assistant criminal investigators. The site was secured by police officers of the Stari Grad SJB /Public Security Station/.

The site was photographed, sketched and recorded by video. A detailed criminal/technical examination of the site revealed the following:

- the artillery projectile fell on the "Markale" market in Maršala Tita Street (photographs 3, 4 and 5);

- the central crater, i.e. the place where the artillery projectile exploded, was on the asphalt covered ground of the north-east part of the market area (seen from the south - Maršala Tita Street); it was 4.16 m away from the building of UPI Shop no. 101, and 11.1 m away from the "22 Decembar" building, as shown in the diagram.

The central crater was approximately 9 cm deep. There was a mechanical damage to the asphalt surface (photograph no. 7) which had a shape of an irregular ellipse whose dimensions were 56 cm and 26 cm. The transverse axis of the ellipse was north-northeast. The asphalt surface on the opposite side of the irregular ellipse of the central crater was also damaged by projectile fragments and shrapnel. Damage to the asphalt fanned out around the central crater 180 cm from the centre (photograph no. 8). Damage to the asphalt on the opposite side of the central crater's irregular ellipse ended on the peripheral surface of the south-west side of the central crater's ellipse. Since the axis of the shell's fall formed an angle of less then 90° with the horizontal surface, the peripheral traces were more pronounced and fanned out further from the centre of the explosion on the side from which the projectile had come because the explosion effect is greater when the projectile shrapnel fragments closer to the surface. On the opposite side of the projectile's fall, traces of the explosion fanned out over a shorter distance from the centre and were less noticeable because, on that side, the effect of the explosion was displaced away from the surface.

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The direction from which the projectile came was established by delineating the boundaries of the mechanical damage to the asphalt surface which fanned out in north-northeast direction and by drawing a perpendicular line to those boundaries and into the centre (photographs 8 and 9). The angle difference between north and the direction from which the artillery projectile came, in relation to the centre of the explosion, was established by using a map of Sarajevo and a compass; it was an 18° angle from north to east (photograph 10), with ± 5° tolerance added to the angle difference value.

The artillery projectile stabiliser was found in the crater centre (photograph 11). It was taken out and examined; it was established that it came from a 120 mm cal mortar shell (photographs 12 and 13). During the detailed examination of the site, a large number of projectile fragments and shrapnel (photographs 14 and 15) were found. They were collected for further criminal/technical investigation.

On the basis of the above stated facts, the following can be established with certainty:

- the above mentioned 120 mm cal mortar shell was activated at the moment of its contact with the asphalt surface;

- the above mentioned projectile came from the north-northeast direction, 18° (±5°) from the north direction.

Done in Sarajevo, 8 February 1994

REPORT SUBMITTED BY:

Mirza SABLJICA
/original signed/

00268350

Translation

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4.

REPORT OF 5 FEBRUARY 1994 ON THE CRIMINAL/TECHNICAL INVESTIGATION INTO THE SITE DRAFTED BY STARI GRAD PUBLIC SECURITY STATION

00268351

Translation

00877585

CRIMINAL/TECHNICAL AND KDZ DEPARTMENT
Investigation book number: 240/93
Date: 5 February 1994

PUBLIC SECURITY STATION: **Stari Grad**

REPORT
ON THE CRIMINAL/TECHNICAL INVESTIGATION INTO THE SITE:

1. CRIMINAL ACT: Projectile explosion

2. PLACE/DATE: "Markale" market, 5 February 1994

3. INJURED PARTY/DAMAGED PROPERTY:

4. DESCRIPTION OF THE CRIMINAL ACT COMMITTED:

The town was shelled on the above stated date from the aggressor's positions. Around 1230 hrs, a 120 mm calibre mortar shell fell on the "Markale" market. Experts have established that the shell had came from a north-northeast direction. Consequences of the shelling: 66 dead and 200 wounded citizens.

5. CRIMINAL/TECHNICAL MEASURES TAKEN:

The site was closed off and criminal/technical measures applied: a criminal/technical examination of the site was carried out; the site was described, photographed and sketched.

6. TRACES FOUND AT THE SITE:
(state time they were found, cause, methods used to preserve them, subsequent action taken with them)

a) - tail of the 120 mm cal mortar shell
- crater
- shrapnel
- blood
- body tissue and body parts

b) - traces found at the site:

c) - traces found on victim:

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Translation

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e) - traces found elsewhere:

f) - objects found at the site:

g) - what was done with the objects brought from the site:

7. Other observations by the assistant criminal investigator:

Date:	Assistant criminal investigator:	Verified by:
6 February 1994	SEFE Servan BEŠIĆ HAĐISAKOVIĆ	/original signed/

SUBSEQUENT LAB ANALYSIS AND FINDINGS:

Sarajevo, _____
Verified by: _____

Analyses done by:
_____
_____

00268353

Translation

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5.

OFFICIAL REPORT OF 5 FEBRUARY 1994 DRAFTED BY STARI GRAD PUBLIC SECURITY STATION

00268354

Translation

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Republic of Bosnia and Herzegovina
MINISTRY OF THE INTERIOR
SECURITY SERVICES CENTRE SARAJEVO
Stari Grad Public Security Station
S A R A J E V O

Date: 5 February 1994

OFFICIAL REPORT

On 5 February 1994, around 1245 hrs, Stari Grad SJB /Public Security Station/ was informed that a shell of unknown calibre had exploded at the "Markale" market in Maršala Tita Street. The shell was fired from the aggressor's positions and many people were killed and injured. After the information was received, the following team went to the site:

- Asim KANLIĆ, Judge of the Higher Court on duty
- Zdravko MILUTINOVIĆ, R B-H /Republic of Bosnia and Herzegovina/ MUP /Ministry of the Interior/, KDZ Dept
- Ekrem SULJEVIĆ, R B-H MUP, KDZ Dept
- Adnan HADŽIOMEROVIĆ, R B-H MUP, KDZ Dept
- Siniša ILIĆ, R B-H MUP, KDZ Dept
- Muhamed HADŽIISAKOVIĆ, Criminal/Technical Dept, CSB /Security Services Centre/ Sarajevo,
- Sead BEŠIĆ, Criminal/Technical Dept, CSB Sarajevo
- Mirza SABLJICA, Criminal/Technical Dept, CSB Sarajevo
- Sejfo EDIN, Criminal/Technical Dept, CSB Sarajevo
- Zlatan SADIKOVIĆ, Criminal/Technical Dept, CSB Sarajevo
- Nedim ĆUREVAC, Genocide Dept, CSB Sarajevo
- Edin SULJIĆ, Genocide Dept, CSB Sarajevo
- Hamdija ČAVČIĆ, R B-H MUP ballistics expert
- Emir KREHO, Homicide Dept, CSB Sarajevo
- Predrag KURTEŠ, Homicide Dept, CSB Sarajevo
- Salko ĆERIMAGIĆ, Homicide Dept, CSB Sarajevo
- Izedin HADŽIĆ, Stari Grad SJB duty officer
- Bahrudin KARAMAN, Stari Grad SJB duty officer
- Sead ŠAČIĆ, Stari Grad SJB duty officer
- Members of UNPROFOR IV French Batt, HQ in Skenderija

Once it had arrived at the site, the team established that the aggressor's shell (a 120 mm cal mortar shell), was fired on 5 Feb 1994 from the aggressor's positions in the area of the village of Mrkovići, fell and was activated around 1240 hrs in the area of the "Markale" green market in Maršala Tita Street, "Trg Oslobođenja" local community, Stari Grad municipality in Sarajevo. Witnesses stated that many people were in the market area at the moment the shell was activated. The number of dead and injured might turn out to be very high. All those persons either dead, or seriously

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or slightly injured were transported to Koševo Hospital and to State Hospital in two lorries, two vans and several cars which happened to be at the site at that moment.

A team from the R B-H MUP and CSB Sarajevo conducted a detailed investigation of the site, made a diagram and photographed the scene. They will draft a report and enclose the photo file. They will also assume the responsibility for submitting information on subsequent measures taken.

Members of the team managed to identify 29 dead in the Koševo Hospital mortuary:

1. Nura ODŽAK
2. Mladen KLAČAR
3. Ahmed FOČO
4. Sakib BULBUL
5. Alija HUKO
6. Vahida BEŠIĆ
7. Muhamed FETAHOVIĆ
8. Mehmed BARUČIJA, /born/ 1959
9. Nedžad SALIHOVIĆ, 1971
10. Ibro KRAJČIN
11. Džemo SUBAŠIĆ
12. Numo LUKAČA
13. Džemal ZEČIĆ
14. Rasema JAŽIĆ
15. Faruk BRKANIĆ
16. Zahida SABLJA, Sedrenik 153 /address/
17. Smajo RAHIĆ
18. Dževdet FETAHOVIĆ
19. Junuz ŠVRAKIĆ
20. Mirsada IBRUN
21. Mumb TORLAKOVIĆ
22. Almasa ČEHAJIĆ
23. Muhamed ZUBOVIĆ
24. Mustafa IMANIĆ
25. Marija KNEŽEVIĆ
26. Ruža MALOVIĆ
27. Bejto ŠKIJELJ
28. Verica ČILIMDŽIĆ
29. Sabit RIZVO

In addition to the above listed identified victims, there were other 9 unidentified persons (7 women and 2 men) in the Koševo Hospital mortuary. The work of identification has been taken over by the Criminal/Technical Dept of the CSB Sarajevo.

In the mortuary of the State Hospital, 3 bodies were found and identified:

1. Ismet FAZLIĆ, 1925
2. Vejsil FEHATBEGOVIĆ

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3. Jozo KRESIĆ, 1940

Doctors on duty in the two hospitals said that approximately 170 persons had been brought there for medical help. It was not possible to establish their names and the nature of their injuries at the moment.

Submitted by:

Izedin HADŽIĆ
Bahrudin KARAMAN
Sead SAČIĆ
/original signed/

00268356

Translation

6.

MAPS OF THE SCENE no. 250/94 DRAWN BY THE SECURTY SERVICES CENTRE SARAJEVO

Translation

00877592

Socialist Republic Bosina and Herzegovina
NATIONAL SECRETARIAT
SECURITY SERVICES CENTRE *Sarajevo*
PUBLIC SECURITY STATION.....

NUMBER: 240/94

MAP OF SCENE

RE: *Shelling - "Markale" market*

IN: *Sarajevo*

DATE PHOTOGRAPHS WERE TAKEN: *7 February 1994*

Prepared by:

Mirza SABLJICA
(signed)

00268357-65/fk

00268358

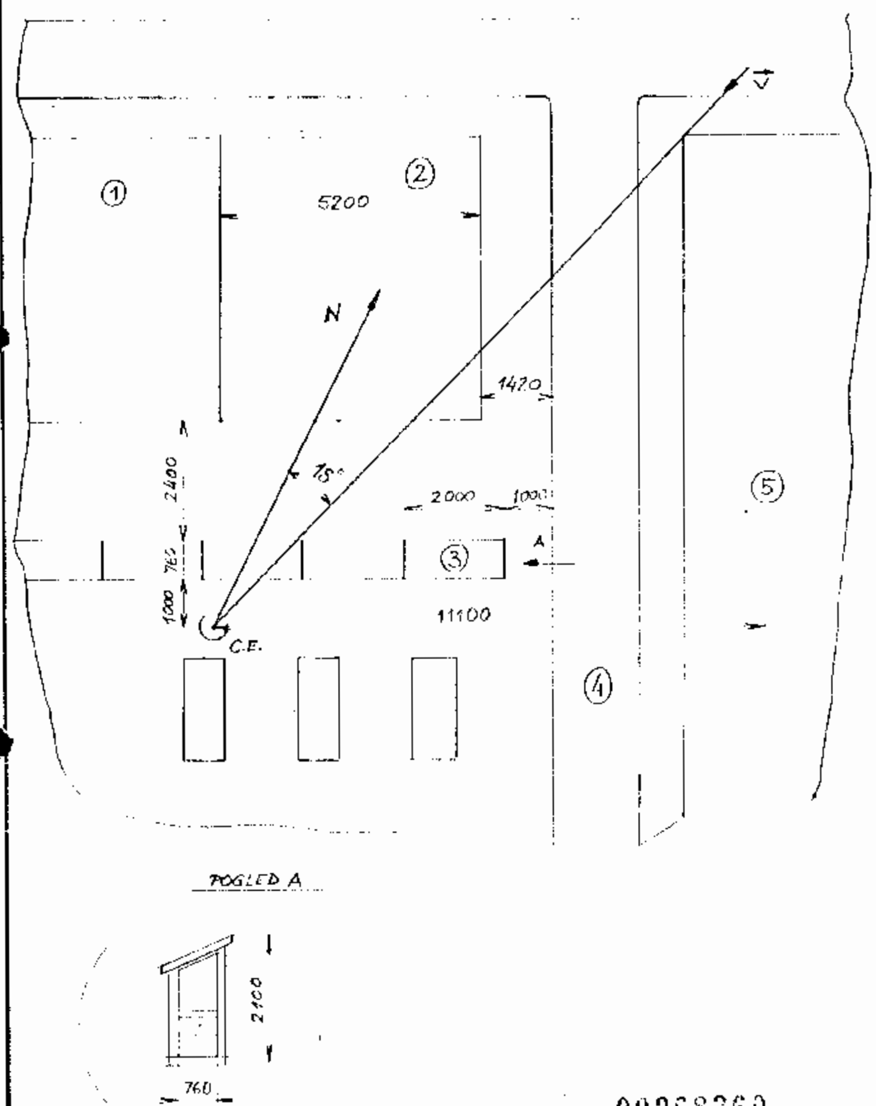
LEGENDA:

(1) - zgrada [illegible] UPI prodavnica br 101, visina zgrade H= 5250 mm
(2) - zgrada [illegible] UPI prodavnica [illegible] 101, visina zgrade H= 3650 mm
(3) - [illegible]
(4) - [illegible] zgrade, 22 decembar
(5) - zgrada 22 decembar, visina [illegible]
N - [illegible]
V - [illegible] projektila
C.E. - [illegible] na asfaltnoj [illegible]

OPIS DOGAĐAJA:

00268359

RAZMJER 1:100



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NAPOMENA: Obavezno u[illegible] stajnu tačku, pravac sjevera i mjesta odakle je fotografisano.

Translation

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KEY:

1) Supermarket UPI building, shop number 101, height of building = 5250 mm
2) Supermarket UPI building, shop number 101, height of building = 3650 mm
3) Market stall
4) Street between the supermarket building and the "22 December" building
5) "22 December" building, height of building = 15450 mm
N - North
v - direction the projectile arrived from
C.E. Centre of explosion on the concrete surface

DESCRIPTION OF EVENTS:

00268359

SCALE: 1:100

VIEW A

00268360

NOTE: Be sure to mark point of observation, north and location where the photos were taken from

Translation

00877595

Socialist Republic Bosnia and Herzegovina
NATIONAL SECRETARIAT
SECURITY SERVICE CENTRE.....
PUBLIC SECURITY STATION.....

NUMBER: *240/94*

MAP OF SCENE

RE: *in connection with 240/94*

IN: *Sarajevo, "Markale" market*

DATE PHOTGRAPHS WERE TAKEN:_____

Prepared by:

_____
Saša KURTO
(signed)

00268361

00268357-65/fk

Translation

00877596

SCALE 1:

SUPERMARKET

NOTE: Be sure to mark point of observation, north and location where the photos were taken from

00268362

Translation

00877597

SCALE 1:

FISH MARKET

00268363

Translation

00877598

A MAP OF LOCATIONS WERE THE WITNESSES WERE AT THE MOMENT THE ARTILLERY PROJECTILE - MORTAR SHELL FLEW OVER

1. Slobodanka MUMINAGIĆ and Samija DEDOVIĆ
   Kaukčije Abdulah efendije 57

2. Radivoje PANIĆ
   Svetozara Markovića (taxi rank)

3. Šemso TRNKA
   Nikole Kašikovića 4

4. Kenan PARLA
   Sedrenik 101

5. Sehida HRKOVIĆ
   Frontovska 56

6. Bahrija PROHO
   Hajduk Veljkova 3

7. Drago MALEŠEVIĆ
   Fadila Jahića Španca 2

8. Šefika PORČA
   Kaukčije Abdulah Efendija (near elementary school Razija Omanović)

9. Esad HADŽIMURATOVIĆ
   Corner of Dženetića čikme and Svetozara Markovića (taxi rank)

10. Midhata /? Midhat/ VRABAC
    Donji Kartal 24-b

Translation

00877599

7.

STUDY OF CIRCUMSTANCES AND CAUSES OF THE MASSACRE AT THE "MARKALE" MARKET ON 5 FEBRUARY 1995

Translation

00877600

The Team:

Berko R. Zečević, engineer
Amir R. Kurtović, engineer
Ahmet K. H. Omerović, engineer

STUDY

of circumstances and causes of the massacre
at the "Markale" market on 5 February 1994

Technical support
and processing:

UNIS - Institut
S a r a j e v o

Sarajevo, 7 February 1994

00268367

Translation

00877601

Contents

00877602

1. **Introduction**

The Government authorities were ordered by the High Court in Sarajevo to form a Team of experts, hereinafter called "the Team", to conduct a detailed analysis of circumstances and conditions of the massacre of a large number of Sarajevo citizens at the "Markale" market on 5 February 1994 at 1220 hours. High Court order no: KRI 13/94 was issued on 6 February 1994.

The Team started work on 6 February 1994. It considered all the data and sources that were found to be relevant and indisputable. The Team relied on what it saw as physical evidence and actual conditions at the site. It also consulted the standard literature considered relevant in similar situations. Because of the war, limited time and extreme importance of the incident, this is an abridged version of the study. However this does not make the findings unreliable.

2. **Analysis of the scene**

Positioning of the buildings was measured in relation to the centre of the explosion (picture 1)

Analysis of the objects next to the centre of the explosion confirmed that damage and perforations were the result of fragmentation.

No damage was found on the market stall that was on the projectile's route. This points to the conclusion that the projectile missed the stall.

The assumption that the projectile hit the stall before reaching the ground is not valid for the following reasons:

1. A projectile with a fuse adjusted to detonate immediately upon impact with an object (in this case a plastic corrugated roof) would cause it to explode in this case at a height of about 2m. Therefore none of the typical imprints of the particles on the asphalt layer on the ground would have been found.

2. For a projectile with a fuse adjusted to detonate with a delay of 0,05 sec, no encounter with an object, be it a plastic corrugated roof or a wooden layer about 20mm thick, would cause the route to be changed because of it's kinetic energy. At a height of 2m, at the most unfavourable projectile speed of 100m/s it would take 0.02s between the time the fuse was detonated by an object and the moment it hit the ground. This is less than the delayed detonation of 0.05s. In that case, the projectile would have had to pierce the asphalt layer and explode in the ground. The effects of such an explosion would have been completely different.

At the site of the explosion (picture 2) the effects of the fragmentation of the projectile with immediate detonation can be seen. At the site, the centre of the explosion can be seen - the actual spot where the projectile hit the ground.

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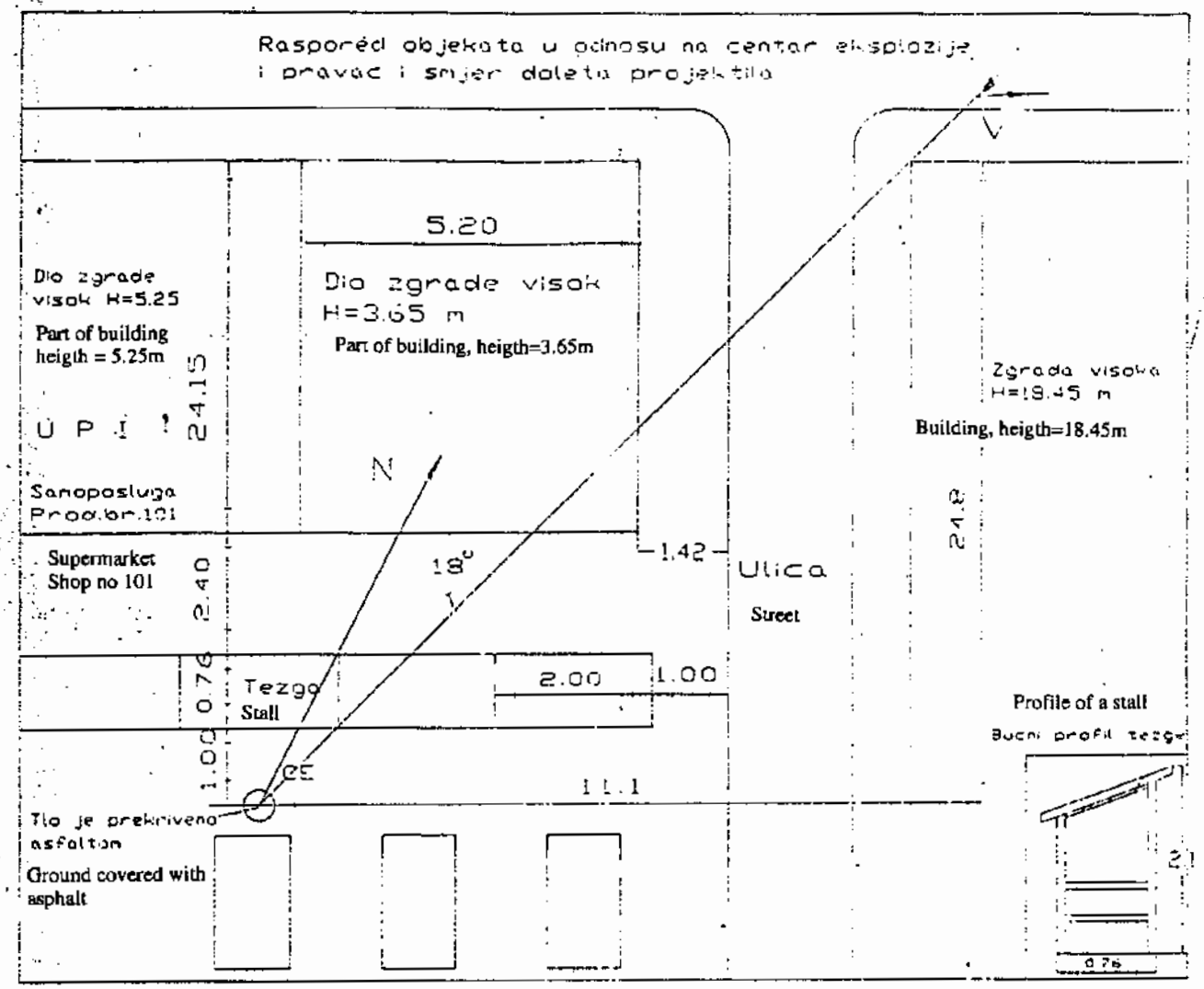
Position of buildings in relation to the centre of explosion
the direction where the projectile came from and its course



Sl.1. Polozaj objekata u odnosu na centar eksplozije

Picture 1. Position of buildings in relation to centre of explosion

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Elaborat

Translation

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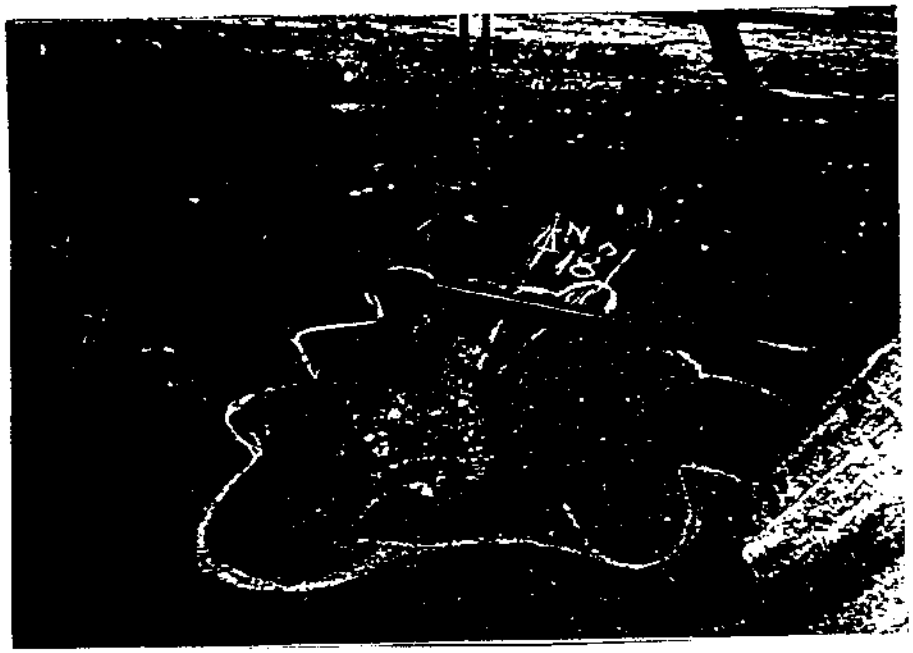
From the video filmed immediately after the explosion, it can be seen that the projectile's stabiliser section entered the surface at a depth of 200-250mm. The effects on the asphalt surface caused by particles are typical for this type of projectile.



Picture 2. A photo of the effects caused by particles on the asphalt surface

3. **Identification of the projectile**

Parts of the projectile found at the scene prove without doubt that the projectile in question is a 120mm TF M62P3 shell with a basic gunpowder charge manufactured by "Krusik" - Valjevo in 1987, first batch. Capsule M74 was fitted to the basic charge.

The exact time and type of the shell cannot be established by this investigation. However, lack of colour on the stabiliser may indicate a recent manufacture, most probably wartime manufacture completed with the remaining gunpowder. The stabiliser and wings were manufactured according to the construction regulations valid during peacetime. This points to the conclusion that the shell was most probably manufactured in one of the two factories manufacturing these shells: "Pretis" Vogošća or "Marko Orešković" Lički Osik.

A more detailed description of the projectile is enclosed.

4. **How the direction and course of the projectile were measured**

On the surface (asphalt layer) shown on picture 2. of the site of the explosion, a typical diagram of the fragmentation can be seen.

The distribution of the particles is regularly symmetrical along the vertical axis of the projectile (Enclosure - a diagram of radial distribution of a 81mm mortar projectile made by SMI, Austria). The course of the projectile can be established from this.

The direction where the projectile came from can be seen from the fact that the density of the fragments from the side of the projectile is the greatest. Considering the speed of the projectile and the angle of trajectory, most fragments are scattered from the spot where the projectile hit the ground in the direction where the projectile came from.

The symmetry axis of the diagram of particle action on the ground is established and at the same time presents the course of the projectile. That is the direction that forms an angle of 18 ° (+/- 5°) with the axis of the north from the centre of the explosion (picture 2)

The direction where the shell came from is established by the fact that most particles are situated north from the centre of the explosion.

5. **How the angle of the projectile trajectory was measured**

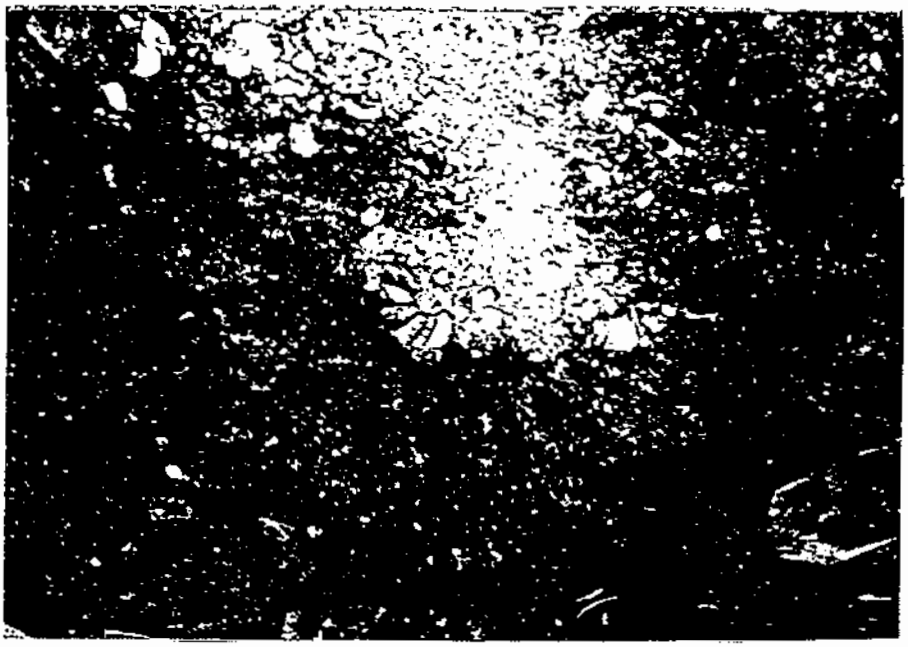
On the video filmed by CSB Sarajevo immediately after the explosion, showing the centre of the explosion, an UNPROFOR staff member can be seen uncovering the top layer of asphalt under which the shell stabiliser part can be seen.

We estimate that the front of the stabiliser section where a cartridge of the basic charge can be seen forms a 20 - 30 ° angle with the surface. (picture 3)

The way the fragments were spread is typical of explosions of a projectile that, when falling, forms a 60 ° angle with the horizon.

Reconstruction of the position of the stabilising section allowed the angle of its front to be measured in relation to the surface. Therefore, it forms approximately 30° angle with the surface and the mortar projectile forms an approximate 60° angle with the surface. (picture 4)

Picture 3 Photo of the site of the explosion moments before the stabilising section had been removed



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Picture 4 Reconstruction of the position of the stabilising section

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6. **Ballistics Analysis**

6.1 Analysis of potential locations where the projectile could have been fired from

The following entry data were used during the outdoor ballistics analysis when potential locations where the projectile could have been fired from were being identified.

1. Angle of fall is 60° (+/- 5°)

2. Mass of the shell is 12.60 kg

3. The difference in altitude between the potential location where the projectile was fired from and the centre of the explosion is 400 meters.

4. Initial velocity of each of the gunpowder charges was measured for a 120mm M74 light mortar. For a 120mm UB M52 mortar and 120mm M75 light mortar that also use this make of projectile, the difference in velocity and range are irrelevant to the findings of this analysis.

The results of the outdoor ballistics findings for an angle of fall of 55° and 65° and for all of six charges are given in the Table: 00268374

Various ranges depending on the initial velocity and angles of trajectory of 55° and 65° and with the altitude difference of 400 meters between the firing spot and site of the explosion

Charge Velocity (m/s)	Range (m) p = 55	p = 65
First Vo=123	1840	1640
Second Vo=173	2972	2577
Third Vo=211	4120	3622
Fourth Vo=250	5110	4570
Fifth Vo=281	5979	5500
Sixth Vo=311	6546	6170

00268375

6.2 Analysis of the effect at the target

It was established through measures applied so far that a 120 mm calibre projectile was used. The following * table values were used for analysis of the effect at the target:

120 mm shell casing mass	=	8.700g
Cast TNT explosive mass	=	2.500g

Analysis of shell fragments distribution

The following statistical values for the quantity of fragments are based on our knowledge of shell fragmentation (the pit method) with a combination of forged shell casing and cast TNT explosive:

mass fraction below 0.5g	60%	=	3,000 fragments
mass fraction of 0.5 - 1g	20%	=	1,000 fragments
mass fraction of 1 - 2 g	14%	=	700 fragments
mass fraction of 2 - 3 g	5%	=	250 fragments
mass fraction over 3 g	1%	=	50 fragments

A minimum of 0.5 g was taken as a criterion for efficient fragments, which gives us a total quantity of efficient fragments of 2,000 out of 5,000 fragments.

Analysis of the criterion for efficient energy/fragments

For the fragments with mass above 0.5 g to be efficient, minimal kinetic energy of 100 J was taken as a criterion. In order to reach the necessary kinetic energy, fragments should have a minimal initial velocity of

$$Vmin = (2{,}000\ Ek/m)^{1/2}$$

for fraction up to 1 g	Vmin = 447 m/s
for fraction up to 2 g	Vmin = 316 m/s
for fraction up to 3 g	Vmin = 258 m/s

Analysis of the initial fragment velocity

Initial fragment velocity at the moment of explosion at target is calculated using the Gurney formula for cylindrical charge:

$$Vpoc = (2E)^{1/2} \times (M/C + 1/2)^{-1/2}$$

$(2E)^{1/2}$ - Gurney's constant for cast TNT = 2097 m/s

M	- *body mass of the casing of the mine body	= 8700 g
C	- mass of the explosive	= 2500 g

$$V_{poc} = 1051 \text{ m/s}$$

According to this indicator, there were 2,000 efficient fragments around the centre of the explosion at the target.

According to Taylor's conditions, a minimum of 80% of fragments in the 10 m radius from the centre of the explosion (given the angle of trajectory and the flat asphalt surface without obstacles) were efficient up to the height of 2 m.

Translation

00877610

7. Conclusion

1. The massacre at the "Markale" market was caused by the120mm M62P3 mortar projectile.

2. The assumption that the explosion was caused by a static explosive device is ruled out.

3. The explosion was activated by the shell's impact with the ground.

4. The assumption that the projectile was activated before it hit the ground is ruled out.

5. The direction where the projectile came from is 18° from the North towards the East. The measurement is +/- 5° correct.

6. The direction where the projectile came from is towards north from the centre of the explosion. /unclear/

7. The projectile fell at an angle of 55-66°.

8. There are six areas where the projectile could have been fired from and they are marked on the section of the army topographic map of the City of Sarajevo (see Enclosures).

9. On the territory under Republic of Bosnia and Herzegovina Army control is one area where the projectile could have been fired from and on the territory controlled by the aggressor there are five areas.

10. The potential destructive power of the projectile at the target corresponds to the number of victims and type of injuries they suffered in the massacre.

(three signatures)

00268378

Translation

00877611

8. Enclosures

1. Diagram of the distribution of the fragments of the 81mm shell, manufactured by SMI from Austria

2. Technical data for the 120mm TF M62P3 shell

3. Army topographic map with the areas where the projectile might have been fired from.

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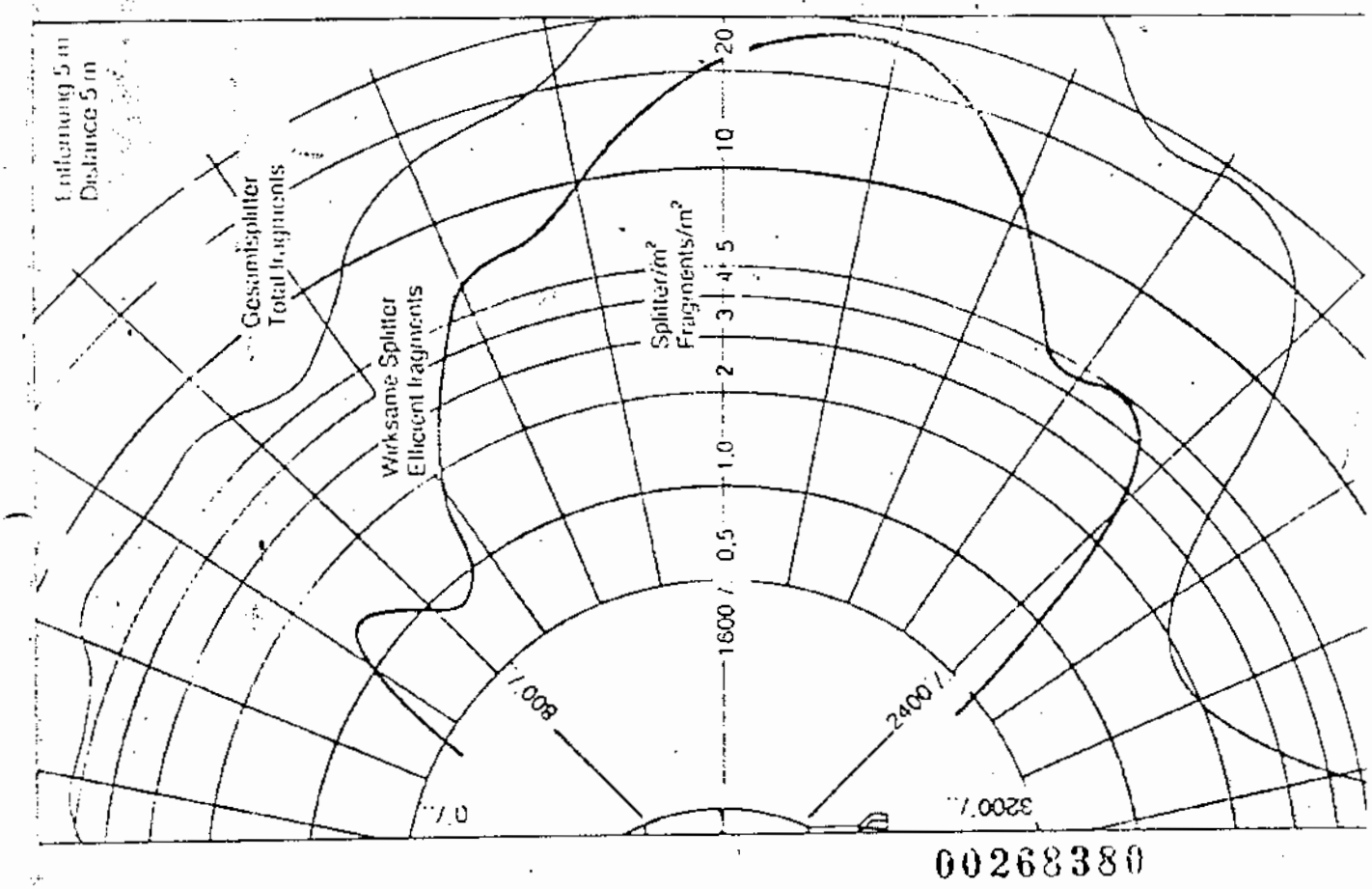

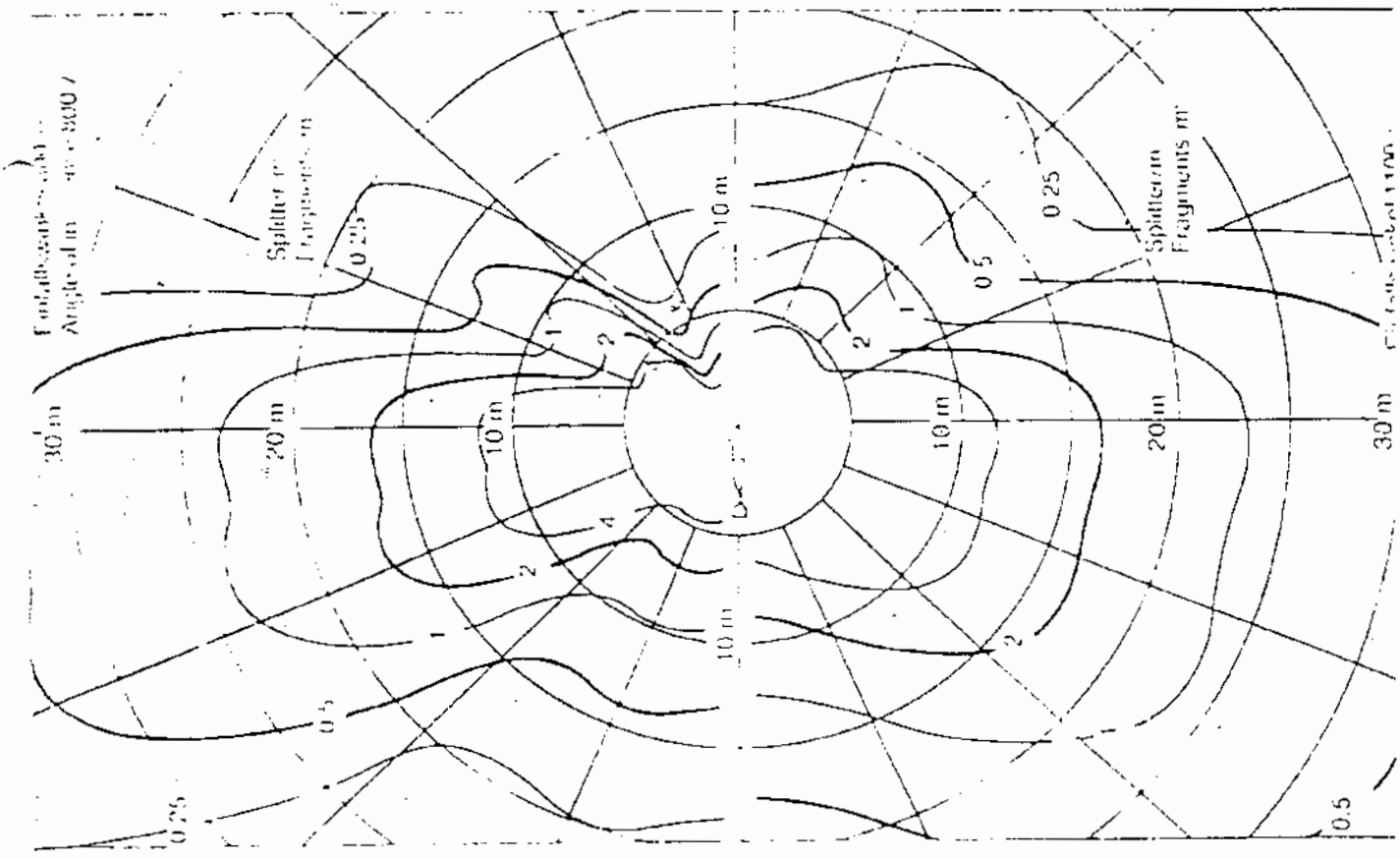

Translation

00877613

120 MM **TF M62P3 SHELL

- Technical characteristics -

- Mass of the projectile while flying	m = 12.6 kg
- Fuse (immediate and delayed detonation)	UTU M78
- Mass of the explosive (TNT)	m = 2.5 kg
- Mass of the casing	m = 8.7 kg
- Total length of the projectile with the fuse	l = 590 mm
- Basic charge (NGB-161 gunpowder)	m = 37 g
- Additional charge (NGB-261 gunpowder)	m = 6 x 76 g
- Maximum range of the shell fired from:	
- 120 mm UB M52 mortar	x = 6,050 m
- 120 mm M74 light mortar	x = 6,213 m
- 120 mm M75 light mortar	x = 6,340 m

Drawing of a 120 mm M62P3 shell

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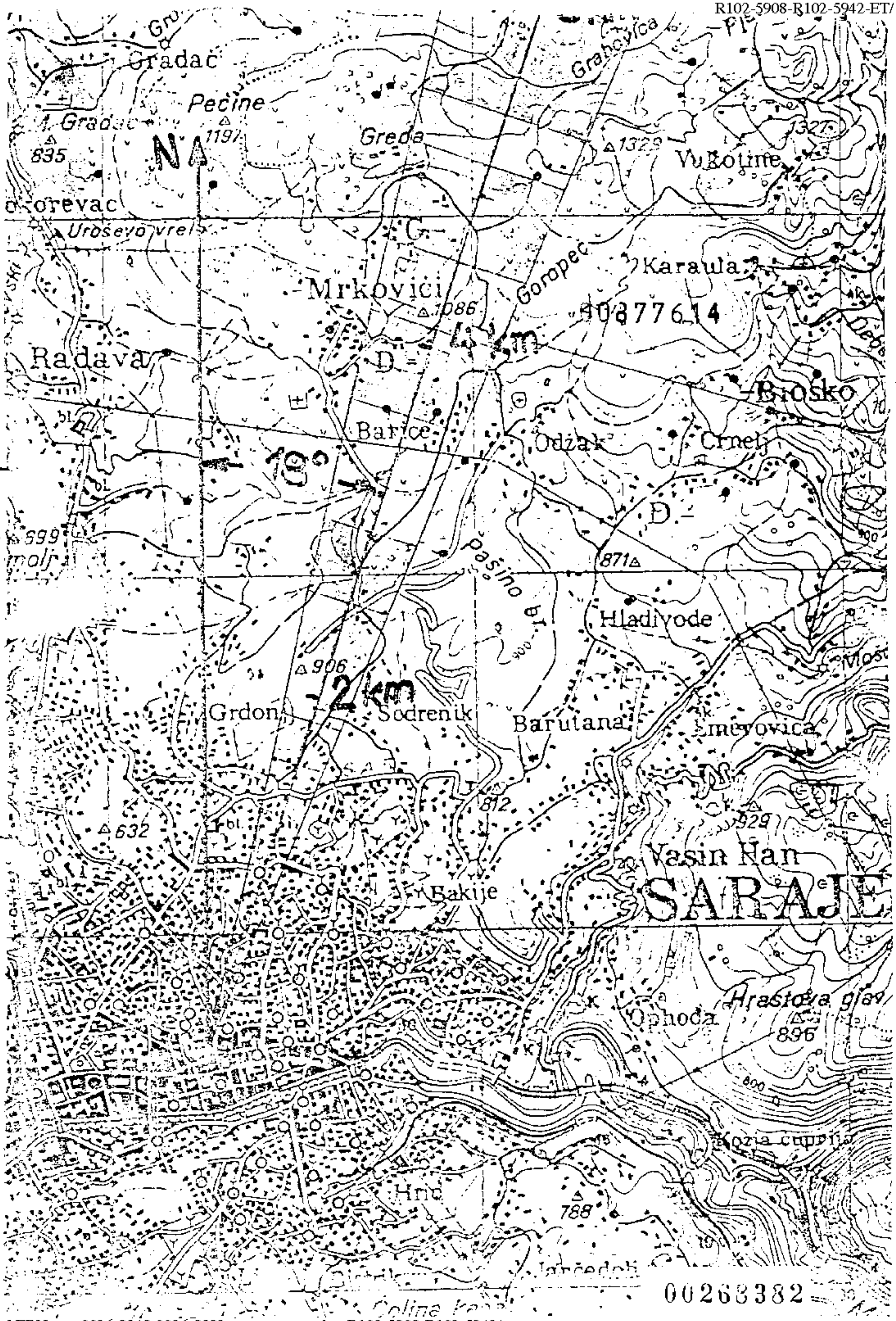

Gradac
Pecine
Greda
Grahovica
1197
1329
1327
835
Vukotine
N
Uroševo vrelo
Goropec
Karaula
Mrkovici
1086
40877614
4 km
Radava
Biosko
Barice
Odžak
Crnelj
19°
Pašino br.
871
699
Hladivode
906
2 km
Grdonj
Sodrenik
Barutana
Smetovica
812
929
632
Vasin Han
SARAJE
Bakije
Hrastova glava
Ophoda
896
Kozja cuprija
788
00268382