

FORENSIC INVESTIGATION OF THE CERSKA GRAVE SITE

BOSNIA AND HERZEGOVINA

Excavation: July 7, 1996 through July 18, 1996

Examination: July 31, 1996 through August 22, 1996

VOLUME I

**William Haglund, Ph.D.
Senior Forensic Advisor
International Criminal Tribunal for the Former Yugoslavia
and the Staff of Physicians for Human Rights, Boston**

June 15, 1998

**Physicians for Human Rights
100 Boylston Street, Suite 702
Boston, Massachusetts 02116 USA
Tel. (617) 695-0041
Fax. (617) 695-0307
E-mail: phrusa@phrusa.org
<http://www.phrusa.org>**

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I. EXECUTIVE SUMMARY

In July of 1995, after the fall of the safe area of Srebrenica to Bosnian Serb forces, approximately 7,000 men and boys went missing. The majority are suspected to have been executed and buried in mass graves. On November 16, 1996, the International Criminal Tribunal for the Former Yugoslavia (ICTY) issued indictment IT-95-18-I for genocide, crimes against humanity, and violations of the laws or customs of war that occurred following the take-over of Srebrenica. Named in the indictment were Radovan Karadzic, President of the Bosnian Serb Administration in Pale and Ratko Mladic, Commander of the Army of the Bosnian Serb Administration. Some of the victims resulting from the fall of Srebrenica were alleged to have been killed and buried in the mass grave at Cerska. The Cerska (CSK) site lies adjacent to a narrow unpaved road in the Cerska Valley in the Republika Srpska region of Bosnia and Herzegovina.

Preliminary reconnaissance of the Cerska area was conducted on April 6 and 8, 1996. At that time the grave was not located. In subsequent investigation on May 29, 1996, by ICTY investigators under the Office of the Prosecutor (OTP) Team Leader Jean-Rene Ruez, the Cerska grave was located. At this time, investigators dug three small test trenches in a disturbed, downslope area of the alleged grave. In each trench were human remains in a state of decomposition. On the basis of these and other field observations (extent of visible surface disturbances, etc.), an estimate of 50 individuals was determined to be in the grave. However, the precise population of the grave(s) remained to be confirmed.

The purpose of the forensic investigation of the grave was to collect evidence for the International Criminal Tribunal for the Former Yugoslavia. Sex, age, cause of death, and patterns of injuries were determined for all individuals recovered. Personal information from the victims was collected and documented. In addition, information was recorded regarding circumstances of death and burial of the victims. These investigations were carried out by experts from Physicians for Human Rights and the International Criminal Tribunal for the Former Yugoslavia under the auspices of the ICTY.

A. The Grave

The Cerska grave was located on an embankment directly off the southeast side of the road through the Cerska Valley which departs from the main highway slightly north of Nova Kasaba. The overburden was shallow and the grave primary and undisturbed. Victims had been deposited on the surface of the embankments then covered with soil from the opposite side of the road.

B. The Victims

The remains of one hundred-fifty Caucasoid individuals were removed from the

Cerska grave. All individuals were male. Mean ages of individuals ranged from 14 to 50. One hundred forty-seven of these men and boys were dressed in civilian clothing. Evidence of affiliation with the Muslim religion, in the form of possession of religious paraphernalia, or documents indicative of membership in the Islamic community, was found on nine individuals. Leads to personal identification for twelve individuals were established by name-bearing documents removed from the clothing of victims. At the time of this writing, positive identity has been confirmed for five individuals via mitochondrial DNA comparison of relative and victim samples.

C. Scene and Circumstances of Death and Burial

Evidence, consisting of cartridge casings collected from the northeast side of the road, was consistent with the victims having been placed at the southeast roadside, directly adjacent to the embankment, and shot by killers standing on the northeast side of the road. The victims either fell or were rolled off the roadside, onto the incline of the embankment. Many came to rest against each other, or piled atop one another. The bodies were subsequently covered by soil removed from the embankment across the road, opposite the burial site. Movement of the soil to bury the bodies had been accomplished by earthmoving equipment. In the process of removal of soil from one side of the road to the other, numerous cartridge casings were incorporated into the overburden of the grave.

In regards to time since death, the condition of the individuals from the Cerska grave was consistent with a minimum of approximately one year of burial. Further support for this time period of death was provided by name and date-bearing documents recovered from victims. A cross check between the ICRC *Missing Persons on the Territory of Bosnia and Herzegovina* and the names on documents found three individuals, CSK-12, CSK-82, CSK-128, who were last seen alive on July 17, July 16, and 12, 1995, respectively. A fourth individual, CSK-138, bearing a document dated June 6, 1995, was recovered from beneath other individuals in the grave. Additionally, this individual was positively identified via mitochondrial DNA analysis.

A total of 48 wire ligatures was recovered from 38 individuals (25.3%). Of the 48 ligatures, 24 (16.0%) were in place, binding individuals' wrists behind their backs. Twenty-three (15.3%) were associated with individuals. One individual (CSK-20) was bound by the ankles. These ligatures had been twisted around the wrists or lower forearms, and bound the victims' arms and hands behind their back. Some ligatures consisted of individual circlets of wire wrapped around each wrist, with the circlets connected by a third twist of wire.

D. Cause and Manner of Death

The cause of death for 149 of the 150 victims was gunshot wounds. The cause of death for one individual was undetermined. Considering circumstances of the scene and burial, manner of death is considered homicide for all individuals.

The excavation mission was led by forensic anthropologist William D. Haglund, Ph.D., Senior Forensic Consultant for the International Criminal Tribunal for the Former Yugoslavia (ICTY). PHR forensic experts arrived at the grave site on July 7, 1996 and the exhumation process was concluded on July 18, 1996.

Autopsy examinations of victims began on July 31, 1996 and lasted through August 22, 1996. Autopsies were carried out at a temporary morgue established at a war damaged clothing factory on the outskirts of the town of Kalesija, Bosnia and Herzegovina. Autopsy examinations were carried out under the direction of Robert H. Kirschner, M.D., Director of the International Forensic Program of Physicians for Human Rights (PHR). Finalization of cause and manner of death, as well as editing of final autopsy reports, was facilitated by ICTY legal advisor, Peter McCloskey.

Collation, preparation, and major authorship of this report was done under the direction of William D. Haglund, Ph.D. The Pathology Summary was authored by Page Hudson, M.D. Contributions to various sections of this report were made by the following individuals:

Site Report, General Methods Section:

Rebecca Saunders, Ph.D., Mapping (with assistance from Terance Winemiller for map production);
Rudolf Schouten, Photography;

Field Report:

Rebecca Saunders, Ph.D., Site Description, Site Preparation, Recovery of Surface Evidence, Excavation and Summary;

Postmortem Examination Section:

Tim Curran, M.S., Evidence Collection;
Nizam Peerwani, M.D., Autopsy Methods, and
Robert H. Kirschner, M.D., General Methods;

Identification, Results of DNA Analysis:

Michele Harvey, Ph.D.
Mary-Claire King, Ph.D.

II. INTRODUCTION

On November 16, 1996, the International Criminal Tribunal for the Former Yugoslavia (ICTY) issued indictment IT-95-18-I for genocide, crimes against humanity, and violations of the laws or customs of war that occurred following the take-over of Srebrenica. Named in the indictment were Radovan Karadzic, President of the Bosnian Serb Administration in Pale and Ratko Mladic, Commander of the Army of the Bosnian Serb Administration. Some of the victims resulting from the fall of Srebrenica were alleged to have been killed and buried in the mass grave at Cerska. The Cerska (CSK) site lies adjacent to a narrow unpaved road in the Cerska Valley in the Republika Srpska region of Bosnia and Herzegovina.

Preliminary reconnaissance of the Cerska area was conducted on April 6 and 8, 1996. At that time the grave was not located. In subsequent investigation on May 29, 1996, by ICTY investigators under the Office of the Prosecutor (OTP) Team Leader Jean-Rene Ruez, the Cerska grave was located. At this time, investigators dug three small test trenches in a disturbed, downslope area of the alleged grave. In each trench were human remains in a state of decomposition. On the basis of these and other field observations (extent of visible surface disturbances, etc.), an estimate of 50 individuals was determined to be in the grave. However, the precise population of the grave(s) remained to be confirmed.

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III. SITE REPORT: EXCAVATION AND EXHUMATION OF THE CERSKA GRAVE

This section introduces the general methods for mapping, photography, and evidence collection utilized in the investigation of the Cerska grave site. With some necessary modifications, methods followed were those advocated in the United Nations manual on the *Effective Prevention and Investigation of Extra-Legal, Arbitrary and Summary Executions*, 1991. The methods section is followed by an account of the excavation and exhumations and concludes with grave site summary findings .

A. General Methods

1. Mapping

In general, overall mapping of the Cerska site, and the grave and its contents, was conducted with a Sokkia Set 4BII-G Total Station. However, procedures varied according to the availability of the instrument.

Mapping of surface evidence, in this case numerous cartridge casings that were apparent on the road running to the northeast of the grave, occurred prior to the arrival of the Total Station. To accomplish the mapping, a grid was set up in the road using a compass and tape; the grid was aligned with magnetic north. This grid was tied into the site map after the Total Station arrived.

A map with topographic and other site features was produced from data generated throughout the period of excavation. These data, along with the cartridge locations and body locations, were entered into Surfer version 5.01 for the production of Figures 3 and 6. Exhumation site evidence is documented in Appendix B-1-a as submitted by ICTY Representative John Gerns.

All buried individuals were mapped before they were exhumed using Sokkia Set 4BII-G Total Station; however, the data recorder was not used. The instrument was set up at a permanent transit station established adjacent to the road near the southern end of the site. Locational information was also collected on standardized mapping forms. Horizontal angle and horizontal distance from the station were recorded for the cranium, shoulders, elbows, hands, right and left hip area, crotch, knees, and feet. An arbitrary elevation datum was established by setting a nail on a large tree at the base of the site at the height of the instrument. Elevations below this datum were recorded for the cranium, hip, and feet of each individual; additional elevations were taken as necessary to describe

the position of each body. In addition, a sketch of the body was included at the bottom of the mapping form.

2. Photography

Photography at the excavation site was conducted using 35 mm still cameras: a Canon F-1 with 20 mm, 28 mm, and 50 mm lenses and an electronic flash; and a Minolta 7000 with a 28-85 mm zoom lens. Only UV filters were used. Kodak slide and print film (ISO 200) was used. Video coverage of daily activities was also recorded. A photographic record of the condition of the site at the beginning of each workday was emphasized. This record was kept to confirm any tampering that might occur after the team had left or any other disturbance to the site.

Throughout the investigation, a written field photograph log was maintained to document each exposure. Information recorded in this log includes: mission, date of mission, identification of photographer, specific site location, film type, ISO (ASA) and film size information, the assigned film roll number. For each exposure, the date, the exposure number, the compass direction of the image when applicable (i.e., the direction from the photographer to the subject), and a brief description of the subject and contents of the image were also recorded. Contents of the field photograph log were transferred onto a Microsoft Excel spread sheet after being reconciled with actual prints and slides (Appendix A).

Photographic images included documentation of the general site characteristics, the procedures and progress of excavations and evidence collection, the process of body exposure and recovery, recording of the burial contexts for discovered bodies, overall portrayal of the remains *in situ* and, when necessary, close-up photos. When appropriate, photographs contained a visible identification label and/or scale and/or north arrow. Close-up photographs were case-dependent and documented trauma, personal effects, and ligatures.

During photography, the film cartridge and storage canister were registered in indelible ink with an individual roll number prior to loading into a camera. When the roll was completed, the labeled film cartridge was resealed in its canister. All film and completed logs were secured in a locked metal camera case.

Rudolf Schouten, photographer, maintained custody of the print film. Processing took place at *Politie Midden en West Brabant*, Netherlands. Custody of slide film transferred to the office of PHR, Boston, U.S.A. was

maintained by William D. Haglund.

3. Evidence

All evidence that could be associated with a particular individual's remains was left with the body to be inventoried and examined at the time of autopsy. Evidence collected and inventoried in the field consisted only of items that could not be associated with a particular individual remains. Prior to packaging, biological material was removed and items such as documents were allowed to air dry. Documents were then placed in paper bags or envelopes for storage. Metallic objects were stored in plastic bags upon collection. On each container the name of the site, number of the remains (when applicable), specifics of its recovery location, date collected, initials of collector, and type of evidence were recorded. For shell casings, information such as manufacture stamp and year of manufacture were recorded. When no manufacturer information was seen, "no markings" was recorded. Collected evidence was itemized onto a Microsoft Excel computer spreadsheet Evidence Log, which appears in Appendix B.

B. Field Report: Exhumation of the Cerska Grave**1. Site Description**

The Cerska (CSK) grave site lies adjacent to a narrow unpaved road in the Cerska Valley in the Republika Srpska region of Bosnia and Herzegovina (grid reference: CQ 473004, ser. M709; sh. 2893 11 (1:50000); ed. 5-DMA) (Figure 1). The road was cut through a hillside that slopes down to a small stream, a tributary of the Cerski *Potok* (River). The grave was evidenced by disturbed earth and volunteer vegetation extending 32.5 m along the southern side of the road, on the down-slope to the floodplain area of the stream (Figure 2A). A relatively fresh-cut surface lay exposed along the face of the slope on the opposite (north) side of the road (Figure 2B). Soils from this face had been borrowed to cover the bodies, which lay on the original ground surface of the opposite roadside slope.

2. Site Preparation

Photograph stations were established along the road at critical points. From these, overall views could be photographed periodically throughout the ensuing excavation. Photographs were taken from these stations each morning and prior to the close of operations each day to provide a record of progress and a control for potential site vandalism.

Before the exhumations began, a thorough de-mining of the area was conducted to insure safety of the ICTY and PHR personnel. Mine assessment was accomplished by staff and dogs provided by the Norwegian Peoples' Aid (NPA). Except for unexpended small arms cartridges, no explosive devices were discovered in the area.

A generous security perimeter of concertina wire was established around the grave area by IFOR troops. In addition, the road accessing the grave site was blocked to traffic. Twenty-four hour security of the grave site was provided by ICTY staff.

3. Recovery of Surface Evidence

A metal detector survey was undertaken to examine the location and distribution of surface munitions, primarily cartridge casings. The survey was conducted within the de-mined area only, along the road and in the down-slope grave area. "Hits" were flagged and mapped *in situ* using the grid system described above (Figure 3; Appendix B). If hits identified subsurface metal, knives were used to excavate up to 5 cm below the road surface to locate the source of the hit. If no metallic objects were found in

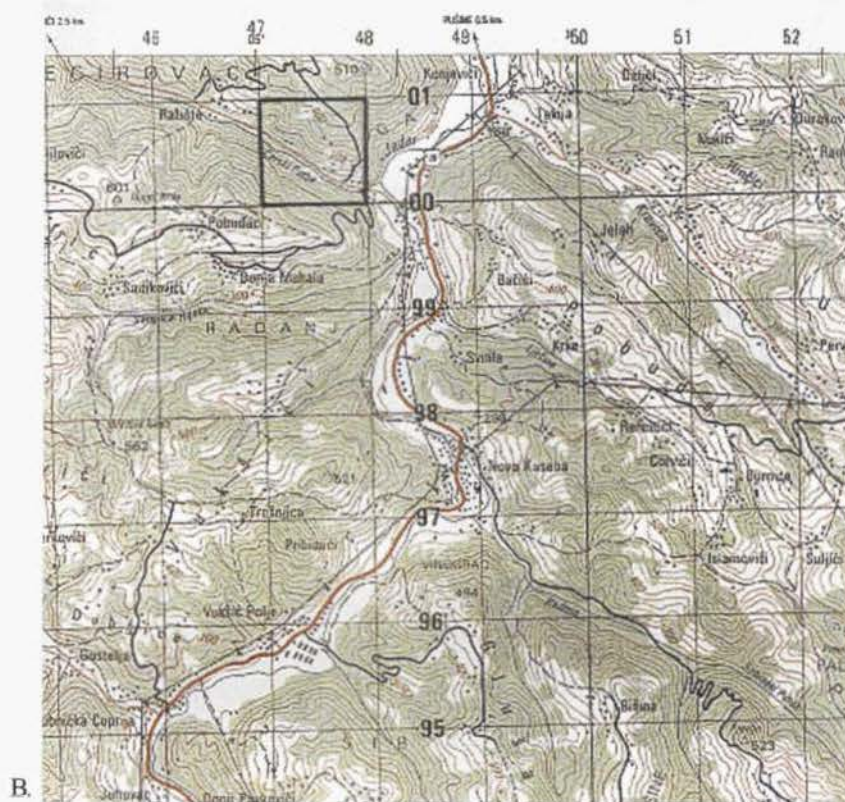
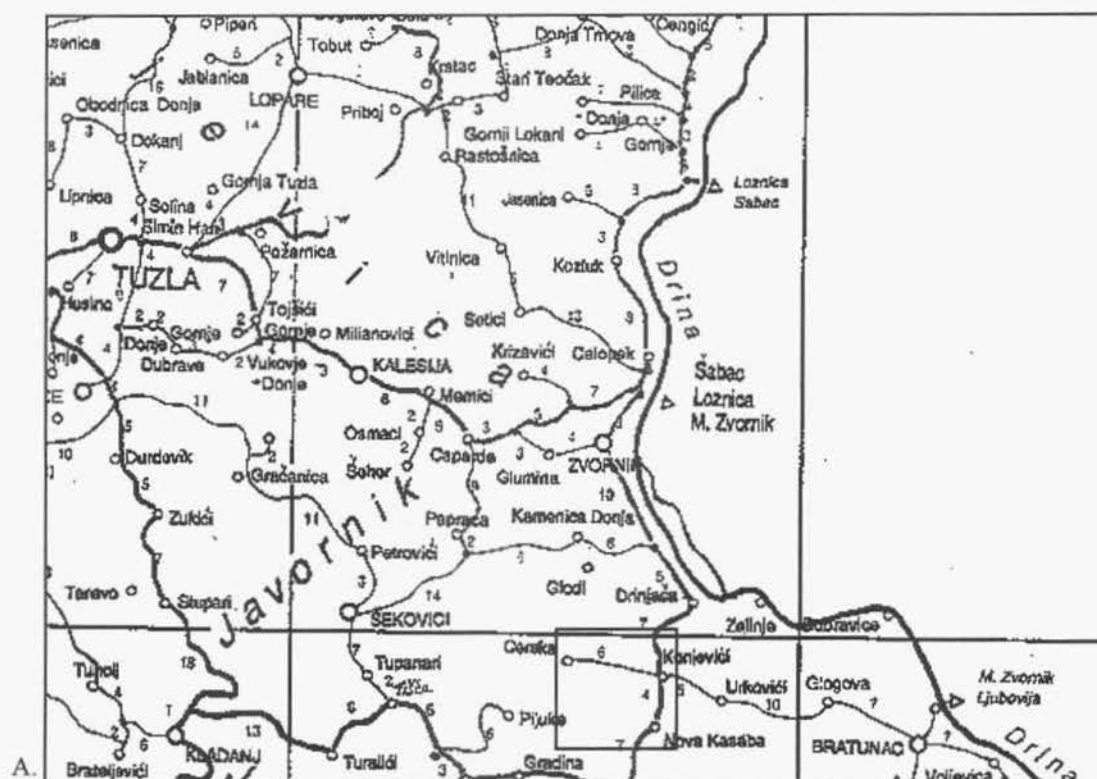


Figure 1. (A) Overall map of eastern Bosnia and Herzegovina, with general locale of the Cerska grave site. (B) Close-up of the Cerska area with location of the Cerska grave site (grid reference CQ 473004).



Figure 2. Eastward view of the road leading through the area of the Cerska grave site. (A) Photo, overall site before processing. (B) Photo, inset showing the cut from which fill was removed to bury remains on the opposite side of the road.

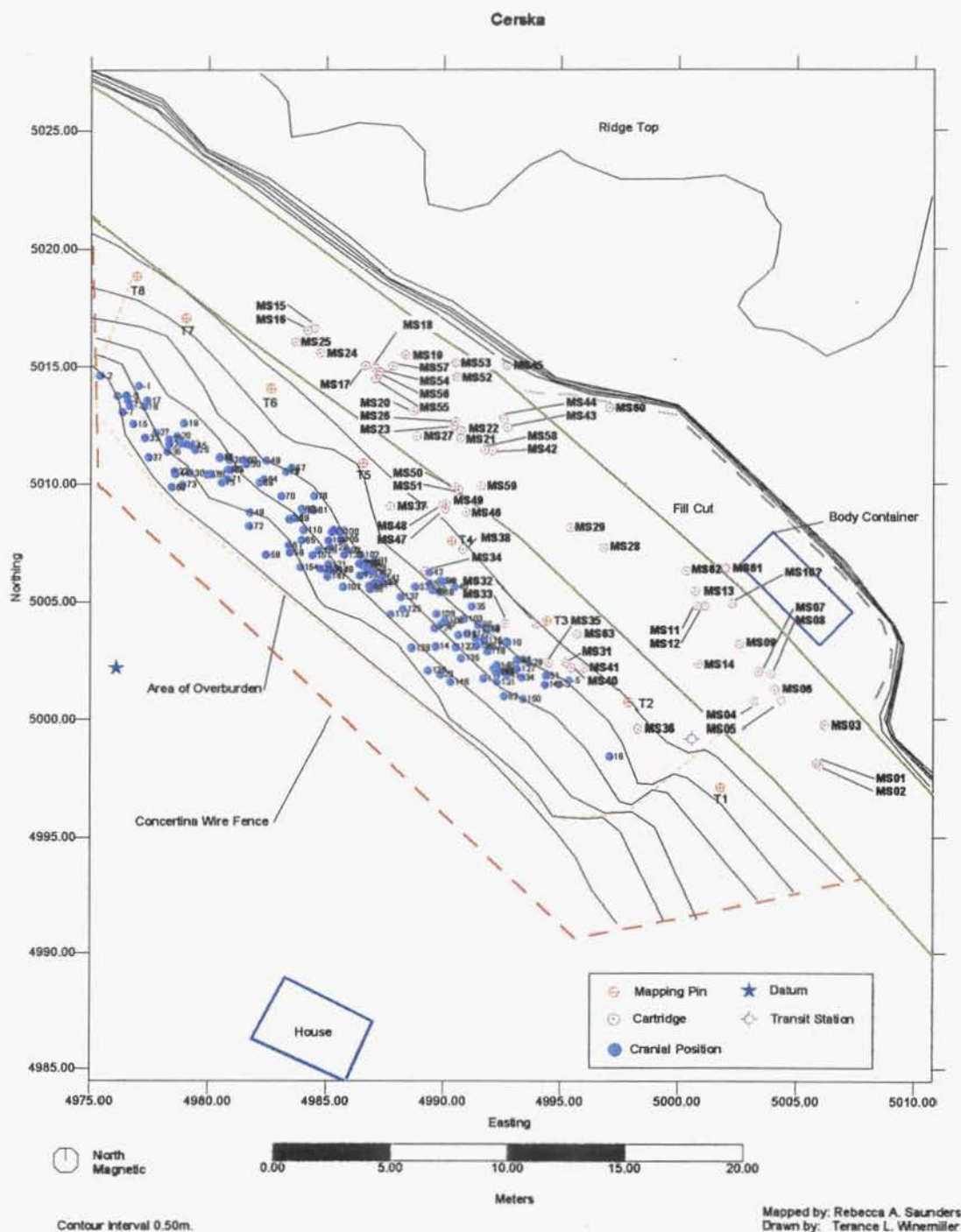


Figure 3. Topographical map of the Cerska grave site showing positions of surface evidence and victim locations via crania.

those probings, the hit was not recorded.

Distribution of the cartridge casings along the road corresponded to the extent of the burial area. However, it was noted during the metal detector survey that the densest frequency of cartridge casings occurred in the northwestern side of the road. A number of cartridge casings appearing in that area after the initial survey were assigned to the cluster rather than being piece-plotted. These are referred to as "N side of road" in the Field Evidence Log, Appendix B.

Whether or not this represents a true cluster is problematic. First, many casings were found in the grave overburden, the soil which covered the remains. Cartridge casings had been scraped off the road and mixed in with the overburden when the bodies were covered. Therefore, clusters observed during mapping do not represent the total number of cartridges/casings deposited at the site. In addition, some cartridge casings were picked up during the previous reconnaissance missions. Finally, casings that appeared in the road after the metal detector survey (exposed by heavy machinery and truck traffic) were not piece-plotted. After considerable discussion, involving the points just mentioned, it was decided that reliable cluster information was unlikely to emerge from the biased data. However, the team still felt recovery of cartridges and cartridge casings was important to document the variety of cartridges as well as dates of manufacture of the different munitions. Subsequent to this discussion, cartridge casings recovered from the road were placed in a single bag. This is the "transprospection" recovery location at the end of the Field Evidence Log, Appendix B.

The cartridge casings plotted along the slope represent only those located at the surface at the start of excavation. Those encountered in grave overburden during excavation were placed in bags by "intervals" 5 m wide and running the length of the slope. These intervals were established perpendicular to a 32.5 m line at the top of the slope. Zero meters was at the southern end of the grave (marked as T1). Another T marker was placed every 5 m up to T7; T8 was 2.5 m NW of T7, 32.5 m from T1 (Figure 4). Because these casings were secondary deposits (that is, redeposited along with the grave fill as the bodies were covered, thus unlikely to offer additional evidence of use to the ICTY), it was not considered necessary to do any piece-plotting of these items. In addition, no effort at total recovery of casings in the overburden was attempted. This would have required screening of all overburden, beneath approximately 200 m². Given limited time and personnel, it was believed that this amount of effort was not worth the limited information likely to be recovered.

However, some recovery was considered useful in that matches in cartridge



Figure 4. Photo, westward view of the Cerska grave site, after clearing vegetation from over the surface of the grave. Numbered yellow markers indicate zone markers, in meters, from the eastern extremity of the grave (field roll 3, exp. 19)

type, manufacturer, and rifling marks between cartridges found in the grave overburden and those found on the road would indicate a necessary connection between the events on the road and individuals in the grave. In other words, the individuals were killed on the road, not somewhere else, and buried. Further, samples of all the various types of munitions were important to establish the number and type of weapons used. Dates of manufacture of casings were also considered important in establishing a terminus post quem (date after which) the burials must have occurred. Therefore, overburden removed by the bulldozer was not screened, but all cartridges recovered during hand excavation were bagged as described above. Other items not directly associated with human remains, such as shoes or other clothing, were treated similarly. All items of evidence were turned over to the Office of the Prosecutor (OTP) and are slated for further analysis. Bullets and/or cartridges directly associated with human remains were mapped in place (see Exhumation).

Clearing of surface vegetation over the grave was performed by labor contracted by ICTY. This was undertaken after demining was completed and following recovery of surface evidence. It was accomplished under the supervision of the ICTY and PHR experts.

4. Excavation

The entire area of the grave was defined before an excavation strategy was developed. This was accomplished by surface observation and hand excavation of a series of test trenches to establish the definition of the overburden and depth below surface of the remains; results of the reconnaissance mission in May 1996 were also considered.

Excavation technique varied throughout the grave depending on a number of factors including depth below surface of remains and soil characteristics. In general, where burials were shallow, only hand tools were used. In most areas, soil compaction required the use of picks to remove dirt overlying and between burials. Where overburden was deeper, a backhoe was used to remove the fill. One or two members of the team monitored backhoe excavation at all times. The backhoe was also used to remove hand and machine excavated fill away from the excavation area. This fill was redistributed over the slope at the end of the project.

In general, exposure of the remains was from the top to the bottom of the slope within 5 m interval areas. After one 5 m interval area was completed, the exposed individuals were covered with plastic and the team moved further south. Occasionally areas were unintentionally left skipped, leaving unexposed remains. These individuals were subsequently exposed by transporting team members to the area in a front-end loader bucket.

5. Exhumation

One hundred and fifty individuals were recovered from the Cerska grave from a relatively shallow depth, beginning at 50 cm below ground surface. The shallowness of the grave, exposure to the sun, the relatively porous matrix of the overburden, and efficient drainage, combined to form an environment that hastened decomposition and skeletonization of the victims.

Once the human remains were reached, shovels and picks were used to loosen and remove the overburden. Individuals were then defined and, when possible, pedestaled, using trowels, whisk brooms, paint brushes, and sharpened chopsticks. Exposed hand (and, where no shoes were present, foot) bones were placed into plastic bags and attached with wire to the clothing of the associated individual to avoid loss of elements during cleaning and removal. Fragmented crania were also placed in separate bags included within the body bag of the individual. Other associated body parts and/or artifacts were treated similarly. If such artifacts included evidence,

such as bullets or casings directly associated with the body, they were photographed *in situ* prior to removal and bagging. All clothing, ligatures or bindings, bullets or bullet fragments, associated with individual remains, were kept with their respective remains and inventoried at the time of autopsy.

Due to the initial absence, then subsequent malfunction of the refrigerated container, individuals whose remains were exposed initially were left *in situ*, covered by plastic sheeting to protect them from sun and rain, until the first layer of burials in the entire 32.5 m area was exposed. These were then processed and removed from the grave as detailed in the foregoing paragraph. The relatively advanced stage of decomposition of the CSK burials (all were partially skeletonized and/or saponified) mitigated dehydration and loss of information.

To avoid possible confusion of individual burials, case numbers were not assigned until immediately prior to removal. Number assignment was relegated to a single forensic team member, who maintained a written record. Numbers were assigned consecutively, by grave (CSK), and appended by a sequential number indicating the particular individual, e.g., CSK- 1, CSK-2, for the first two individuals excavated at the Cerska site. As a cross-check on the Total Station mapping, the interval in which the burial was found was also recorded in this log. Other information included the date the burial was numbered, the lead excavator, and additional locational comments (e.g., under CSK-77).

Once a set of remains was completely defined and numbered a rough outline was sketched, the body location was mapped, and the remains were photographed. Photographs showing the overall context of each set of remains were taken to illustrate the relationship to other remains in the immediate area (Figure 5A). These were followed by photographs depicting the delineated remains with the case number prominently displayed. For those cases demonstrating ligatures or special features, a close-up photograph of the remains was taken (Figure 5C, D). The resulting map showing locations of the crania is presented in Figure 6.

Burials occurred throughout the area of the grave, though burials were more dense in some locations than others (Figure 6). One outlier occurred five meters from all other burials at the southern end of the site.

Prior to removal of the remains, an exhumation form was filled out and/or observations were recorded on a small cassette recorder by team leader William D. Haglund. Observations included the date the remains were

ascribed a number, initials of the lead exhumers, the presence of bindings, and a brief description of clothing. These brief descriptions of clothing were noted for purposes of cross-checking the excavated remains with those received for autopsy and not intended as a thorough description. Autopsy results should be consulted for definitive data on each individual. Field observations were subsequently compiled in Table 1.

The remains were removed and wrapped in a plastic body-bag liner which was then placed into a case-numbered, zippered body-bag for storage and transport to the autopsy area. Body bags were numbered at both the head and foot ends. All clothing and other evidence associated with the body was also placed inside the body bag. The bags were then zippered shut.

After removal of all individuals, the base of the grave was examined to ensure that no other individuals were present. Soils discolored by decomposition were also examined. At the end of the excavation, a backhoe trench was dug through the area to demonstrate that the bottom of the grave had been reached.

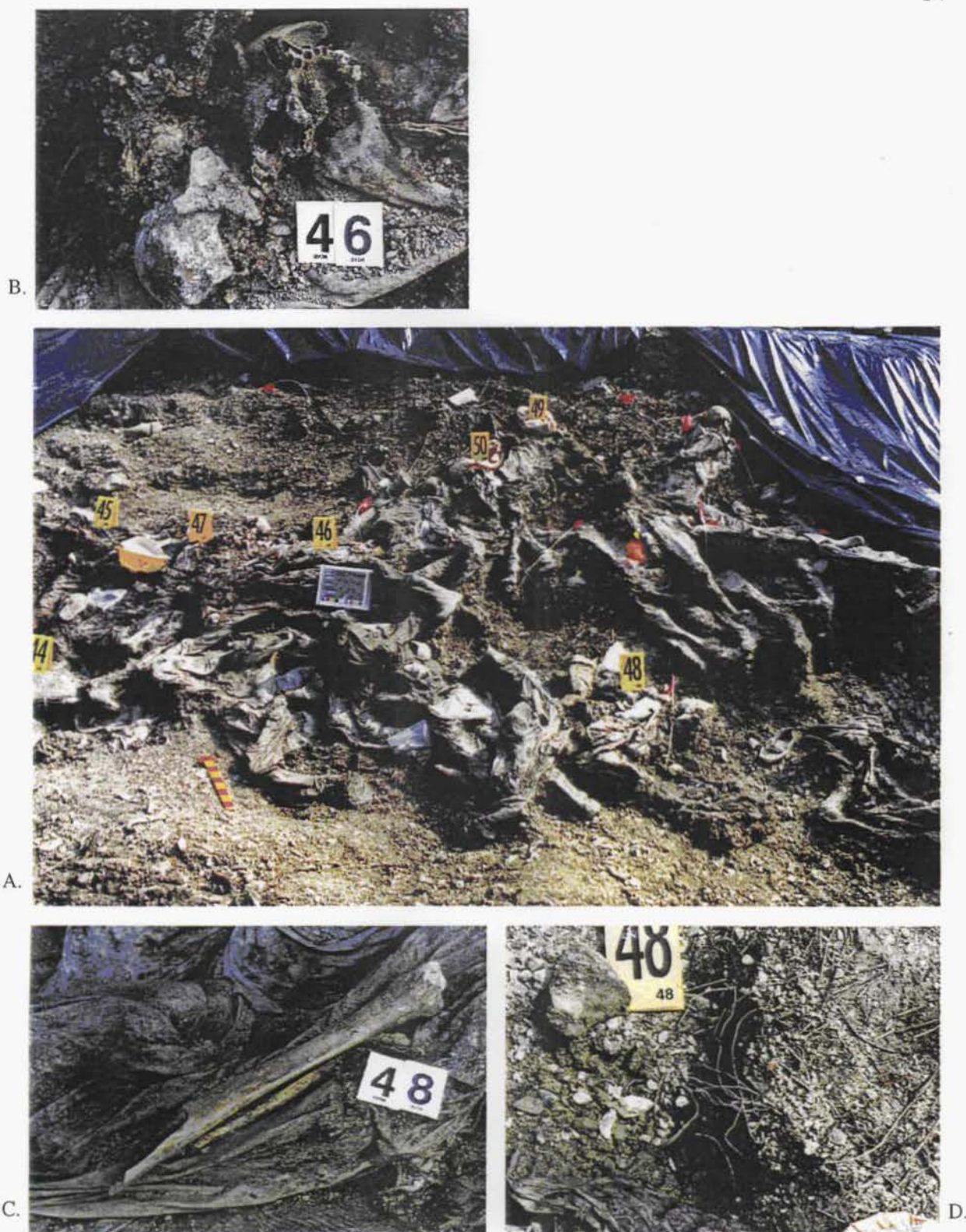


Figure 5. Overview of the section of the grave containing individuals CSK-44 through 50. (A) Photograph, delineated remains showing their context in the grave (field roll 10, exp. 34). (B) Photograph, close-up demonstrating fragmentation of crania CSK-46 due to high velocity gunshot wounds (field roll 12, exp. 12). (C) Photograph, fractured tibia of individual CSK-48 (field roll 12, exp. 10). (D) Photograph, snarl of wire recovered in proximity to individual CSK-48 and consistent with ligatures (field roll 12, exp. 22)

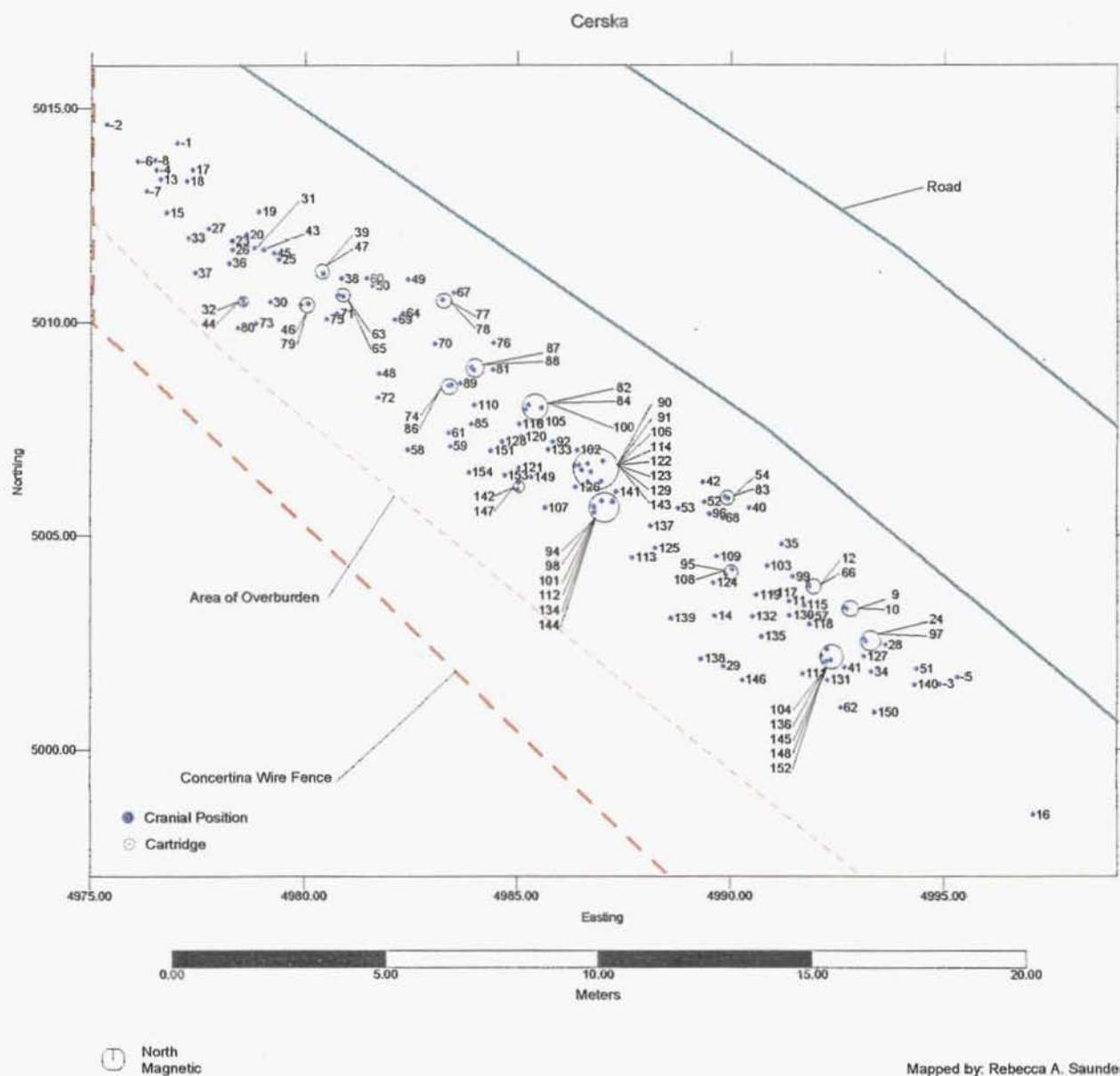


Figure 6. Map of the Cerska grave site, showing cranial locations (enlarged from Figure (3)).

Table 1. Cerska Field Exhumation Observations

Case No.	Date*	Excavator [†]	Orientation and Position	General Description of Clothing	Ligatures Noted
CSK-001	12-Jul-96	WDH, FM	Right side, parallel to embankment, face down, arms behind back	Long sleeve shirt, black belt, 2 pairs trousers, tennis shoes	N
CSK-002	12-Jul-96	WDH, FM	Right side, legs flexed, feet uphill	Jacket, black sweater, blue sweater, pants, socks, ankle boots	N
CSK-003	13-Jul-96	FM, JPB	Sitting position, legs placed west, feet behind body (north), face down, bent over body	Purple/red/green jacket, white/red shirt, red nylon T-shirt	N
CSK-004	13-Jul-96	WDH, RS	Face down, cranium downslope from feet, left arm overlies another cranium	Green sweater, undershirt, belt, dark pants, red striped socks, ankle length Mixer boots	N
CSK-005	13-Jul-96	FM, JPB	Kneeling face down, body leaning forward, head under right arm facing east, right arm extended, left arm flexed backwards	Dark blue knit sweater, light color sweater, red/white zip jogging pants, basketball shoes	N
CSK-006	13-Jul-96	WDH	Face down, head downhill	Long sleeve shirt, trousers, boots	N
CSK-007	13-Jul-96	WDH	Face down, head down hill, legs extended, right arm visible out of side	Short sleeved blue plaid shirt, pullover sweater, long sleeved shirt, blue shorts, light colored pants	N
CSK-008	13-Jul-96	WDH, JG	Head uphill, face down, right arm flexed	Purple top, trousers, socks, one shoe	N
CSK-009	13-Jul-96	JPB, CK	Face down, left arm flexed backwards, legs flexed right arm extended forward	Dark color jacket w/ knit waist, cotton T-shirt, light color jogging pants	Y
CSK-010	14-Jul-96	JPB, CK	Leaning against slope on right hand side, hand behind back tied with wire, faces the bottom of the slope, legs: right flexed feet pointing down slope, left, flexed, pointing upwards	Dark jacket, 2 knit shirts, rugby shirt, belt, jeans, dark boxers, hiking boots	Y
CSK-011	14-Jul-96	FM, DDP	Face up, head forwards, R hand, feet towards ravine	Dark jacket w/ red lining, dark button shirt, belt, dark pants, dark sock, one shoe	Y
CSK-012	14-Jul-96	JPB, CK	Lying on left side, legs flexed, slightly uphill	Dark jacket, knit blue sweater, belt, dark pants, boxer shorts	N
CSK-013	13-Jul-96	WDH, RS	Parallel to edge at bottom, right leg semi-flexed, left arm semi-flex cross chest, lying on right side	Green long sleeve sweater, blue trousers, tennis shoes	N
CSK-014	14-Jul-96	DDP, FM	Face down, parallel to embankment	Dark sweater, dark pants, leather shoes	N
CSK-015	13-Jul-96	WDH	Parallel to hill at bottom	Denim jacket, long sleeve striped shirt, belt, black pants	N
CSK-016	14-Jul-96	WDH	Head, right side, feet S	Sweater vest, long sleeve shirt, dark trouser, boots w/ rubber sole/canvas top	Y
CSK-017	14-Jul-96	WDH	Head downhill and face down, right arm extended at side flexed at elbow, right leg extended	Long sleeve sweater, undershirt, jeans, oxford-type shoes	N
CSK-018	14-Jul-96	WDH	Right side, head downhill, left arm extended at side	Denim jacket, long sleeve green sweater, jeans, ankle length rubber sole shoe w/ canvas	N
CSK-019	14-Jul-96	WDH	Face down, head down hill, right leg flexed over extended left leg, right arm extended	Jacket, knit shirt, black leather belt, dark trousers, R sock, brown leather oxfords	N
CSK-020	14-Jul-96	WDH	Right side, head towards hill	Long sleeved light-colored shirt, dark trousers	Y
CSK-021			Case number not assigned		
CSK-022	14-Jul-96	FM, DDP	Lying head uphill, arms enveloped in coat, hands above head and tied, both legs flexed	Black/green striped sweater, long sleeve shirt, black belt, dark pants	Y
CSK-023	14-Jul-96	WDH	Lying face down, atop several other bodies, right leg extended, left leg flexed, left arm extended	Coat, long sleeve brown sweater, 2 undershirts, black belt, trousers, hiking shoes	Y
CSK-024	14-Jul-96	JPB, CK	E-W lying face up, hand behind back, knees slightly bent, head down hill	Knit long sleeve sweater, light color T-shirt, black pants, R leather shoe	N
CSK-025	14-Jul-96	WDH	Lying face up, hands behind back, right leg flexed with right leg flexed over left at ankle of left and knee of right	Denim jacket, button shirt, black belt, trousers	Y
CSK-026	14-Jul-96	WDH	Lying with neck tightly flexed on chest, face up, arms behind back	Jacket, purple long sleeve sweater, light pants, boxers	N

† JPB = Jose-Pablo Baraybar; DG = Dorothy Gallagher; JG = John Gerns; WDH = William Haglund; CK = Clea Koff; FM = Fernando Moscoso; DDP = David del Pino; RS = Rebecca Saunders

Table 1. Cerska Field Exhumation Observations

Case No.	Date*	Excavator [†]	Orientation and Position	General Description of Clothing	Ligatures Noted
CSK-027	14-Jul-96	WDH	Rotated at hip, lower extremities anterior side up, thorax face down, lightly flexed on self	Pink top, black pants, R oxford shoe	N
CSK-028	14-Jul-96	JPB, CK	Lying face up, left arm extended above head, left arm flexed with forearm beneath pelvis, pelvis tilted on R lateral side, left leg stretched over (disarticulated)	Blue/green cardigan, purple/red/white sweater, belt, dark pants	N
CSK-029	14-Jul-96	FM, DOP	Face up towards road, feet towards ravine, body N-S, right arm flexed with forearm above head, left arm extended	Cotton zip jacket, white/blue stripe shirt, dark pants over red pants, R tennis shoe	N
CSK-030	14-Jul-96	WDH	Lying parallel to embankment, head downhill, legs extended, right arm flexed at elbow, forearm extended	Sweater, black sweater, undershirt, 2 jogging pants, running shoes	N
CSK-031	14-Jul-96	WDH	Lying face up, legs inclined uphill, head down hill, legs extended	Coat, blue shirt, blue tie for belt, black pants, tan pants, blue shorts, rubber boots	N
CSK-032	14-Jul-96	WDH	Face up, legs extended	Shirt w/ 1/4" plaids, reddish brown squares surrounded by white, T-shirt, jeans, boxer-type shorts, below ankle shoes	N
CSK-033	14-Jul-96	WDH	Lying on right side, left arm flexed at side of thorax	Blue synthetic zip up jacket, blue sweater, black leather belt (narrow), pants with green stripes, ankle top imitation leather shoes with laces	N
CSK-034	14-Jul-96	JPB, CK	Face down atop several other bodies	Light-weight dark jacket, blue shirt, soft belt, dark pants, dark R sock, dark L shoe	N
CSK-035	14-Jul-96	FM, DOP	Face down, towards bottom of embankment, atop several other bodies, arms behind back	Brown/Gray/white striped sweater, shirt, undershirt, boxers, dark pants, belt, tennis shoe	N
CSK-036	14-Jul-96	WDH	Face down, hands behind back, towards bottom of grave	Long sleeve purple sweater, 2 dark trousers, blue plaid undershorts, boots	N
CSK-037	14-Jul-96	WDH	Towards bottom of grave, lying on left side, left leg extended, left leg flexed, adj. to #36	Green and red shirt, jeans, loafers	Y
CSK-038	14-Jul-96	WDH	On top of pile towards bottom of embankment, face up, legs spread	Dark zip jacket, undershirt, string belt, dark trousers, boots	N
CSK-039	14-Jul-96	WDH	Partially beneath #38, atop pile of bodies, slightly inclined to left side, right leg flexed, left leg extended	Long sleeve blue top, light woven shirt, braided belt, black trousers, ankle length military-type boots w/straps	Y
CSK-040	14-Jul-96	FM, DOP	Down, right arm flexed angled towards rope, face lying on right	Dark jacket, knit sweater, canvas pants, ankle boots	N
CSK-041	14-Jul-96	JPB, CK	Face down, head west, feet east	Dark jacket, belt, corduroy pants, black tennis shoes	N
CSK-042	15-Jul-96	FM	Lying face down, legs extended	Blue sweater w/ design, blue sweatshirt, T-shirt, belt, ankle boots	N
CSK-043	15-Jul-96	WDH	Head uphill, lying slightly on left side, legs spliced	Long sleeved knit shirt, green jeans, green boxers, hiking boots	N
CSK-044	15-Jul-96	WDH	Feet uphill, head downhill, lower ext. at left rotated at hip with upper body face up and parallel to edge	Dark brown top, light colored top, belt, dark pants, long wool underpants, black tennis shoes	N
CSK-045	15-Jul-96	WDH	Head uphill -- 2nd tier	Dark long sleeve sweater, blue long sleeve shirt, black belt, dark pants, rubber boots	N
CSK-046	15-Jul-96	WDH	Lying right side, half way down embankment, head adj. to 47	Blue shirt, black belt, dark wool pants, green boots	N
CSK-047	15-Jul-96	WDH	Head uphill -- 2nd tier	Long sleeve blue shirt w/ buttons, black belt, blue trousers	N
CSK-048	15-Jul-96	WDH	Bottom of hill, head uphill, lying on left side, tightly flexed upon self, fractured tibial shaft	Purple coat, knit top, undershirt, black pants, tennis shoes	N
CSK-049	15-Jul-96	WDH	Head uphill, face up, right leg flexed beneath extended left leg	Coat, red/brown plaid long sleeve pullover, black belt, trousers, L shoe	N
CSK-050	15-Jul-96	WDH	Head uphill, face up, twisted at hip, right side, legs extended -- slightly flexed	Blue knit sweater, blue shirt beneath, undershirt, black wide belt, blue pants, lace up ankle shoes	N

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Table 1. Cerska Field Exhumation Observations

Case No.	Date*	Excavator†	Orientation and Position	General Description of Clothing	Ligatures Noted
CSK-051	15-Jul-96	CK, JPB	Face down, hands tied behind back with wire, face laying on left side	Denim jacket, braided belt, jeans, hiking boots	Y
CSK-052	15-Jul-96	FM	Feet uphill, head downhill, face down, tightly flexed with head underneath thorax, heels on buttock, (upside down)	Blue sweater, shirt, leather belt, pants w/ green print, black socks, black shoes	N
CSK-053	15-Jul-96	FM	Head resting on right side top towards road, body bent inward at waist with shoes pointing diagonally to slope	Blue jacket, green long-sleeve shirt, leather belt, light-colored pants, faux leather shoes, red socks	N
CSK-054	15-Jul-96	FM	Head downhill, rotated at waist	Black jacket, light-colored T-shirt, light-colored pants, dark underwear, black boots	N
CSK-055			Case number not assigned		
CSK-056			Case number not assigned		
CSK-057	15-Jul-96	CK, JPB	Laying on left side facing slope	Leather jacket, belt, dark pants, dark socks, L shoe	N
CSK-058	15-Jul-96	WDH	Bottom of hill, adj. to 59, face up, arms behind back, legs extended, left side	Black zip jacket, leather belt, green pants, socks, oxford shoes	N
CSK-059	15-Jul-96	DDP	Bottom edge of grave, lying face up, right arm extended, left arm flexed, legs extended semi-flexed up hill w/ torso extended	Blue green shirt, black belt, trousers, ankle length shoes	Y
CSK-060	15-Jul-96	WDH	Lying head uphill, right leg flexed, right arm lying at side with hand resting on hip	Long sleeved shirt, trousers	N
CSK-061	15-Jul-96	WDH	Face down, at edge of pile, right leg extended, left leg flexed	Coat, long sleeve blue sweater, string belt, pants, long underwear, boxers, ankle shoes	N
CSK-062	15-Jul-96	JPB, CK	At periphery of grave, head W, feet E, arms extended N-S	Blue button shirt, green pants, belt, knit underwear, light socks w/red ankle stripe	N
CSK-063	15-Jul-96	WDH	Lying on left side, parallel to hill, legs extended, slightly down hill	Blue shirt, light colored pants, dark jacket, blue colored belt	Y
CSK-064	15-Jul-96	WDH	Face down, legs spread, left arm extended at side, one wrapping of wire around arm	Coat, shirt w/ red lines, pants, shoes	Y
CSK-065	15-Jul-96	WDH	Face up, both arms flexed at elbow, hands behind head, left leg flexed beneath adj. remains, right leg flexed with heel touching rear knee of right leg	Jacket, black belt, black trousers, rubber sole shoes w/ brown ankle tops	N
CSK-066	15-Jul-96	CK, JPB	Laying on back, right arm flexed at elbow across chest, left arm parallel to left side, right leg flexed at knee with tibia/fibula heading down slope and right foot flexed SE, left leg hyperflexed and tibia/fibula facing W	Shirt, black pants w/ black belt, L foot wrapped in plastic	N
CSK-067	15-Jul-96	WDH	Head uphill, right side	Pink zip jacket, blue plaid shirt, black belt, trousers, boxers, oxford shoes	Y
CSK-068	15-Jul-96	FM	Lying parallel to hill on right side w/ right arm extended down hill and flexed at elbow, left arm flexed w/ hand beneath back, both legs semi-flexed	Blue sweater, white shirt, blue pants, leather belt, beige socks, black leather shoes	N
CSK-069	15-Jul-96	WDH	Head uphill, right arm extended, flexed at elbow	Blue coat, work boots	N
CSK-070	16-Jul-96	WDH	Bent over at hip, torso elevated on top of debris, legs down hill, arms behind back	Long sleeve sweater, black belt, brown pants, purple socks	Y
CSK-071	16-Jul-96	WDH, JPB	Face down, feet extended, left arm extended, both legs extended	Brown sweater, blue undershirt, blue shorts, rubber boots	N
CSK-072	16-Jul-96	WDH	Face up, arms behind back, legs semi flexed up hill	Denim jacket, brown long sleeve shirt, black belt, trousers, red socks, orange shoes	N
CSK-073	16-Jul-96	JPB	Head down hill, left leg tightly flexed over bodies beneath him as is left, legs spread	Jacket, trousers, tennis shoes	N

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Table 1. Cerska Field Exhumation Observations

Case No.	Date*	Excavator†	Orientation and Position	General Description of Clothing	Ligatures Noted
CSK-074	16-Jul-96	WDH	Head down hill, legs uphill, right arm extended on side, lying face down, inclined on right side, knees tucked up	L sock, R slip-on shoe	N
CSK-075	16-Jul-96	JPB	Face down, legs extended right arm at side, left arm flexed, elbow towards lumbar region, hand extending up side	Blue knit sweater, dark shirt, dark trousers, red shorts, rubber boots	N
CSK-076	16-Jul-96	WDH	Face up, left arm extended, right arm flexed behind back, left knee tucked under neath in kneeling position, right across left	Sweater vest, blue sweater	N
CSK-077	16-Jul-96	WDH	Lying face down, blind fold	Green sweater underneath red sweater, black belt, black pants, loafer-type shoes	N
CSK-078	16-Jul-96	WDH	Face down, right leg flexed at knee, left leg uphill, contorted,	Purple zip coat, heavy denim vest, long sleeve brown shirt	N
CSK-079	16-Jul-96	JPB	Lying inclined face up, towards right side, left arm extended, legs semi-flexed	Shirt, light colored undershirt, braided belt, dark trousers, tennis shoes	N
CSK-080	16-Jul-96	JPB	Inclined towards right side, legs tightly flexed, right arm extended above head	Dark knit sweater, leather belt, dark trousers, ankle leather boot w/rubber soles	N
CSK-081	16-Jul-96	WDH	Parallel to edge, 2 m away, face down, left arm extended upwards, right arm flexed	Long sleeve knit sweater, black belt, pants, rubber sole/canvas top ankle boots	N
CSK-082	16-Jul-96	WDH	Parallel to edge, legs extended	Jacket w/ red trim, undershirt, pants, jogging shoes	Y
CSK-083	16-Jul-96	JPB	Lying on right side, body extended, arms behind	Blue stripe knit sweater, jeans, military-type boots	N
CSK-084	16-Jul-96	WDH	Lying face down atop several others, left leg ext. right leg flexed at hip and hanging over pile w/ right arm, left arm extended uphill	Red zip jacket, trousers, socks	N
CSK-085	16-Jul-96	WDH	Lying face down atop other remains, inclined with torso resting on right side, right arm flexed at elbow with hand resting against	Knit sweater, shirt w/red stripes, black belt, green trousers, rubber sole boots	N
CSK-086	16-Jul-96	WDH	Face down, right arm extended at side, atop other bodies	Black coat, black shirt, white shirt, pants, wool socks, shoes	N
CSK-087	16-Jul-96	WDH	Lying w/ lower extremities towards right, torso face up, legs uphill, arms behind back	Dark jacket, canvas top boots	N
CSK-088	17-Jul-96	WDH	Head uphill, left side, right arm behind left arm	Blue striped coat, shirt, trousers, orange shoes	N
CSK-089	17-Jul-96	WDH	Face uphill, legs flexed	Red plaid shirt, orange shoes	N
CSK-090	17-Jul-96	WDH	Face uphill, top edge of grave	Coat, undershirt, green trousers, red jockey shorts, ankle leather/plastic shoes	N
CSK-091	17-Jul-96	WDH	Feet uphill, inter mingled with remains beneath, inclined left side	Long sleeve knit sweater, black belt, trousers	N
CSK-092	17-Jul-96	WDH	Bottom of several other skeletonized remains, lying on left side, legs flexed,	Light colored shirt, wide black leather belt, pants, socks	N
CSK-093			CSK-93 subsequently renumbered as CSK-100		
CSK-094	17-Jul-96	FM	Feet uphill, face up	Canvas jacket, green sweater, black/red plaid shirt, dark pants, leather shoes	N
CSK-095	17-Jul-96	JPB, CK	Sitting, with head facing down slope and legs flexed under body	Green jacket, light colored undershirt, leather belt, jeans, orange shoes	N
CSK-096	17-Jul-96	JPB, CK	Face down, head west, legs bent at knee with feet downslope, body is parallel to road	Light-colored jacket, knitted shirt, blue pants, canvas ankle boot w/ rubber soles	Y
CSK-097	17-Jul-96	DDP	Lying on right side, arms behind back, hips rotated and legs flexed, E-W orientation	Dark short sleeve shirt, jeans	N
CSK-098	17-Jul-96	FM	Lying face down, legs sprawled, atop other remains	Faux leather jacket, light colored sweater, white T-shirt, leather belt, blue pants, black socks, shoes	N

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Table 1. Cerska Field Exhumation Observations

Case No.	Date*	Excavator†	Orientation and Position	General Description of Clothing	Ligatures Noted
CSK-099	17-Jul-96	JPB, CK	Parallel to slope, face down, head facing NE, left arm loosely flexed, right arm flexed underneath	Blue jacket, T-shirt, undershirt, dark sweatpants, briefs, hi-tops	N
CSK-100	17-Jul-96	WDH	Face up, head uphill, left arm flexed at elbow, legs extended, right arm extended, bottom of grave	Green upper garment, rubber boots, coat,	N
CSK-101	17-Jul-96	FM	Face down, feet uphill, arms outstretched	black jacket, white/blue stripe shirt, leather belt, dark pants	N
CSK-102	17-Jul-96	RS, JG	Flexed upon self at bottom of hill, legs uppermost covering head and torso	Black jacket, white T-shirt	N
CSK-103	17-Jul-96	CK, JPB	Face down, head facing NE, feet downhill, arms behind back	Green zip jacket, dark trousers, light-color socks, white faux leather sneakers	N
CSK-104	17-Jul-96	DDP	E-W orientation, face down	Sweater, shirt w/elastic waist, blue pants w/zipper pockets, leather shoes	N
CSK-105	17-Jul-96	WDH	Face up, head uphill, arms extended, right leg extended, left flexed	Dark long sleeve shirt, button shirt, woven belt, black pants, shoes	N
CSK-106	17-Jul-96	WDH	Flexed at waist, lying face down, torso towards right, legs and head uphill, arms extended in front of body	Maroon knit sweater, blue button shirt, blue pants	N
CSK-107	17-Jul-96	WDH	Lying on left side, legs flexed uphill, head downhill, arms behind back	Green/orange/black jacket, green pants, rubber boots	N
CSK-108	17-Jul-96	CK, JPB	Face down, flexed with buttocks down hill, head and feet facing uphill, left side	Dark colored jacket, red/black plaid shirt, green trousers, belt, green rubber boots	Y
CSK-109	17-Jul-96	CK, JPB	Lying, hyperflexed with legs laying over torso -- feet going north up slope and hips are lowest point, arms over head	Tweed blazer, red/white sweater, T-shirt, light-colored pants, socks, black hi-tops	N
CSK-110	17-Jul-96	WDH	Face up, flexed upon self with knees touching chest, head slightly uphill, feet downhill	Brown sweater, white/blue/red striped T-shirt, dark pants, belt, socks, leather boots	N
CSK-111	17-Jul-96	DDP	NE-SW orientation, torso and head enveloped in jacket, legs semi-flexed uphill	Blue zip jacket, sweater, red T-shirt, long pants	N
CSK-112	17-Jul-96	WDH, RS	Head under torso, arms extended, head uphill, feet down hill	Black coat, red sweater, red top, jeans, rubber sole shoes	N
CSK-113	17-Jul-96	FM, RS	Lying right side, head downhill, body slightly inclined up, hands behind back, semi-flexed at hips and knees	Denim jacket, pants, tennis shoes	Y
CSK-114	18-Jul-96	WDH	Down hill, legs rotated, legs parallel to edge	Red shirt, leather shoes	N
CSK-115	17-Jul-96	CK, JPB	Face looking down slope on stomach, parallel to slope with legs down slope slightly	Brown sweater, checkered pants, cut-off boots	N
CSK-116	17-Jul-96	FM	Lying on left side, facing down hill, arms behind back, legs contorted and rotated	Blue pullover shirt, dark pants, red shorts, light long sleeved under garments, socks, black ankle length shoes	N
CSK-117	17-Jul-96	CK	Lying perpendicular to road, head down slope, face down, left leg flexed at knee, crossing over extended right leg	Knit sweater, belt, pants, hi-top rubber boots	N
CSK-118	17-Jul-96		E-W with hands behind back	Black nylon jacket, green plaid pants, hiking shoes	Y
CSK-119	18-Jul-96	JPB, CK	Lying parallel to road on right side, legs loosely flexed, head under body, feet W, head E, left arm extended NE up slope, right arm flexed at elbow	Dark jacket, dark blue shirt, light-color shirt, leather belt, brown pants, ankle boots	N
CSK-120	17-Jul-96	FM, RS	Face down, rotated at hip, left arm flexed with hand at side, lower right extremity on left side	Green jacket, blue pants, light socks, black tennis shoes	N
CSK-121	17-Jul-96	FM	Lying face down, legs down hill, inclined on left side, hyper extend at hips	Knit sweater, brown/green sweater, black/white/green plaid shirt, dark pants, socks, brown leather shoes	N
CSK-122	18-Jul-96	WDH	Face down, legs flexed to side	Red shirt w/ dark stripes, jeans, orange boots	N
CSK-123	18-Jul-96	WDH	Head down, face down, legs semi-flexed	Purple/green/yellow/red striped sweater, shirt, pants, socks, orange boots	N

† JPB = Jose-Pablo Baraybar; DG = Dorothy Gallagher; JG = John Gerns; WDH = William Haglund; CK = Clea Koff; FM = Fernando Moscoso; DDP = David del Pino; RS = Rebecca Saunders

Table 1. Cerska Field Exhumation Observations

Case No.	Date ^a	Excavator ^b	Orientation and Position	General Description of Clothing	Ligatures Noted
CSK-124	18-Jul-96	JPB, CK	Lying parallel to road, head at western side, face looking down slope, body extended with left leg straight, right leg flexed at knee, left arm flexed	Light color jacket, maroon & blue shirt, blue pants, socks, hi-top tennis shoes	N
CSK-125	18-Jul-96	WDH	Parallel to edge left side, face downhill	Black jacket, striped brown/black/green sweatshirt, leather belt, pants, calf length boots	N
CSK-126	18-Jul-96	WDH	Inclined towards right side back facing down hill, legs flexed with knees uphill, arms in back	Short sleeved shirt, strap undershirt, dark pants, undershorts, orange ankle top boots	N
CSK-127	18-Jul-96	DDP	E-W orientation, left arm extended, facing down hill slightly parallel to hill, left side, flexed at knees	Blue jacket, light color shirt, underwear, canvas pants, brown socks, leather boots	N
CSK-128	18-Jul-96	FM	Face up, extended at hips, legs uphill, left hill extended, right leg flexed	Denim jacket, blue sweater, white T-shirt, leather belt, green pants, black leather boots	N
CSK-129	18-Jul-96	WDH	Atop other bodies, face up, left arm flexed with hand on torso, right arm extended downhill	Denim jacket, sweatshirt, red shirt, wide black belt	N
CSK-130	18-Jul-96	JPB, CK	Face up, right arm extended parallel to body, left arm out and bent back at elbow under, right leg extended downslope, left leg bent at knee out from body	Light color sweater, shirt, thin belt, jeans, socks, red/white/blue tennis shoes	N
CSK-131	18-Jul-96	DDP, DG	Lying on stomach, head, on left side, body angled uphill	Denim jacket, belt, denim pants, shoes	N
CSK-132	18-Jul-96	JPB, CK	Lying on back, right leg extended, face up, right leg over left	Green jacket, yellow shirt, leather belt, green trousers, leather shoe w/rubber sole	N
CSK-133	18-Jul-96	FM	head NW, feet E, face up, right leg twisted over left, left arm extended east, right arm flexed across chest	Red/white sweater, black pants	N
CSK-134	18-Jul-96	WDH	Head down hill, feet uphill, face down, lying on back	Red/green sweater, cloth belt, blue pants, shoes	N
CSK-135	18-Jul-96	CK, JPB	Laying parallel to road, face-up, on back, right arm flexed with hand on neck, right leg flexed uphill, left leg extended down	Jacket, shirt, belt, corduroy pants, socks, white tennis shoes w/ blue soles	N
CSK-136	18-Jul-96	DDP, DG	W-E, head west, head and body and left side	Red/blue/green jacket, blue denim button shirt, tan pants, 1 tennis shoe	N
CSK-137	18-Jul-96	FM	Head under body, face down, right leg flexed back to thigh, right arm under body, left flexed over body, left leg extended	Denim jacket, red/blue shirt, cloth belt, blue pant, blue/red socks, tennis shoes	N
CSK-138	17-Jul-96	CK, JPB	S-NE, head downhill, face-up, left leg across body, parallel to slope, right leg extended up slope, left arm extended parallel to body	Light color jacket, print shirt, red pants, black pants, calf length rubber boots	N
CSK-139	18-Jul-96	JPB, CK	W-E face down, face angled slightly NE	Leather jacket, T-shirt, dark pants, boots	N
CSK-140	18-Jul-96	DDP, DG	E-W facing down with arms underneath body	Dark knit sweater, light colored shirt, dark pants, ankle boots	N
CSK-141	18-Jul-96	WDH	Head towards uphill, inclined on back, knees flexed	dark coat, green/white/yellow shirt, blue pants, socks, tennis shoes	N
CSK-142	18-Jul-96	FM	Head under body, head S, body N-S	Black coat, pullover with red left shoulder, blue sleeve, bluish strap undershirt, green underpants with white elastic, brown trousers, black lace up shoes	N
CSK-143	18-Jul-96	FM, RS	Face down, head NE, feet S, left arm extended/semi-flexed N	Black jacket, light T-shirt, green pants, tennis shoes	N
CSK-144	18-Jul-96	WDH	Head and torso down, flexed at hips with legs semi-flexed and parallel to embankment	Dark shirt, jacket with buttons, blue pants, belt, plaid pants with red and black horizontal stripes, socks, right rubber boot	N
CSK-145	18-Jul-96	DDP, DG	W-NE orientation, face down, bottom of pile near periphery, flexed upon self	Blue jacket, light shirt, denim pants, white underwear, rope as belt, leather work shoes	N
CSK-146	18-Jul-96	JPB, CK	At bottom of slope, head at eastern end, parallel to road, legs extended west	Green/red jacket, red vest, undershirt, jeans, leather belt, leather R shoe	N

^a JPB = Jose Pablo Baraybar; DG = Dorothy Gallagher; JG = John Gerns; WDH = William Haglund; CK = Clea Koff; FM = Fernando Moscoso; DDP = David del Pino; RS = Rebecca Saunders

Table 1. Cerska Field Exhumation Observations

Case No.	Date*	Excavator†	Orientation and Position	General Description of Clothing	Ligatures Noted
CSK-147	18-Jul-96	WDH	Face down, right arm semi-flexed, head W, feet, NE -- left over right flexed	Dark jacket, zip up, long sleeved pullover, light colored shirt with broad green horizontal stripes, purple undershirt, two pair of underpants, brown trousers	N
CSK-148	18-Jul-96	DDP	Lying inclined on right, down hill, hands behind back, extended at hips, pointing uphill	Blue striped shirt, belt, dark pants, light-colored shorts, Gitanos underwear	N
CSK-149	18-Jul-96	WDH	Facing uphill, right side, legs semi-flexed, rotated at hips, torso and head face down, extremities on left, right arm flexed with hand at face, left arm flexed with hand above face	Green long sleeve shirt, undershirt, leather belt, trousers, cut-off boots	N
CSK-150	18-Jul-96	DDP, DG	Face down, left arm flexed behind back, head behind body	Dark jacket, light shirt, belt, dark pants, black shoes	N
CSK-151	18-Jul-96	FM	Bottom of hill, inclined towards right, facing uphill	Black coat, long sleeve green sweater, blue trousers, socks	Y
CSK-152	18-Jul-96	DDP, DG	W-E orientation, above the head, face up, bottom of slope, legs flexed, right arm behind back, left arm flexed at elbow with wrist parallel to head	Plaid shirt over blue striped shirt, green pants, rubber ankie boots	N
CSK-153	18-Jul-96	FM	Inclined towards left side, right leg flexed downhill, left uphill, arms behind back	Dark shirt, dark jacket, light colored pants, tennis shoes, under shorts	N
CSK-154	18-Jul-96	FM, DDP	W-E face up bottom of slope, legs flexed right over left, right arm extending back behind head left arm flexed at wrist parallel to head	Jacket, zip sweatshirt, pants, ankle boots	N
CSK-155	18-Jul-96	FM, DDP	Cranium only -- facing road	No clothing	N

† JPB = Jose-Pablo Baraybar; DG = Dorothy Gallagher; JG = John Gerns; WDH = William Haglund; CK = Clea Koff; FM = Fernando Moscoso; DDP = David del Pino; RS = Rebecca Saunders

6. Comments on Excavation Issues

Inclement weather was minimal at the Cerska site and marked only by occasional rain. However, site security, disassociated clothing, and commingling of remains complicated the investigation.

a. Security

Site security personnel, arranged by the Office of the Prosecutor, were left at the site on the first evening of the forensic investigation, July 7, 1996. They were not present at the site the following morning when the forensic team returned. According to IFOR personnel, threats by members of the local population discouraged further participation by these individuals. At this point, only the mine assessment phase and initial photography of the site had occurred. No disturbance of the site was detected for the period during the absence of the security personnel. Hence this security breach was not considered significant. Subsequent security was provided on a twenty-four hour basis by ICTY personnel.

b. Commingling

Many of the Cerska remains were in varying degrees of skeletonization. As the grave was situated on a slope, this created the danger that once exposed and delineated, skeletonized and separated remains were subject to rolling away from their original position. This danger was aggravated by the high velocity gunshot wounds, a majority to the head, resulting in extreme fragmentation of crania, and by the fact that in some areas the bodies were layered four to five deep, many with their crania adjacent to each other. A further potential factor contributing to commingling was avulsion of skull sections, separating them from the individual, at the time victims were shot. Recovery artifacts accounted for additional commingling.

Because of the acknowledged potential of commingled remains, especially portions of fragmented crania, autopsy examinations conducted on individuals removed from clustered areas of the grave were conducted in sequence, often by the same pathologist, in order to maximize recall of commingling issues.

According to the autopsy reports, commingling was noted in 13 cases. In four cases, remains could be attributed to the correct

individual. For the remaining nine, seven involved portions of skulls, one a distal radius, and one a right ulna. In no case did commingling compromise the determination of cause or manner of death. These findings are summarized in Table 2.

Table 2. Summary of Commingled Remains from the Cerska Grave Site

Case No.	Commingled Element(s)	Resolution
CSK-5	Not specified by excavator	
CSK-9	Extra cranium and mandible	Attributed to CSK-10
CSK-10	Portions of two crania present	Attributed to CSK-9
CSK-23	14 yr. old male mandible, T1 vertebral body with an embedded bullet, C1-T1 vertebral bodies; maxilla and left parietal and occipital bones	
CSK-28	Portions of cranium older than skeletal age	Attributed to CSK-29
CSK-46	Upper and mid-facial bones	
CSK-47	Three facial and mandibular bony fragments inc., left maxillary fragment with four teeth, fragment of left temporal with mastoid process, and left mandibular ramus with four teeth	
CSK-80	Right frontal bone	
CSK-88	Two partial crania present	One partial cranium attributed to CSK-87
CSK-101	Frontal left and right parietal, occipital, right temporal fragments, and cervical vertebrae	
CSK-133	Extra distal portion of left radius	
CSK-147	Right ulna	
CSK-148	Left temporal and parietal bones, nasal and maxillae	

c. Unassociated Remains

Unassociated remains collected from the Cerska grave appear in Table 3.

Table 3. Unassociated Remains Collected from the Cerska Grave Site.

Skeletal Elements	Recovery Zone	No. Unallocated	No. Expected for 150 Individuals	% Unallocated (No. Unallocated / No. Expected for 150 Individuals)
Cranial Fragments	5-10m	5	NA	NA
	10-15m	15		
	20-25m	<u>15</u>		
	Total	35		
Carpals & Tarsals	5-10m	50	4,500	2.0
	10-15m	25		
	20-25m	<u>13</u>		
	Total	88		
Metacarpals & Metatarsals	5-10m	45	3,000	2.6
	10-15m	17		
	20-25m	<u>18</u>		
	Total	80		
Phalanges	5-10m	88	8,400	1.9
	10-15m	33		
	20-25m	<u>40</u>		
	Total	161		

*NA = not applicable.

d. Unassociated Clothing

No clothing or personal items were removed from remains until the time of autopsy. However, items which could not be attributed to particular individual remains were encountered in the grave. With the exception of one button, all items were shoes; 18 of which represented pairs, and 36 of which were unmatched. The majority of the shoes (n=33, or 61%) were described as "low-cut." An inventory, accompanied by a description and zone of recovery, is shown in Table 4.

e. Numbering of Removal Units, "Body Numbers"

During the numbering process, 155 numbers were allotted for body bags. Only 150 individuals were recovered. The discrepancy is accounted for as follows: four numbers were unused; CSK-21, CSK-55, CSK-56, and CSK-93. These numbers were assigned prematurely, i.e., were requested by the individual removing the remains, and following assignment of the number, it turned out that

Table 4. Cerska Grave Site Unassociated Clothing Log

Area	Item	Side(s)	Style	Height	Material	Color	Lace	Sole	Brand	Size	Made In	Observations
0-5 m	shoe	L	casual	low	leather	black	in front	rubber		8 +		
0-5 m	button											grey
5-10 m	shoe	L	boot	calf	leather	brown	in front	rubber		280-B		military style
5-10 m	shoe	L	tennis	low	leather	white	in front	green	Adidas	9 +		style Torsion
5-10 m	shoe	L	casual	low	leather	brown	in front	black		9-1/2 +		blue lace
5-10 m	shoes	R & L	tennis	low	canvas	white						orange tongue; 2 brown stripes
5-10 m	shoes	R & L	boots	ankle	vinyl	orange	in front	rubber	Lech	39	Italy	blue socks with red design in both boots;
5-10 m	shoe		casual	low	leather	brown	in front	rubber	CCO	43	Denmark	left sock with all foot bones
5-10 m	shoe		handmade	low	rubber	black	none	rubber		9-1/2 +		beige wool sock inside
5-10 m	shoe	R	casual	low		black	in front	rubber		10 +		
5-10 m	shoe	L	casual	low	leather	black	in front	rubber	Bor	8-1/2 +		
5-10 m	shoe		handmade			orange						sock
5-10 m	shoe					beige						sock
10-15 m	shoes	L & R	casual	low	leather	brown		rubber		9 +		
10-15 m	shoes	L & R	boots	ankle	rubber	green		rubber		42 B		hand-cut at ankle bone
10-15 m	shoe	R	work	calf	rubber	black		rubber	Alaska	43/44		
10-15 m	shoe	L	boot	calf	rubber	black		rubber		8 +	Yugoslavia	
10-15 m	shoe	R	tennis	low	canvas	white	in front	green rubber		8 +		
10-15 m	shoe	L	casual	low	leather	black	in front	rubber		8 1/2 +		
10-15 m	shoe	L	casual	low	canvas	green		black rubber	Delta	37-38		
10-15 m	shoe	L	casual	low	leather	brown	black front	rubber		9 +		
10-15 m	shoe	R	casual	low	leather	black	in front	rubber	BOR	8 +	Norway	
10-15 m	shoe	R	dress	low	leather	black	in front	rubber		43		beige sock; all foot bones
10-15 m	shoe	R	casual	low	leather	brown	in front	rubber		9 +		
10-15 m	shoe	L	tennis	low	rubber	black	in front	rubber	DAXING	7 1/2		blue and green stripes on both sides,
10-15 m	shoe	R	casual	low	leather	brown	black front	rubber		8+		and 'BENQI' in left side
10-15 m	shoe	L	casual	low	leather	black		rubber		8+		decorative holes in front
10-15 m	shoe	L	dress	low	leather	brown	in front	rubber		41		decorative holes in front
10-15 m	shoe	L	hiking	ankle	leather	black	in front	rubber		8+		black sock inside, no bones
10-15 m	shoe	L	tennis	low	leather	blue	white front	rubber		9+		beige sock in
10-15 m	shoe	R	tennis	low	leather	white	in front	rubber	INTER	8+		white sock in, all the bones of the foot

Table 4. Cerska Grave Site Unassociated Clothing Log

Area	Item	Side(s)	Style	Height	Material	Color	Lace	Sole	Brand	Size	Made In	Observations
20-25 m	shoes	R & L	casual	low	leather	black	4 holes	rubber		9		clear acrylic sock with foot bones inside R
20-25 m	shoe	L	casual	low	leather	black	4 holes	rubber		10		hand application of double sole
20-25 m	shoe	L	casual	low	leather	brown	5 holes	rubber	SRI	8		Model world action
20-25 m	shoe	R	casual	low	leather	black		leather		7+		decorative holes at toe
25-30 m	shoes	L & R	formal	low	leather	black	side zipper	rubber		7+		angled plastic side zipper
25-30 m	shoe	R	tennis	low	leather	black	4 holes	rubber	SRI	7+		
25-30 m	shoes	R & L	casual	low	leather	brown	3 holes	rubber		9+		
25-30 m	shoes	R & L	hiking	ankle	leather	orange/brown	6 holes	rubber	Action	7+		
25-30 m	shoes	R & L	work	ankle	leather	brown	8 holes	rubber		9+		acrylic sock in right shoe
25-30 m	shoe	R	casual	low	canvas	brown	4 holes	rubber		7+		
25-30 m	shoe	L	casual	low	leather	black	2 holes	leather		9+	Austria	laced with red & black wire
25-30 m	shoe	L	casual	low	leather	black		leather		7+		decorative holes at toe
25-30 m	shoe	L	handmade	low	rubber	black		rubber		9+		cut off boots with hand-sewed sole
25-30 m	shoe	L	rubber boot			black				11+		Band on top 1 cm thick brown or red

a part of the remains was "trapped", making it necessary to leave the remains in the grave until additional bodies or overburden could be removed to free the trapped portion. The next day when the body was removed, the remains were subsequently re-numbered, for example, CSK-93 was renumbered as remains CSK-100. The fifth number for body bag CSK- 155 was assigned to an isolated body part (a head), which was subsequently reunited at the examination area with the remains of CSK-153. None of these numbering issues had any impact on the final calculation of the number of bodies removed.

7. Summary

A total of 150 individuals was exhumed. Evidence, consisting of cartridge casings, collected from the road are consistent with the victims having been placed at the southeast roadside, directly adjacent to the embankment, and shot by killers standing on the opposite side of the road. The victims were wearing civilian clothing. Many of the victims' wrists were bound behind their backs with wire bindings. Upon being shot, the victims either fell and/or were rolled off the roadside, onto the incline of the embankment. Many came to rest against each other, or were piled atop one another.

The bodies were subsequently covered by soil removed from the embankment across the road, opposite the burial site. The deepest individuals were recovered on top of the original ground surface of the slope. This ground surface was easily identifiable by the presence of a mat of vegetation underlying or intermixed with the lowest individuals. In addition, soil color and inclusions of the undisturbed soils of the downslope area was distinct from that of the overburden. The overburden consisted of the stratigraphic C Horizon, composed of a medium tan clay with moderate amounts of weathered gravel. In contrast, the buried A Horizon (the undisturbed soil immediately beneath the vegetation) was composed of a medium gray, slightly loamy clay with dense, angular gravel inclusions.

Removal of the soil from the opposite embankment and burying of the bodies had been accomplished by earthmoving equipment. In the process of moving soil from one side of the road to the other, numerous cartridge casings were incorporated into the overburden of the grave.

The forensic investigation of the Cerska site was completed on July 18, 1996. Remains were transported to the Kalesija examination facility under the coordination of United Nations police observers and cooperative security provided by IFOR, local Republika Srpska and Bosnian Federation police.

A brief chronology of the site investigation appears in Table 5.

Table 5. Chronology of Activities at the Cerska Grave Site

Date	Activities
July 7, 1996	Initial photography, mine assesment, site preparation
July 8, 1996	Continuation of site preparation, surface evidence collection, and initial trenching of grave
July 9, 1996	Continuation of surface evidence collection, and initial removal of grave fill
July 10, 1996	Continuation of surface evidence collection, and initial removal of grave fill
July 11, 1996	Continuation of surface evidence collection, and initial removal of grave fill
July 12, 1996	Continuation of surface evidence collection, and initial removal of grave fill. Delineation, exposure and numbering, mapping, photography, narration and removal of two individuals
July 13, 1996	Delineation, exposure and numbering, mapping, photography, narration and removal of nine individuals
July 14, 1996	Delineation, exposure and numbering, mapping, photography, narration and removal of twenty-nine individuals
July 15, 1996	Delineation, exposure and numbering, mapping, photography, narration and removal of twenty-six individuals
July 16, 1996	Delineation, exposure and numbering, mapping, photography, narration and removal of eighteen individuals
July 17, 1996	Delineation, exposure and numbering, mapping, photography, narration and removal of thirty-two individuals
July 18, 1996	Delineation, exposure and numbering, mapping, photography, narration and removal of thirty-four individuals and one cranium

IV. POSTMORTEM EXAMINATIONS

Postmortem examinations were performed by forensic pathologists affiliated with PHR, and supported by a staff comprised of anthropologists, radiology technicians, evidence technicians, photographers, data entry personnel, and logistical support staff (see Acknowledgments). This chapter's three sections treat the methods used in the examination process, the examination findings, and a summary of the examination phase of the investigation.

Postmortem examinations were carried out in a temporary morgue facility established near the outskirts of Kalesija, Bosnia and Herzegovina. The building and surrounding grounds were previously a war damaged clothing factory. A high wire fence, gate and guard enclosure provided a perimeter of security. The view of the front of the facility was blocked by tarps affixed to the chain link fence and by strategic positioning of the refrigerated containers. Security personnel were provided by the Bosnian Government on a twenty-four hour basis. Evidence was kept in a locked evidence room with the key in custody of the evidence technician.

A. General Methods

1. Photography

Photography at the examination area was conducted using 35 mm still cameras (Nikon 801 with the following Nikon Lenses: 28/80 and 35/70, and 105). The flash utilized was Nikon SB25. Film was Fuji 200 print film and Kodachrome 200 slide film.

Film cartridges were labeled in indelible ink with an individual roll number prior to being loaded into the camera. When the roll was completed, the labeled film roll was sealed in a similarly labeled canister. Slide film was handed over to William D. Haglund for transport and processing in the United States. Print film was developed under the direction of photographer Rudolf Schouten of the Netherlands and printed using Fuji processing and printing equipment.

2. Evidence Collection and Storage

The goal in evidence collection was to collect and document evidence of restraint, beating or torture, cause of death and evidence that would assist in personal identification of the victim. Among types of evidence that were collected and documented were ballistic items, including projectiles and cartridge casings; ligatures; all clothing removed from the remains; and all items of a personal nature, including jewelry, pictures, letters, I.D., etc.

Biological evidence including tooth samples for potential future DNA testing, were also collected for identification purposes. Evidence collection occurred at various steps in the examination process.

All remains were fluoroscoped to screen them for metallic objects. Projectiles and other metallic items revealed were removed and labeled with the case number and area of retrieval by the pathologist who also performed the autopsy. These items were clearly labeled and placed upon the evidence table assigned to that particular autopsy station.

Clothing was treated in several steps: All clothing was removed at the time the remains were fluoroscoped or at the autopsy table, according to the discretion of the pathologist. All pockets were inspected for contents. A metal tag, with the case number impressed upon it, was then affixed to each piece of clothing, which was then forwarded to the washing station. After cleaning mud and soil debris, the clothing was hung to dry and made available for the pathologist to describe special characteristics such as labels, sizes, fabric, logos, color, repair marks, or any alterations. This description is part of the autopsy report.

All other evidence was cleaned and placed into appropriately labeled containers and taken to the photographic station. The following information was included on each container:

- 1) Case number
- 2) Item number
- 3) Date of collection
- 4) Description of item and location retrieved from

For example:

- (1) CSK-4
- (2) #3
- (3) 18-07-96 (day/month/year)
- (4) Bullet, one (1) from left chest wall

After photography, the evidence items were retrieved from the photographic station and stored in a large paper bag marked with the case number.

Each packaged and labeled item placed into the case bag was recorded on an evidence flow sheet by the evidence technician. This information was later entered into an Excel spread sheet (Appendix B, Table B-2).

Once all evidence was properly documented and packaged, the case bag was transferred by the evidence technician to the evidence storage area. At this point the evidence was broken down into three categories: (1) ballistic and restraint, (2) biological, and (3) personal effects. Ballistic evidence and evidence of restraint, as well as items critical to identification, were secured in Evidence Room Locker A. This storage location is documented in the Examination Area Evidence Log, Appendix B. Biological evidence (DNA samples) was secured in Evidence Room Locker B. Personal effects were stored on shelves, by case number, in storage lockers in the Evidence Room. Each evidence bag was sealed (by stapling or tape) with the initials of the evidence technician covering the seal.

All evidence (exclusive of DNA samples), including ballistic evidence and evidence of restraint, as well as items critical to identification, was reviewed by ICTY investigators in order to determine which items were to be retained and which were appropriate to be released to the Bosnian authorities. The biological evidence was delivered to the Physicians for Human Rights Molecular Genetics Laboratory at the Division of Medical Genetics, University of Washington, Seattle, Washington, U.S.A.

3. Autopsy Examination

A written protocol, containing the following guidelines, was posted in the examination area. Examinations were performed on all remains according to the sequence described below.

- a. Radiologic Examination¹
 - (1) Upon removal from the storage container each body was fluoroscoped in order to locate and collect bullets, bullet fragments and casings. This was done in the presence of the pathologist.
 - (2). A hard copy print-out of areas of interest, such as presence of trauma and/or bullet/bullet fragments, was made of the fluoroscoped image at the discretion of the pathologist.
- b. Photography:
The following photos were taken:
 - (1) Overall photograph of remains before examination
 - (2) During examination, additional photos were taken to document trauma or abnormalities on request from the

¹

Due to the unavailability of a functioning X-ray processor, radiography relied solely on fluoroscopy which was utilized to screen remains for metallic objects such as projectiles and projectile fragments.

- pathologist (Figures 7, 8, 9)
- (3) Bullets, bullet fragments and casings (Figure 10-A)
 - (4) Clothing, with emphasis on peculiar designs or logos (Figure 10-B) as well as jewelry and personal items (Figures 10-A,C)
 - (5) Identification cards or receipts, etc.
 - (6) Anthropology specimens: teeth (Figure 11), pubic symphyses (Figure 12-A) medial clavicle, distal rib exemplar (Figure 12-B,C) (see anthropology methods).

c. Clothing and Personal Effects

Clothing and personal items were carefully documented, including tags with names of clothing manufacturer, size, logos, and laundry markings if present. Evidence that was moist was air dried before packaging. Items of clothing were individually washed, dried and photographed. They were then placed into plastic bags for storage in the body bag of the individual from which they had been removed.

Clothing and personal items such as jewelry, watches, rings or documents, which had been reviewed by ICTY investigators, were turned over to Bosnian government authorities at the time of body disposition. All other items of evidence, such as bullets, cartridge casings, ligatures were turned over to ICTY investigators.

d. External Examination noted the following:

- (1) State of decomposition
- (2) Stature (in cms) if possible or femur length (in cms)
- (3) Sex identification and age assessment
- (4) Presence or absence of commingling
- (5) General condition of body
- (6) Reconstruction of bone trauma. Attempts were made to distinguish antemortem injury from older healed injury

e. Internal Examination noted the following:

- (1) State of decomposition of internal organs (if present)
- (2) Detailed documentation of internal trauma, if present, with correlation to the external trauma (if applicable or if possible)
- (3) Complete dental charting (see anthropology)
- (4) Recovery of remaining bullet(s)/bullet fragment(s)



Figure 7. Case example CSK-52, cranium of a middle-aged male who died of multiple gunshot wounds. (A) Photograph, entrance wound (exam roll 2, exp. 2). (B) Photograph, exit wounds (exam roll 2, exp. 6). (C) close-up, exit wound to right occipital bone (exam roll 2, exp. 3). (D) close-up, exit wound, right tempo-parietal bone (exam roll 2, exp. 4).



Figure 8. Photo, case example CSK-52, fractured mandible (exam roll 2, exp. 8)



Figure 9. Photo, case example CSK-52, femurs, left fractured (exam roll 1, exp. 15)



Figure 10. (A) Photograph, overview of personal effects and projectiles of CSK-52 (exam roll 1, exp. 5). (B) Photograph, overview of clothing of CSK-52 (exam roll 6, exp. 2). (C) Photograph, close-up of cigarette lighter of CSK-52 (exam roll 1, exp. 10).

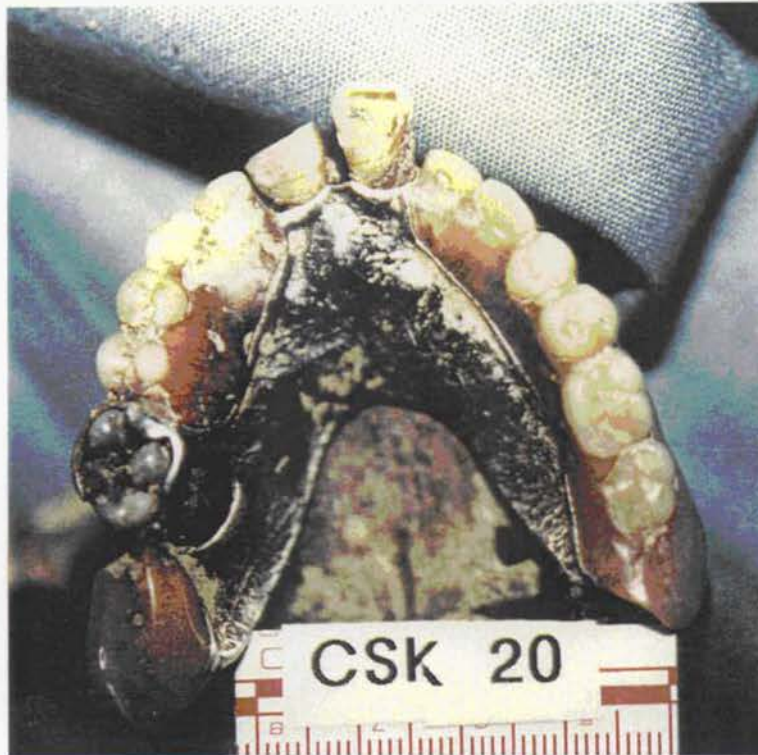
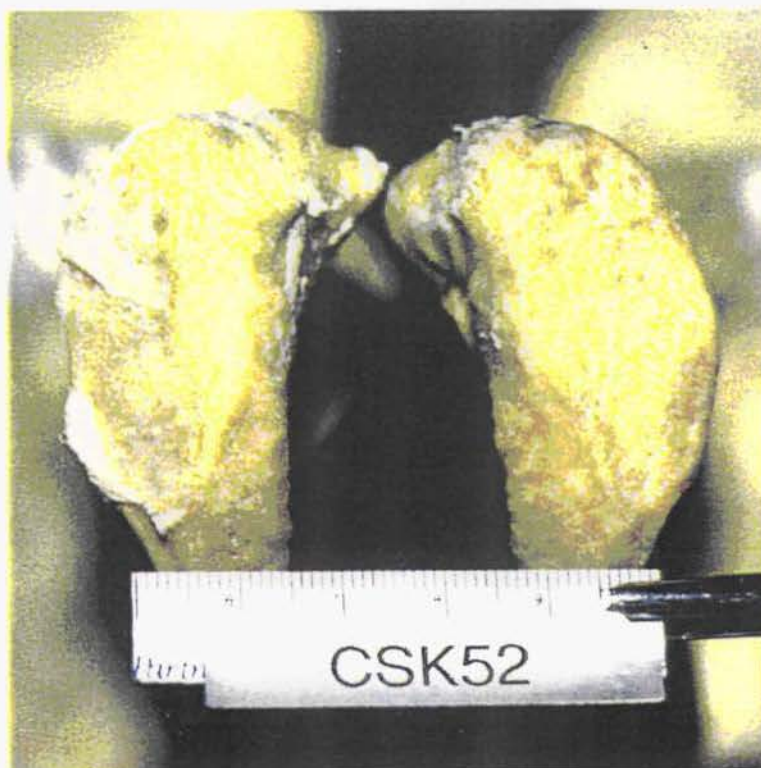
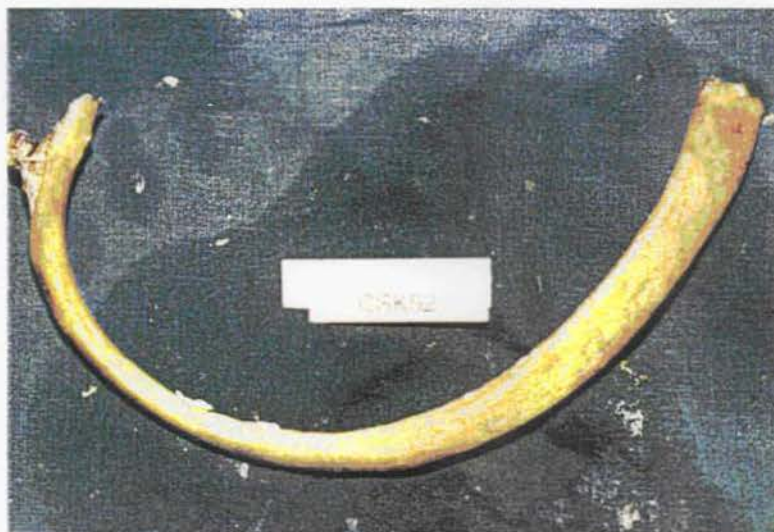


Figure 11. Photo, case example CSK-20, occlusal view of maxillary dentition with dental appliance *in situ* (exam roll 16, exp. 17)



A.



B.



C.

Figure 12. Anthropology, case example CSK-52. (A) Photograph, pubic symphysis (27-66 yrs.) (exam roll 26, exp.17). (B) Photograph, rib (26-32 yrs.) (exam roll 26, exp.15). (C) Photograph inset, distal end of rib from Photo B (exam roll 26, exp.16).

f. Specimens and Evidence Collected

- (1) Anthropology specimens to be photographed
- (2) DNA samples. These consisted of 3-5 cms segments of the femur or humerus and two (2) molars or premolars
- (3) Clothing and personal items

4. Anthropological Examination

The anthropologist was responsible for cleaning, reconstruction, and analysis of skeletal material for assessment of age, stature, handedness, trauma, and in the absence of external genitalia, determination of sex of the individual. In cases where the remains were completely skeletonized, the entire skeleton was submitted to the anthropologist for analysis. In the case of fleshed remains, selected skeletal elements were routinely submitted to the anthropologist, with additional elements submitted when deemed appropriate by the pathologist, anthropologist or other specialists involved. Discussion regarding analysis occurred regularly between anthropologists. Final results of the anthropologist's examination were included in the autopsy report after being submitted to the pathologist (who performed the autopsy) for review and signature.

Standard osteometric instruments were used in the collection of all metric anatomical information.

a. Skeletal Elements Examined

- (1) Maxillae and mandible for dental charting
- (2) Pubic symphyses for age determination
- (3) The left 3rd, 4th and 5th ribs (with an intact sternal end) for age determination
- (4) Left femur for stature estimation
- (5) Claviculae for age determination
- (6) Scapulae, humeri, radii and ulnae from both sides for handedness and, when necessary for stature estimation

When any of the above elements were not available, substitutions were utilized. If the left femur was damaged or otherwise unsuited for maximum length measurements, the following substitutions were made (in order of preference and left preferred over right): right femur, left tibia, right tibia, a humerus, radius or ulna. If some arm/shoulder bones were unavailable/unsuitable, all of those that were suitable were used. If an entire side was unavailable/unsuitable for handedness then only the contralateral clavicle was analyzed. If pubic bones and ribs were unavailable/unsuitable, other elements useful for aging, such as auricular

surface, cranial sutures, vertebral lipping, etc., were utilized. All specimens, except for those collected for purposes of DNA analysis, were returned to the respective body bags from which they originated.

Additional specimens were submitted to the anthropologist for reconstruction or evaluation at the behest of the pathologist when:

- (1) Elements manifested trauma, pathology, and or individuating marks
- (2) Elements were needed to augment or substitute elements used in routine analysis.
- (3) In cases where sex could not be determined by the pathologist, all available fragments of the pelvis and skull were analyzed.

Specimens were removed in the following manner:

- (1) Maxillae were cut away from the cranium unless the cranium was also needed for sex determination (then the skull was left intact). The cutting of the maxilla was done at a level that left the roots of the molars intact.
- (2) Pubic bones were cut through the superior and inferior rami as close to the ilium and ischium, respectively, as possible. When the pelvis was also needed for the determination of the sex, the innominate bones were removed intact.
- (3) Ribs were cut approximately 5 cm from the sternal end and through the cartilage as close to the sternum as possible.
- (3) Mandibles, scapulae and tubular bones were removed intact.
- (4). DNA samples were collected by an anthropologist who gave them to the evidence technician to be packaged in a paper bag. All specimens and samples collected were marked and appropriately secured until release for transport to PHR's DNA laboratory.

b. Sex Determination

In cases where the sex could not be determined during the autopsy, general morphological features of the pelvis as characterized by Bass (1987) and Phenice (1969) were utilized.

c. Age Estimation

Estimation of age at time of death was determined from examination of: the medial clavicles with attached manubrium; the anterior 3rd and/or 4th ribs with attached segment of sternum; and the pubic symphysis, bilateral (cut along superior and inferior rami).

Standards utilized to determine age from the pubic symphysis were those of Brooks and Suchey (1990). Iscan and Loths' (1984) rib phases and the stage of sternal clavicular epiphyseal union (Owings, Webb and Suchey 1985) were also recorded. If additional elements were used they were also recorded. The final mean age estimation is based on a combination of the aforementioned factors plus the anthropologist's own judgement; the minimum and maximum age are equal to minus one and plus one standard error, respectively. The final range given is the anthropologist's opinion of the individual's biological age, and does not exclude the possibility that the true "calendar" age is outside the range given.

d. Stature

Stature estimate was made based on the morphological length of the left femur, or substitution, according to Trotter (1958, 1970) and Trotter and Gleser (1952, 1977). For the sake of uniformity, all estimated statures made at the time of autopsy were recalculated using original long bone lengths recorded by anthropologists. They appear in Table 5 with plus/minus two standard errors. No adjustment of standard error was made for particular individuals' predicted stature value. No correction of the stature estimate was made for particular individuals' age.

e. Ancestry

Basic ancestry, relevant to Caucasoid, Negroid or Mongoloid characteristics, was determined through features of cranial and postcranial non-metric morphology (Bass 1987).

f. Trauma

A brief description of antemortem, perimortem, and postmortem trauma, pathologies and other notable skeletal conditions were recorded. The pathologist and anthropologist discussed their

respective interpretations of these manifestations. It was the primary responsibility of the pathologist to provide detailed assessments of trauma and pathologies in his/her autopsy report. Concerning perimortem trauma, the anthropologist provided corroborating testimony.

Trauma was detailed through description and photograph documentation and was categorized as ante-, peri-, and postmortem in origin. Bone damage due to taphonomic processes, such as weathering, abrasion through movement, and animal and insect activity, was also recorded.

g. Handedness

Muscle markings, overall robusticity, joint surface area, and bone lengths were used to assess handedness. (Traits that appear useful for the Cerska grave population include: the clavicle on dominant side is shorter and more robust; posterior lip of the glenoid fossa is more medially displaced on the scapula from the dominant side; one or more of the long bones on the dominant side is longer than its opposite.)

h. Unique Characteristics

Morphological features considered unique and individualistic were identified and noted as a permanent record of the individual. Anomalies and individuating marks, if noted, were recorded.

i. Dental Charting

The anthropologist was responsible for dental charting. The anthropologist also analyzed dentition, as needed, to facilitate, e.g., age assessment, pathology/trauma, race, and or commingling likelihood.

The above was the level of analysis in so far as the skeletal system was concerned. Further analysis would have entailed complete skeletonization, a difficult and time-consuming process. Results were reported to the Bosnian authorities for follow-up in the identification process as they deemed necessary.

B. Summary of Examination Findings

A detailed postmortem report for individual remains appears in Appendix C. A summary of postmortem findings and manner of death appears in Table 6. The following is a summary analysis of the individual reports.

1. Number of Individuals, Age, Sex and Ancestry.

One-hundred fifty male Caucasoid individuals were exhumed from the Cerska grave. Age range distribution for these individuals is shown in Figure 13. Mean age distribution is shown in Figure 14. For twenty-four individuals, only minimum age could be determined, therefore, mean age was not determined. Ages for individual remains are indicated in Table 6.

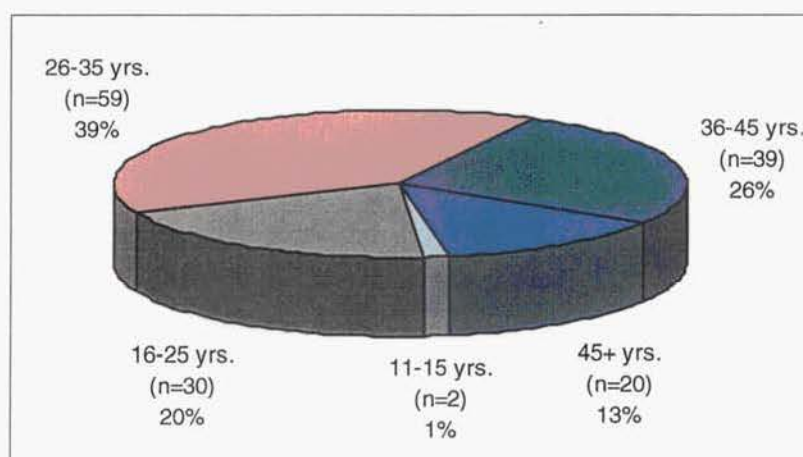


Figure 13. Victim age distribution for individuals recovered from Cerska grave site (n=150).

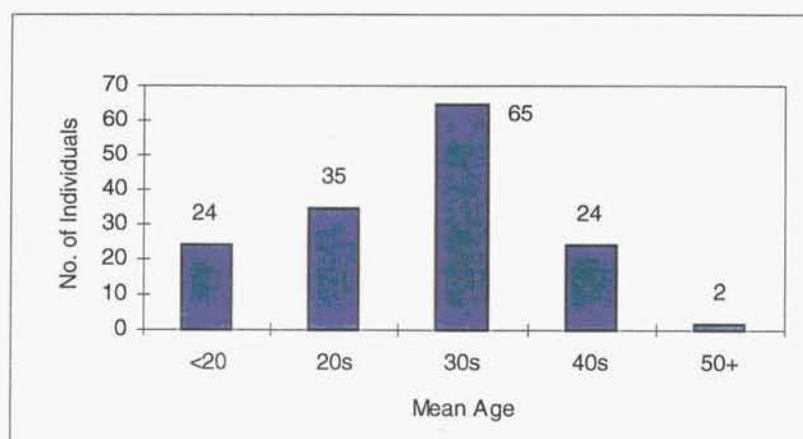


Figure 14. Victim mean age distribution for individuals recovered from Cerska grave site (n=150)

Table 6. Cerska Examination Summary Log.

Case No.	Date	Anth.†	Sex	Estimated Age			Estimated Stature			Path.‡	Manner of Death	Cause of Death	Ligatures
				Min.	Max.	Mean	Estimate*	-2 S.E.	+2 S.E.				
CSK 01	25-Jul-96		M	40	50	45	174.69	168.15	181.23	LSH	Homicide	MHV GSW of pelvis and extremities	n
CSK 02	25-Jul-96		M	25	30	27.5	168.84	162.30	175.38	NP	Homicide	HV GSW of left cranium and extremities	n
CSK 03	25-Jul-96		M	18	23	21	176.84	170.30	183.38	NP	Homicide	HV GSW right occiput	n
CSK 04	25-Jul-96		M	20	25	23	175.65	169.11	182.19	LSH	Homicide	HV GSW left parietal cranium	n
CSK 05	25-Jul-96		M	20	25	23	176.36	169.82	182.90	NP	Homicide	HV GSW right forehead and extremities	n
CSK 06	26-Jul-96		M	17	21	19	173.03	166.49	179.57	LSH	Homicide	HV GSW of facial cranium	y
CSK 07	26-Jul-96		M	40	50	45	174.22	167.68	180.76	NP	Homicide	HV GSW of right cranium, torso and extremities	n
CSK 08	26-Jul-96		M	30	40	35	171.36	164.82	177.90	LSH	Homicide	HV GSW right femur	n
CSK 09	26-Jul-96		M	17	23	19	183	176.46	189.54	NP	Homicide	HV GSW of cranium	y
CSK 10	26-Jul-96		M	14	16	15	ND	n/a	n/a	LSH	Homicide	HV GSW right temporal cranium	y
CSK 11	26-Jul-96		M	25	30	28	163.51	156.97	170.05	NP	Homicide	HV GSW of right cranium	y
CSK 12	27-Jul-96		M	40	50	45	178.03	171.49	184.57	NP	Homicide	HV GSW of right cranium	n
CSK 13	27-Jul-96		M	17	21	19	175.65	169.11	182.19	LSH	Homicide	HV GSW right temporal cranium	n
CSK 14	27-Jul-96		M	24	28	26	172.55	166.01	179.09	NP	Homicide	MHV GSW base of cranium, right chest wall, left arm	n
CSK 15	28-Jul-96		M	45	55	50	178.26	171.72	184.80	LSH	Homicide	HV GSW cranium	n
CSK 16	27-Jul-96		M	30	40	35	170.89	164.35	177.43	LSH	Homicide	HV GSW, left posterior parietal cranium	n
CSK 17	27-Jul-96		M	30	40	35	ND	n/a	n/a	LSH	Homicide	HV GSW of face with penetration of thorax	n
CSK 18	27-Jul-96		M	25	30	28	164.94	158.40	171.48	NP	Homicide	HV GSW face, spine, torso and extremities	y
CSK 19	28-Jul-96		M	27	37	31	170.65	164.11	177.19	NP	Homicide	HV GSW cranium, torso and extremities	y
CSK 20	28-Jul-96		M	40	50	45	192.31	185.77	198.85	NP	Homicide	HV GSW left occipital cranium, spine, and extremities	y
CSK 21	28-Jul-96		M	25	35	30	170.89	164.35	177.43	LSH	Homicide	MHV GSW chest	y
CSK 22	28-Jul-96		M	35	45	40	ND	n/a	n/a	YM	Homicide	GSW head	y
CSK 23	6-Aug-96		M	22	32	26	172.79	166.25	179.33	LSH	Homicide	HV GSW occipital of cranium	n
CSK 24	28-Jul-96		M	30	40	35	175.65	169.11	182.19	YM	Homicide	MGSW head, torso and extremities	n
CSK 25	7-Aug-96		M	26	32	28	177.79	171.25	184.33	LSH	Homicide	HV GSW posterior cranium	n
CSK 26	29-Jul-96		M	20	30	25	170.89	164.35	177.43	NC	Homicide	HV GSW skull, hip and spine	n
CSK 27	7-Aug-96		M	14	18	16	ND	n/a	n/a	LSH	Homicide	HV GSW posterior cranium	n
CSK 28	29-Jul-96		M	25	35	30	170.65	164.11	177.19	NP	Homicide	HV GSW of right parietal cranium	n
CSK 29	29-Jul-96		M	25	35	30	170.65	164.11	177.19	NP	Homicide	HV GSW of right parietal cranium	n

† Anthropologists Dorothy Gallagher, Juereana Hoffman, Susan Jimenez, Clea Koff, Laura Sinfeld, and Michael Warren performed analysis as a team.

‡ EC = Ellen Clark; OO = Onder Ozkalipici; BP = Basil Perdue; JG = James Grieve; BS = Bulent Sam; NC = Niriellage Chandrasiri; LSH = L. S. Harris;

YM = Yvonne Milewski; RHK = Robert Kirschner

* As stated in the Methodology section (IV A 4 d), all estimated statures made at the time of autopsy were recalculated when femur length was available using $Y=2.38(\text{femur length})+61.41$ with standard error of 3.27.

Table 6. Cerska Examination Summary Log.

Case No.	Date	Anth.†	Sex	Estimated Age			Estimated Stature			Path.‡	Manner of Death	Cause of Death	Ligatures
				Min.	Max.	Mean	Estimate*	-2 S.E.	+2 S.E.				
CSK 30	7-Aug-96		M	20	30	25	171.6	165.06	178.14	NC	Homicide	GSW chest and pelvis	n
CSK 31	31-Jul-96		M	15	19	17	176.84	170.30	183.38	NP	Homicide	MHV GSW pelvis	y
CSK 32	7-Aug-96		M	13	15	14	ND	n/a	n/a	YM	Homicide	MGSW head and torso	n
CSK 33	6-Aug-96		M	25	30	28	168.272	161.73	174.81	YM	Homicide	MGSW head and torso	n
CSK 34	11-Aug-96		M	35	50	42	169.938	163.40	176.48	NC	Homicide	HV GSW head and pelvis	n
CSK 35	11-Aug-96		M	25	35	30	ND	n/a	n/a	NC	Homicide	HV GSW head, right side of pelvis, left forearm, both thighs	n
CSK 36	29-Jul-96		M	40	50	45	164.702	158.16	171.24	LSH	Homicide	HV GSW posterior cranium	n
CSK 37	7-Aug-96		M	25	30	28	180.41	173.87	186.95	NC	Homicide	HV GSW back of head, right femur, right upper chest area	y
CSK 38	29-Jul-96		M	14	18	16	178.03	171.49	184.57	NP	Homicide	HV GSW occiput, pelvis and extremities	n
CSK 39	7-Aug-96		M	33	42	37	177.554	171.01	184.09	RHK	Homicide	MHV GSW	y
CSK 40	11-Aug-96		M	35	50	42	178.03	171.49	184.57	YM	Homicide	MGSW head, torso	y
CSK 41	9-Aug-96		M	25	35	30	166.606	160.07	173.15	YM	Homicide	MGSW head and torso	n
CSK 42	9-Aug-96		M	25	35	30	171.128	164.59	177.67	NC	Homicide	HV GSW left side of head and left side of hip	n
CSK 43	6-Aug-96		M	17	20	18.5	178.268	171.73	184.81	YM	Homicide	MGSW head, torso	n
CSK 44	30-Jul-96		M	18	22	20	164.94	158.40	171.48	NP	Homicide	HV GSW left occiput, pelvis and left femur	n
CSK 45	30-Jul-96		M	25	35	30	163.75	157.21	170.29	LSH	Homicide	HV GSW right parietal cranium	y
CSK 46	7-Aug-96		M	30	40	35	ND	n/a	n/a	RHK	Homicide	MHV GSW	n
CSK 47	29-Jul-96		M	30	40	35	174.936	168.40	181.48	NP	Homicide	HV GSW forehead, face and extremities	n
CSK 48	30-Jul-96		M	25	30	28	ND	n/a	n/a	NP	Homicide	MHV GSW right occiput, torso and extremities	y
CSK 49	31-Jul-96		M	40	50	45	ND	n/a	n/a	LSH	Homicide	HV GSW left temporal cranium	n
CSK 50	11-Aug-96		M	40	55	47	175.65	169.11	182.19	NC	Homicide	HV GSW head and hip	n
CSK 51	31-Jul-96		M	25	30	28	ND	n/a	n/a	LSH	Homicide	HV GSW (IV) of thorax	y
CSK 52	31-Jul-96		M	28	38	33	173.27	166.73	179.81	NP	Homicide	MHV GSW cranium, vertebrae, extremities	n
CSK 53	11-Aug-96		M	25	35	30	165.654	159.11	172.19	YM	Homicide	GSW head and torso	n
CSK 54	11-Aug-96		M	20	25	23	171.604	165.06	178.14	NC	Homicide	HV GSW head, sacrum, right clavicle	y
CSK 55							case number not assigned						
CSK 56							case number not assigned						
CSK 57	11-Aug-96		M	35	45	40	176.126	169.59	182.67	YM	Homicide	MGSW head, torso	y
CSK 58	11-Aug-96		M	25	35	30	168.034	161.49	174.57	YM	Homicide	GSW head	n

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YM = Yvonne Milewski; RHK = Robert Kirschner

* As stated in the Methodology section (IV.A.4.d), all estimated statures made at the time of autopsy were recalculated when femur length was available using $Y = 2.38(\text{femur length}) + 61.41$ with standard error of 3.27.

Table 6. Cerska Examination Summary Log.

Case No.	Date	Anth.†	Sex	Estimated Age			Estimated Stature			Path.‡	Manner of Death	Cause of Death	Ligatures
				Min.	Max.	Mean	Estimate*	-2 S.E.	+2 S.E.				
CSK 59	1-Aug-96		M	25	30	29	ND	n/a	n/a	NP	Homicide	HV GSW right occiput, left chest, lower extremities	y
CSK 60	7-Aug-96		M	16	20	18	174.936	168.40	181.48	YM	Homicide	GSW head	n
CSK 61	31-Jul-96		M	20	30	25	170.176	163.64	176.72	NP	Homicide	HV GSW left occiput	n
CSK 62	11-Aug-96		M	25	35	30	173.508	166.97	180.05	YM	Homicide	MGSW head and torso	n
CSK 63	31-Jul-96		M	25	30	28	ND	n/a	n/a	LSH	Homicide	HV GSW left occipital cranium	y
CSK 64	8-Aug-96		M	14	18	16	ND	n/a	n/a	NC	Homicide	HV GSW pelvis, right humerus and left tibia	n
CSK 65	7-Aug-96		M	45	55	50	ND	n/a	n/a	RHK	Homicide	MGSW	n
CSK 66	11-Aug-96		M	25	35	30	171.128	164.59	177.67	YM	Homicide	GSW head	n
CSK 67	9-Aug-96		M	35	50	42	ND	n/a	n/a	NC	Homicide	HV GSW hip and spine	y
CSK 68	12-Aug-96		M	25	35	30	163.036	156.50	169.58	YM	Homicide	GSW head and neck	n
CSK 69	9-Aug-96		M	30	40	35	ND	n/a	n/a	NC	Homicide	HV GSW hip	n
CSK 70	8-Aug-96		M	25	30	28	ND	n/a	n/a	NC	Homicide	HVGSW back of head	y
CSK 71	8-Aug-96		M	30	40	35	177.078	170.54	183.62	YM	Homicide	MGSW head, torso	n
CSK 72	8-Aug-96		M	25	30	28	166.368	159.83	172.91	YM	Homicide	MGSW head, neck and torso	y
CSK 73	8-Aug-96		M	25	30	27	168.51	161.97	175.05	RHK	Homicide	MHV GSW	n
CSK 74	1-Aug-96		M	30	40	35	169.224	162.68	175.76	NP	Homicide	HV GSW right occiput and extremities	n
CSK 75	8-Aug-96		M	25	30	28	173.032	166.49	179.57	YM	Homicide	MGSW torso	y
CSK 76	9-Aug-96		M	25	35	30	175.65	169.11	182.19	YM	Homicide	MGSW wounds to head and torso	n
CSK 77	9-Aug-96		M	25	35	30	169.7	163.16	176.24	YM	Homicide	MGSW head, torso	n
CSK 78	8-Aug-96		M	15	19	17	ND	n/a	n/a	NC	Homicide	HV GSW across head, neck and hip	n
CSK 79	12-Aug-96		M	20	30	25	168.986	162.45	175.53	NC	Homicide	HV GSW head, neck and hip	n
CSK 80	8-Aug-96		M	25	35	30	175.412	168.87	181.95	RHK	Homicide	MHV GSW	n
CSK 81	11-Aug-96		M	25	35	30	ND	n/a	n/a	YM	Homicide	MGSW head	n
CSK 82	16-Aug-96		M	40	55	47.5	174.936	168.40	181.48	JG	Homicide	GSW head with trauma to chest, right arm, pelvis, right leg c/w firearm injuries	y
CSK 83	11-Aug-96		M	25	35	30	178.744	172.20	185.28	NC	Homicide	HV GSW head and sacrum	n
CSK 84	15-Aug-96		M	35	45	40	167.796	161.26	174.34	EC	Homicide	GSW head and neck	n
CSK 85	12-Aug-96		M	25	35	30	163.75	157.21	170.29	NC	Homicide	HV GSW head	y
CSK 86	8-Aug-96		M	30	45	37	170.652	164.11	177.19	RHK	Homicide	MHV GSW	n
CSK 87	9-Aug-96		M	25	35	30	170.414	163.87	176.95	NC	Homicide	HV GSW back of head	n
CSK 88	9-Aug-96		M	25	35	30	161.37	154.83	167.91	YM	Homicide	MGSW head, torso	n

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CSKSUM.EXM printed 9/28/1998

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Table 6. Cerska Examination Summary Log.

Case No.	Date	Anth.†	Sex	Estimated Age			Estimated Stature			Path.‡	Manner of Death	Cause of Death	Ligatures
				Min.	Max.	Mean	Estimate*	-2 S.E.	+2 S.E.				
CSK 89	9-Aug-96		M	30	40	35	180.41	173.87	186.95	RHK	Homicide	MHV GSW	n
CSK 90	12-Aug-96		M	35	50	42	173.27	166.73	179.81	NC	Homicide	MHV GSW head and hip	n
CSK 91	12-Aug-96		M	35	50	42	ND	n/a	n/a	YM	Homicide	MGSW head, torso	n
CSK 92	12-Aug-96		M	17	21	19	168.034	161.49	174.57	YM	Homicide	MGSW head, torso	n
CSK 93	CSK 93 renumbered as CSK-100												
CSK 94	20-Aug-96		M	25	35	30	168.51	161.97	175.05	BS	Homicide	MGSW	y
CSK 95	13-Aug-96		M	35	45	40	ND	n/a	n/a	YM	Homicide	MGSW head, pelvis	y
CSK 96	12-Aug-96		M	30	40	35	167.082	160.54	173.62	NC	Homicide	HV GSW head	y
CSK 97	13-Aug-96		M	20	25	23	180.41	173.87	186.95	JG	Homicide	GSW head and left leg	n
CSK 98	20-Aug-96		M	35	45	40	169.462	162.92	176.00	BP	Homicide	MGSW	n
CSK 99	15-Aug-96		M	30	40	35	171.128	164.59	177.67	EC	Homicide	Multiple injuries consistent with gunshot trauma of head and torso	n
CSK 100	12-Aug-96		M	25	35	30	168.272	161.73	174.81	YM	Homicide	MGSW head and torso	n
CSK 101	19-Aug-96		M	17	21	19	172.08	165.54	178.62	JG	Homicide	c/w GSW to head, spine, arms, pelvis and right leg	n
CSK 102	13-Aug-96		M	25	35	30	ND	n/a	n/a	NC	Homicide	HV GSW head	n
CSK 103	18-Aug-96		M	25	35	30	165.892	159.35	172.43	JG	Homicide	c/w GSW head	n
CSK 104	14-Aug-96		M	25	40	32	ND	n/a	n/a	YM	Homicide	MGSW torso	n
CSK 105	13-Aug-96		M	25	35	30	167.32	160.78	173.86	EC	Homicide	GSW head and torso	n
CSK 106	13-Aug-96		M	30	40	35	ND	n/a	n/a	EC	Homicide	GSW neck, torso and extremities	n
CSK 107	17-Aug-96		M	28	38	33	169.7	163.16	176.24	JG	Homicide	Unascertainable. Presumed head injury with pelvic and spinal trauma consistent with firearms injuries	n
CSK 108	13-Aug-96		M	30	45	37	165.416	158.88	171.96	JG	Homicide	Head injury c/w GSW	y
CSK 109	21-Aug-96		M	40	55	47	172.556	166.02	179.10	BS	Homicide	MGSW	n
CSK 110	17-Aug-96		M	45	50	47	179.696	173.16	186.24	EC	Homicide	GSW trunk and extremities w/ complex fracture of face and cranium c/w GSW	n
CSK 111	18-Aug-96		M	33	42	37.5	169.7	163.16	176.24	EC	Homicide	GSW head, neck, torso and extremities	n
CSK 112	19-Aug-96		M	30	45	37	173.746	167.21	180.29	JG	Homicide	c/w GSW head w/ injury to chest, right arm, left leg	n
CSK 113	17-Aug-96		M	35	50	42	183.266	176.73	189.81	JG	Homicide	Head injury c/w GSW, multiple other injuries	y
CSK 114	13-Aug-96		M	20	25	23	ND	n/a	n/a	JG	Homicide	GSW head w/ spine, pelvis, right leg consistent w/ firearms injury	n

† Anthropologists Dorothy Gallagher, Juerena Hoffman, Susan Jimenez, Clea Koff, Laura Sinfeld, and Michael Warren performed analysis as a team.

‡ EC = Ellen Clark; OO = Onder Ozkalipci; BP = Basil Perdue; JG = James Grieve; BS = Bulent Sam; NC = Nirilage Chandrasiri; LSH = L. S. Harris;

YM = Yvonne Milewski; RHK = Robert Kirschner

* As stated in the Methodology section (IV.A.4.d), all estimated statures made at the time of autopsy were recalculated when femur length was available using $Y = 2.38(\text{femur length}) + 61.41$ with standard error of 3.27.

Table 6. Cerska Examination Summary Log.

Case No.	Date	Anth.†	Sex	Estimated Age			Estimated Stature			Path.‡	Manner of Death	Cause of Death	Ligatures
				Min.	Max.	Mean	Estimate*	-2 S.E.	+2 S.E.				
CSK 115	13-Aug-96		M	25	30	28	174.698	168.16	181.24	NC	Homicide	HV GSW across right hip area	y
CSK 116	12-Aug-96		M	25	35	30	ND	n/a	n/a	NC	Homicide	HV GSW head	n
CSK 117	19-Aug-96		M	25	35	30	168.51	161.97	175.05	EC	Homicide	GSW head	n
CSK 118	13-Aug-96		M	30	40	35	ND	n/a	n/a	YM	Homicide	MGSW head, torso	y
CSK 119	19-Aug-96		M	15	23	19	179.22	172.68	185.76	EC	Homicide	Multiple skeletal injuries, c/w GSW head, torso, and extremities	n
CSK 120	12-Aug-96		M	25	35	30	164.702	158.16	171.24	YM	Homicide	MSGW head and torso	n
CSK 121	15-Aug-96		M	30	40	35	168.51	161.97	175.05	NC	Homicide	HV GSW head, pelvis, left leg and left forearm	n
CSK 122	13-Aug-96		M	14	18	16	ND	n/a	n/a	EC	Homicide	GSW head, trunk and extremities	n
CSK 123	13-Aug-96		M	16	23	19.5	176.126	169.59	182.67	NC	Homicide	HVGSW head	n
CSK 124	19-Aug-96		M	35	45	40	169.224	162.68	175.76	EC	Homicide	GSW head and torso	n
CSK 125	17-Aug-96		M	25	35	30	158.514	151.97	165.05	EC	Homicide	GSW head and torso	n
CSK 126	20-Aug-96		M	40	55	47	170.652	164.11	177.19	BS	Homicide	MGSW	y
CSK 127	13-Aug-96		M	14	18	16	176.364	169.82	182.90	NC	Homicide	HV GSW head and left femur	n
CSK 128	19-Aug-96		M	30	45	37	173.27	166.73	179.81	JG	Homicide	Head injury c/w GSW w/ wound s to right arm, pelvis, right leg, c/w GSW	n
CSK 129	13-Aug-96		M	13	15	14	ND	n/a	n/a	JG	Homicide	Head injury c/w GSW	y
CSK 130	21-Aug-96		M	25	30	27	177.078	170.54	183.62	OO	Homicide	MGSW head, torso, pelvis and extremities	n
CSK 131	20-Aug-96		M	25	40	32	173.27	166.73	179.81	OO	Homicide	MGSW head, torso, left femur	n
CSK 132	21-Aug-96		M	20	30	25	175.412	168.87	181.95	EC	Homicide	GSW head, torso and extremities	y
CSK 133	21-Aug-96		M	15	20	17	173.27	166.73	179.81	BP	Homicide	MGSW	n
CSK 134	20-Aug-96		M	20	30	25	160.418	153.88	166.96	OO	Homicide	MGSW head	n
CSK 135	20-Aug-96		M	28	38	33	176.84	170.30	183.38	BP	Homicide	MGSW	n
CSK 136	14-Aug-96		M	20	30	25	179.22	172.68	185.76	NC	Homicide	HV GSW head	n
CSK 137	17-Aug-96		M	35	50	42	173.508	166.97	180.05	JG	Homicide	GSW head w/ injuries to pelvis, legs, and right hand c/w GSW	n
CSK 138	20-Aug-96		M	25	35	30	ND	n/a	n/a	BP	Homicide	MGSW	n
CSK 139	17-Aug-96		M	25	40	32	167.32	160.78	173.86	EC	Homicide	GSW head and torso	n
CSK 140	21-Aug-96		M	30	45	37	170.89	164.35	177.43	EC	Homicide	GSW head, extremities, torso	n
CSK 141	18-Aug-96		M	15	23	19	180.648	174.11	187.19	EC	Homicide	GSW of extremities and torso, w/ complex cranial fractures also c/w GSW	n

† Anthropologists Dorothy Gallagher, Juerena Hoffman, Susan Jimenez, Clea Koff, Laura Sinfield, and Michael Warren performed analysis as a team.

‡ EC = Ellen Clark; OO = Onder Ozkalipci; BP = Basil Perdue; JG = James Grieve; BS = Bulent Sam; NC = Niriellage Chandrasiri; LSH = L. S. Harris;

YM = Yvonne Milewski; RHK = Robert Kirschner

Table 6. Cerska Examination Summary Log.

Case No.	Date	Anth.†	Sex	Estimated Age			Estimated Stature			Path.‡	Manner of Death	Cause of Death	Ligatures
				Min.	Max.	Mean	Estimate*	-2 S.E.	+2 S.E.				
CSK 142	15-Aug-96		M	26	42	34	172.318	165.78	178.86	JG	Homicide	Head injury c/w GSW w/injuries to pelvis, chest and limbs c/w firearms injuries	n
CSK 143	21-Aug-96		M	25	35	30	166.606	160.07	173.15	BS	Homicide	MGSW	n
CSK 144	15-Aug-96		M	35	40	37	163.274	156.73	169.81	JG	Homicide	Head injury c/w GSW	n
CSK 145	14-Aug-96		M	12	16	14	ND	n/a	n/a	EC	Homicide	GSW head, torso and extremities	n
CSK 146	17-Aug-96		M	30	35	33	ND	n/a	n/a	EC	Homicide	Multiple Blunt Trauma c/w GSW head, torso, and extremities	n
CSK 147	15-Aug-96		M	17	20	18.5	182.076	175.54	188.62	EC	Homicide	Multiple skeletal injuries consistent with GSW head, torso, and extremities	y
CSK 148	14-Aug-96		M	25	40	32	160.656	154.12	167.20	JG	Homicide	GSW head, trunk and right leg	n
CSK 149	20-Aug-96		M	18	25	21	171.366	164.83	177.91	OO	Homicide	MGSW head, torso and pelvis	n
CSK 153	22-Aug-96		M	25	35	30	173.032	166.49	179.57	OO	Homicide	MGSW	y
CSK 154	22-Aug-96		M	25	40	32	175.412	168.87	181.95	BP	Homicide	MGSW	n
CSK 150	21-Aug-96		M	20	30	25	169.938	163.40	176.48	OO	Homicide	MGSW head, torso and pelvis	y
CSK 151	21-Aug-96		M	15	20	17	176.364	169.82	182.90	BS	Homicide	MGSW	n
CSK 152	14-Aug-96		M	20	30	25	169.462	162.92	176.00	EC	Homicide	GSW w/ extensive destruction of face, cranium and left leg	n

† Anthropologists Dorothy Gallagher, Juereña Hoffman, Susan Jimenez, Clea Koff, Laura Sinfeld, and Michael Warren performed analysis as a team.
‡ EC = Ellen Clark; OO = Onder Ozkalpici; BP = Basil Perdue; JG = James Grieve; BS = Bulent Sam; NC = Niriellage Chandrasiri; LSH = L. S. Harris;
YM = Yvonne Milewski; RHK = Robert Kirschner

2. Clothing and Personal Effects

The majority of individuals were dressed in civilian clothing (one military jacket and two military-type trousers were noted). No military insignias were noted. Personal effects consisted of items of religious affiliation, documents, smoking paraphernalia (e.g., tobacco tins and lighters), handkerchiefs, and pouches containing dried fruit, metal and stones. Items indicating religious affiliation are presented in Section V, Table 7. Documents containing leads to identification are presented in Section V, Table 8 (pertinent translations appear in Appendix B-1-c)

3. External Examinations

Condition of the remains, as characterized by the pathologists, ranged from complete skeletons to putrefied bodies, the latter signifying saponified soft tissue with no disarticulation or skeletonization. The majority of individuals were in varying degrees of skeletonization with residual soft tissue characterized as putrefied or saponified. Thirty-four individuals were completely articulated, that is, all body parts were united and not disconnected due to the process of skeletonization. The remaining one-hundred and sixteen remains were in varying states of disarticulation with separated body parts due to decomposition and the skeletonization process.

4. Internal Examinations

Internal organs were noted present in five individuals. Decompositional changes had rendered internal organs for the remaining 145 individuals unidentifiable.

5. Additional Findings: Ligatures

A total of 48 wire ligatures was recovered from 38 individuals (25.33%). Of the 48 ligatures, 24 (16.0%) were in place, binding individuals' wrists behind their backs. Twenty-three (15.33%) were directly associated with individuals. One individual (CSK-20) was bound around the ankles. Ligatures were twisted around the wrists or lower forearms, and bound the victims' arms and hands behind their backs. Some ligatures consisted of individual circlets of wire wrapped around each wrist, with the circlets connected by a third twist of wire. A summary of ligatures found on or associated with remains exhumed from the Cerska grave is shown in Appendix B-2-a: Transfer of Evidence to ICTY.

6. Description of Trauma

Figure 15 show the frequency of trauma to affected body areas, as recorded on the autopsy reports. In the majority of cases, individuals received multiple gunshot wounds.

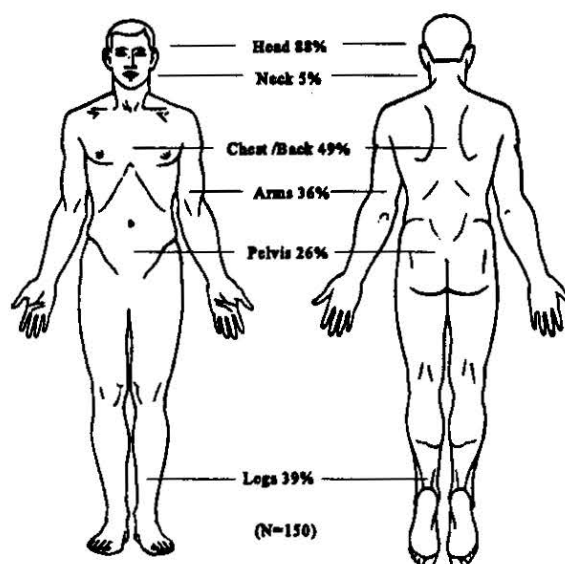


Figure 15. Frequency of trauma to affected region, expressed as percentage of total individuals recovered from the Cerska grave site (n=150). (Compiled from "Trauma" section of the Autopsy Reports.)

7. Cause and Manner of Death

Cause and manner of death according to the Autopsy Reports for 149 of the 150 individuals was gunshot wound(s). For one individual, the cause of death was undetermined. The manner of death for all individuals was homicide. Cause and manner of death by individual is shown in Table 6.

Affected areas of gunshot trauma are indicated in Figure 16. Gunshot wounds to the head and other multiple sites accounted for 50% (33%) of deaths, gunshot wounds to the head and neck accounted for 43 (29%) of deaths, and gunshot wounds of the head and thorax for 29 individuals (19%).

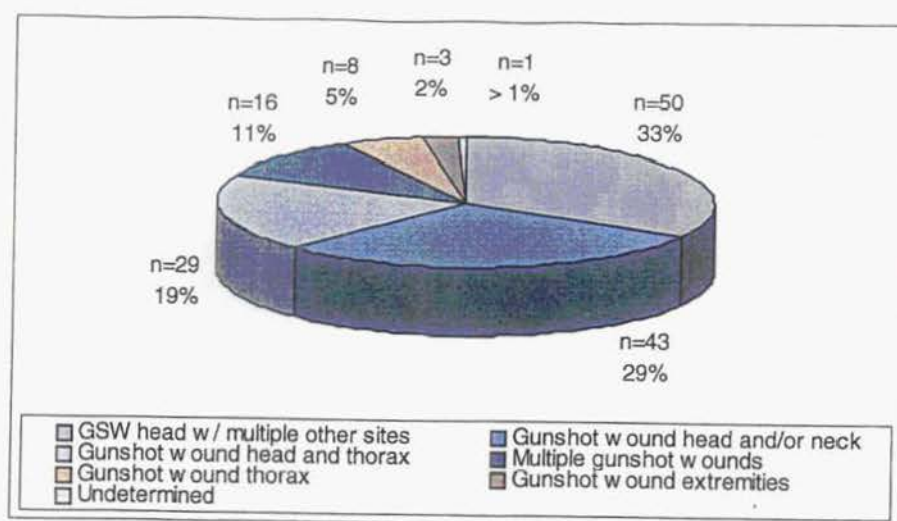


Figure 16. Cause of death, by affected region, for individuals recovered from the Cerska grave site (n=150).

8. Pathology Summary²

There was little to suggest forms of killing other than gunshot wounds. Loss of soft tissue made evaluation of beating or other so-called torture impossible to detect. There was no bony injury adequate to permit such a diagnosis.

The majority of the bodies were shot with multiple bullets, as evidenced by examination by x-ray and autopsy. Most, if not all of the gunshot wounds were from relatively small caliber, high energy ammunition. In addition to the multiple shots noted on most bodies, the large proportion of shots to the extremities, especially to the legs, allow an inference of automatic/semi-automatic weapons and "spray" shooting, i.e., firing from moderate gun-to-target distance. The numbers and distribution of shots allow for several possible scenarios. The high percentage of gunshot wounds to the head (88%), may be suggestive of dropping the victims with spray shooting, followed by coup de grace head shots.

The cause of death for the 149 individuals recovered from the Cerska grave was gunshot wound(s). The cause of death for one individual was undetermined. The manner of death for all individuals was homicide.

²

This entry is an excerpt from the "Pathology Summary." For complete signed and dated text see "Pathology Summary," first entry of Appendix C, Volume III.

V. IDENTIFICATION OF VICTIMS

Confirmation of personal identity of victims was not pursued by the ICTY/PHR forensic team due to a lack of an antemortem database from which to make comparisons. However, in anticipation of such a database being established, personal identifying information and all leads to identification was collected from victims and made available to the appropriate authorities from the Antemortem Database Project. Another level of identification, that of religious affiliation was documented by the forensic team.

A. Evidence of Religious Affiliation

Evidence of religious affiliation was inferred from an individuals' possession of religious paraphernalia, such as amulets³, prayer beads, or documents indicating membership in a religious community. Table 7 indicates such items and the individuals from whom they were recovered.

Table 7. Items Indicating Affiliation to the Muslim Religion.

Case No.	Item Type	Description
CSK-25	document	official papers (Islamic Community of Sarajevo, 49849)
CSK-40	prayer beads	wooden prayer beads
CSK-60	Koran and prayer	cloth pouch, (1) red plastic Koran holder and prayer on separate paper
CSK-73	prayer beads	wooden prayer beads
CSK-119	talisman/pouch	small leather square pouch sewn on sides with green thread, white on front
CSK-126	Koran	miniature, in polywrap
CSK-128	prayer muska	prayer, typed and signed "Saban Smajic" Tokoljaci
CSK-128	prayer beads	wooden prayer beads
CSK-142	prayer beads	wooden prayer beads

³

A Muslim amulet, popularly called a *zapis*, or note, was present on three individuals. A *zapis* is a small piece of paper with a verse or phrase from the Qur'an written in Arabic and carried as a charm or amulet. The paper is wrapped into a triangle in a small piece of red cloth which has been oiled or waxed to make it more resistant. A *zapis* is attached by a safety pin as close to the person's body as possible, usually to the undershirt. A *zapis* may also be referred to as a *hamajija*, which is a more general term for amulet, or as a *musema*, an Arabic word for oilcloth which describes the wrapper around the note (Bringa, 1955).

B. Personal Identification

No personal identifications were confirmed by the ICTY/PHR Forensic Team. All identifying information, contained on the autopsy report, including anthropological data, clothing descriptions, descriptions of personal effects, and the originals or copies of documents were given to the Bosnian authorities. Documents providing leads to tentative identification are indicated in Table 8.

Positive identification of Cerska grave victims is being pursued through Bosnian government authorities with the support of the Antemortem Database Project (AMDB) and the Identification Project directed by PHR. Postmortem information supportive of personal identification, gathered during the postmortem examinations, will be compared with antemortem information collected in interviews with families. Selected tentative identifications will be followed-up by DNA comparisons between putative family members and victim tissue samples.

At the time of this writing, positive identity, using DNA sequencing approaches, has been confirmed for five individuals, CSK-65, CSK-69, CSK-138, CSK-142, and CSK-144, via mitochondrial DNA comparison of survivor and victim samples.

Table 8. Documents Providing Leads to Tentative Identification, and Results of DNA Analysis, for Cerake Grave Site.⁴

Case Number	Putative Identity	Type of Document	ICRC Number	Tissue obtained for DNA analysis from remains	Relative obtained for DNA analysis	Results of DNA test of remains vs relative	Likelihood of relationship v. coincidence
CSK-12	Saban Karic	medical referral	BAZ-903596	tooth and bone		ncp	
CSK-24	Senahid Entijic	official document		tooth and bone		ncp	
CSK-34	Sawir Jusuf	tobacco tin		tooth and bone		ncp	
CSK-65	Mehmed Momisevic Ajisa Momisevic	identification card identification card military exemption card	possibly BAZ-900629 possibly BAZ-102274	bone	brother	match	14 to 1
CSK-69	Vukic Hasib	identification card		tooth	sister	match	70 to 1
CSK-73	Ejub Dedic (sender) Adil Kadric and Suljo Hasanovic	letter official document	BAZ-912502	tooth and bone		ncp	
CSK-82	Mudo Meminovic	identification card driver's license	BAZ-913006	tooth and bone	sister	in progress	
CSK-128	Mehic Beriz(z) Mehic Beriz(z) and Ibrahim Ibrahimovic (sender) Mehic (Beriz)	identification card letter receipt	BAZ-910946	bone		ncp	
CSK-138	Mehic Beriz(z) ⁵ Muradif Muharm	refugee card		tooth and bone	sister	match	>1300 to 1
CSK-142	Osmo Muminovic	drivers license identification card military orders		tooth and bone	sister	match	>1300 to 1
CSK-144	Arif Nukic	bank deposit slip transportation ticket identification card		tooth and bone	maternal cousin	match	>1300 to 1
CSK-154	Hajro Sinanovic Izet Sinanovic	official court document		tooth and bone		ncp	

ncp = no comparison possible because no surviving relative obtained

⁴ Names are from translations of documents at postmortem exam, Appendix B-1-c.⁵ Mehic Beriz identified as CSK-138; name bearing documents recovered with remains of CSK-128.

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VI. SUMMARY CONCLUSIONS

A. The Grave

The Cerska grave was located on an embankment directly off the southeast of the road through the Cerska Valley which departs from the main highway slightly north of Nova Kasaba. The overburden was shallow and the grave primary and undisturbed. Victims were deposited on the surface of the embankments then covered with soil from the opposite side of the road.

B. Time Since Death and Circumstances of Disposition

Victims were executed at the site. Evidence, consisting of cartridge casings collected from the northeast side of the road, are consistent with the victims having been placed at the southeast roadside, directly adjacent to the embankment, and shot by killers standing on the opposite side of the road. The victims either fell or were rolled off the roadside, onto the incline of the embankment. Many came to rest against each other, or piled atop one another. The bodies were subsequently covered by soil removed from the embankment across the road, opposite the burial site. Movement of the soil to bury the bodies had been accomplished by earthmoving equipment. In the process of removal of soil from one side of the road to the other, numerous cartridge casings were incorporated into the overburden of the grave.

It is unreliable to estimate the time since death of buried individuals recovered from a mass grave due to the stabilizing effect on the grave environment on preservation of the remains and the interaction of a multitude of factors which contrive to affect the rate of decomposition. Included among these factors are the postmortem interval between death and burial, condition of the body at time of death, presence of clothing, depth of burial, and compaction and nature of the grave fill. Conditions of the Cerska grave were its relatively shallow depth, the coarse overburden, exposure of the grave surface to direct sun, and efficient drainage of the area. Considering these environmental factors, the condition of the remains from the Cerska grave are consistent with a minimal time since death of approximately one year, however, a longer period cannot be ruled out.

Further support of the approximately one year interval of time since death is based upon the presence of victims who were last reported alive in July of 1995 and who were killed and buried in the grave at the same time as their grave-mates. This time period of death was provided by name and date bearing documents recovered from victims. A cross check between the ICRC *Missing Persons on the Territory of Bosnia and Herzegovina* and the names on documents found three individuals, CSK-12, CSK-65 and CSK-82, whose identity have not been confirmed were last

seen alive in July 1995. A fourth individual, CSK-138, who was positively identified, was reported missing on July 12, 1995.

The hands of 24 individuals (16%) were bound behind their backs by wire and wire was associated with the remains of an additional 22 (14.67%). Additionally, the ankles of two individuals were bound with wire.

C. Number of Individuals, Sex, Age, and Ancestry

The remains of one hundred-fifty Caucasoid individuals were removed from the Cerska grave. All individuals were male. Mean ages of individuals ranged from 14 to 50.

D. Cause and Manner of Death

The cause of death for 149 of the 150 victims was gunshot wounds. The cause of death for one individual was undetermined. Considering circumstances of the scene and burial, manner of death is considered homicide for all individuals.

E. Identification of Victims

One hundred-forty seven victims were dressed completely in civilian clothing.

Indication of Muslim religious affiliation was found for nine individuals.

Leads to personal identification for twelve individuals were established by name-bearing documents removed from the clothing of victims.

At the time of this writing, positive identity, using DNA sequencing approaches, has been confirmed for five individuals, CSK-65, CSK-69, CSK-138, CSK-142, and CSK-144, via mitochondrial DNA comparison of survivor and victim samples.

VII. ACKNOWLEDGMENTS

The investigation was led by forensic anthropologist William D. Haglund, Ph.D., Senior Forensic Advisor for the International Criminal Tribunal for the Former Yugoslavia (ICTY). Andrew Thomson, M.D., was ICTY Coordinator for the mission. Autopsy examinations were carried out under the direction of Robert H. Kirschner, M.D., Director of the International Forensic Program of Physicians for Human Rights (PHR). Finalization of cause and manner of death, as well as editing of final autopsy reports, occurred under the direction of ICTY legal advisor, Peter McCloskey. The summary of findings of trauma and cause and manner of death was authored by Page Hudson, M.D.

Assisting the investigation were John Gems, ICTY Forensic Investigator, and Jose-Pablo Baraybar, anthropologist, contributed from the International Criminal Tribunal for the Former Yugoslavia.

Rudolf Schouten, photographer from *Politie Midden en West Brabant*, Netherlands, was provided by the Dutch government.

Experts provided by Physicians for Human Rights included:

Igor Begovic, M.D., logistics, Zagreb, Croatia
Cyril Chan, radiology/autopsy technician, Medical Examiner's Office,
Edmonton, Alberta, Canada
Nirielle Chandrasiri, M.D., forensic pathologist, National Poisons Information
Center, Columbo, Sri Lanka
Ellen Clark, M.D., forensic pathologist, Sierra Pathology Association, Reno,
Nevada, U.S.A.
Tim Curran, M.S., evidence technician, New Haven, Connecticut, U.S.A.
David Del Pino, B.A., anthropologist, Texas, U.S.A.
Dorothy Gallagher, B.A., anthropologist, graduate student, Louisiana State
University, Louisiana, U.S.A.
James Grieve, M.D., forensic pathologist, University of Aberdeen, Aberdeen,
Scotland
Lawrence Harris, M.D., forensic pathologist, ECU School of Medicine,
North Carolina, U.S.A.
Juerene Hoffman, M.A., anthropologist, graduate student, University of Arizona,
Arizona, U.S.A.
Sue Jiminez, M.A., anthropologist, Partners in Crime Forensic Anthropology
Consultants, New Mexico, U.S.A.
Clea Koff, B.A., anthropologist, graduate student, University of Nebraska,
Nebraska, U.S.A.
Peter Knudson, autopsy technician, University of Odense, Odense, Denmark;
Robert McNiel, autopsy technician, University of Glasgow, Glasgow, Scotland;

Yvonne Milewski, M.D., forensic pathologist, Office of the County Medical Examiner, New York, New York, U.S.A.
Fernando Moscoso, archeologist, *Equipo de Anthropologia Forense de Guatemala*, Guatemala City, Guatemala
Onder Ozkalipci, M.D., forensic pathologist, Turkiye Insan Haklari Vakfi, Istanbul, Turkey
Nizam Peerwani, M.D., forensic pathologist, Office of the County Medical Examiner, Tarrant County, Texas, U.S.A.
Basil Purdue, FRC Path., forensic pathologist, University of Edinburgh, Scotland;
Fiona Rainforth, autopsy technician, formerly of Hull City Mortuary, Hull, Great Britain
Ronnie Redic, autopsy technician, Tarrant County Office of the County Medical Examiner, Texas, U.S.A.
Molly Ryan, data entry, graduate student, University of California, Berkeley, California, U.S.A.
Bulent Sam, M.D., forensic pathologist, *AdliTip Kurumu*, Istanbul, Turkey
Rebecca Saunders, Ph.D., archeologist, Museum of Natural Science, Louisiana State University, Louisiana, U.S.A.
Laura Sinfield, M.A. archeologist, Great Britain
Ronald Turnbull, M.S., evidence technician, Metropolitan Police, London, Great Britain
Michael Warren, anthropologist, graduate student, University of Florida, U.S.A.

Gratitude is expressed to the Boston staff of Physicians for Human Rights for their administrative support throughout the investigation. Logistics for the investigation were provided by Carl Rhodes and Geoff Bucknall of the European Union, with support from Komble Bhagwan, Cosme Parxa, and Neil Tomo of the ICTY. Mine assessment on the Cerska site was provided by Norwegian Peoples' Aid. Assistance in clearing vegetation from the grave was provided by the ICTY through a contract with Dine Core. Twenty-four hour security for the grave site was provided by ICTY staff. Personal safety of team members while at the grave site was provided by the NATO Implementation Force (IFOR). Funding for this project was provided by United Nations Development Program (UNDP) with assistance from ICTY.

Collation and preparation of this report was done under the direction of William D. Haglund, Ph.D. The Pathology Summary reflects the sole authorship of forensic pathologist Page Hudson, M.D. Other contributors to various sections of this report were:

Site Report, General Methods Section:

Rebecca Saunders, Ph.D., Mapping (with assistance from Terance Winemiller for map production);
Rudolf Schouten, Photography;

Field Report:

Rebecca Saunders, Ph.D., Site Description, Site Preparation, Recovery of
Surface Evidence, Excavation and Summary;

Postmortem Examination Section:

Tim Curran, M.S., Evidence Collection;

Nizam Peerwani, M.D., Autopsy Methods, and

Robert H. Kirschner, M.D., General Methods;

Identification, Results of DNA Analysis:

Michele Harvey, Ph.D.

Mary-Claire King, Ph.D.

Roddy Grant of NBBJ in Seattle, WA, provided graphic design support. A final draft of the completed document was reviewed by Physicians for Human Rights, with final editing by Barbara Ayotte of PHR. Special thanks is extended to Jake Sherman for his invaluable assistance in the compilation of this report.

VIII. LITERATURE CITED

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