

Archaeology of Conflicts

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Second phase of non-destructive archaeological survey of field fortification features in the neighbourhood of the Smolkov Artillery Fort¹

Jiří Juchelka

The Silesian Museum is working on a research project focused on mapping of the World War II sites in the territory of Czech Silesia and Northeast Moravia, more precisely in the Moravian-Silesian Region and in the Jeseník District within the Olomouc Region. Particularly the eastern and central parts of this territory represent an area of key importance with distinct evidence of fights from the end of World War II within the liberation operations of the Red Army. The sites are often disturbed by agriculture, forestry or some other economic activity. Many locations are already affected by erosion and the most of them gradually undergo, or already underwent, the process of archaeologisation. A conspicuous and still surviving evidence and symbol of fights during the World War II is the line of Czechoslovak border fortifications (so-called Beneš Wall) built in 1935–1938, which the Nazi army seized together with the borderland before the outbreak of the war and then used for its own purposes. At the end of the war, German forces established a system of light field fortification features in the neighbourhood of the main fortification line. These structures perish much faster than the stable system of Czechoslovak fortifications and they are paid zero attention from the perspective of heritage preservation. However, they represent an important source of information and complete our knowledge of the course of individual military operations, of the number of deployed soldiers, but also of leisure activities of soldiers, etc. These anthropogenic relics can only be studied on very few locations, whose terrain was not noticeably modified or destroyed in the past. One of these places is the military area in the cadastral district of Smolkov (Moravian-Silesian Region, Opava District) in the vicinity of the entrance blockhouse MO-Sm-S 41, in a location called “Nad Valchou”. The site is situated halfway between the towns of Opava and Ostrava, more precisely 14 km east of Opava and 13 km west of Ostrava, in a hilly region south of the built-up area of the municipality of Smolkov (Fig. 1).

The whole area is property of the Army of the Czech Republic, therefore it is fenced in, guarded and inaccessible virtually from the end of the World War II. From the perspective of archaeology of the Modern Period, or archaeology of conflicts, this location is suitable for studying the historical development of the place since the beginning of the build-up of the Czechoslovak fortification system in 1935 or 1936 until almost the present day (due to helpfulness of the Army of the Czech Republic, particularly the commandant Maj. Leoš Koutný from the Military Unit Háj ve Slezsku, to whom we express our gratitude, we were allowed to explore the field fortification features in the military area).

An important part of our activity, besides the study of warfare issues, is documentation. Although the area is inaccessible, unused for economic purposes and left without any distinct human inputs,

¹ This publication was funded by the Ministry of Culture of the Czech Republic within the institutional support for the Long-Term Conceptual Development of the Research Organisation Silesian Museum (DKRVO, MK000100595).

the area below the entrance blockhouse has been mapped (marked as sector B). During the second research season, two sectors of the area were examined. Sector A (Fig. 2), situated west of the sector examined in 2018, and sector C (Fig. 3), adjoining the eastern side of sector B. The whole area below the fortress in the south-western part of present-day military area (Fig. 4) is thus explored.

The characteristics and historical development of the site were published in an article summarising the results of the first research phase in 2018 (see Juchelka – Piętoň in print). This text therefore contains only the most important information.

The researched site is situated at the north-eastern edge of the Vítkov Uplands, in a hilly landscape at an elevation of 288 m ASL, on the left bank of the rivers Kremlice and Hrabynka, southeast of the hill Paděrov (spot height 339 m ASL) and west of Ostrá hůrka (spot height 315 m ASL), in the neighbourhood of the road Hrabyně – Háj ve Slezsku. Geological subsoil in this area is mainly composed of shales, siltstones and greywackes overlaid by grey-brown clay, which in some places reaches a thickness of more than one and a half metres. The area is now overgrown with a mixed forest stand without the floor layer, with the absence of shrubs. A shale outcrop is only visible at the western edge of the military area.

The Smolkov Artillery Fort is composed of five aboveground features and an extensive system of underground corridors. It consists of the infantry blockhouse MO-S 40 “Nad silnicí”, the artillery blockhouse MO-S 39 “U trigonometru”, the rotary artillery turret MO-Sm-S 38 “V lese”, the artillery

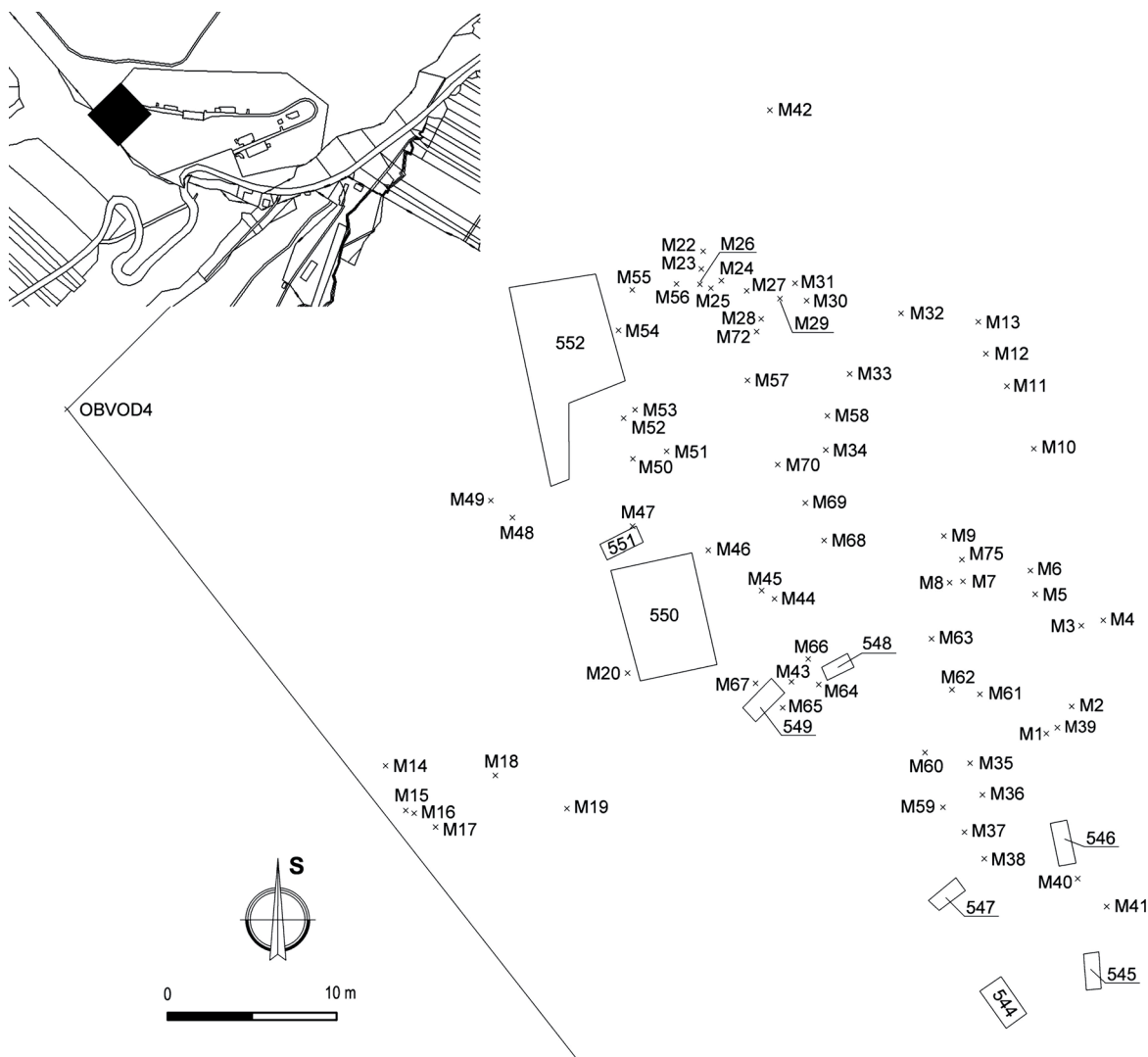


Fig. 2. Sector A. Defensive fighting positions and localisation of finds (top left is a detail of the cadastral map, the highlighted place shows the examined area).

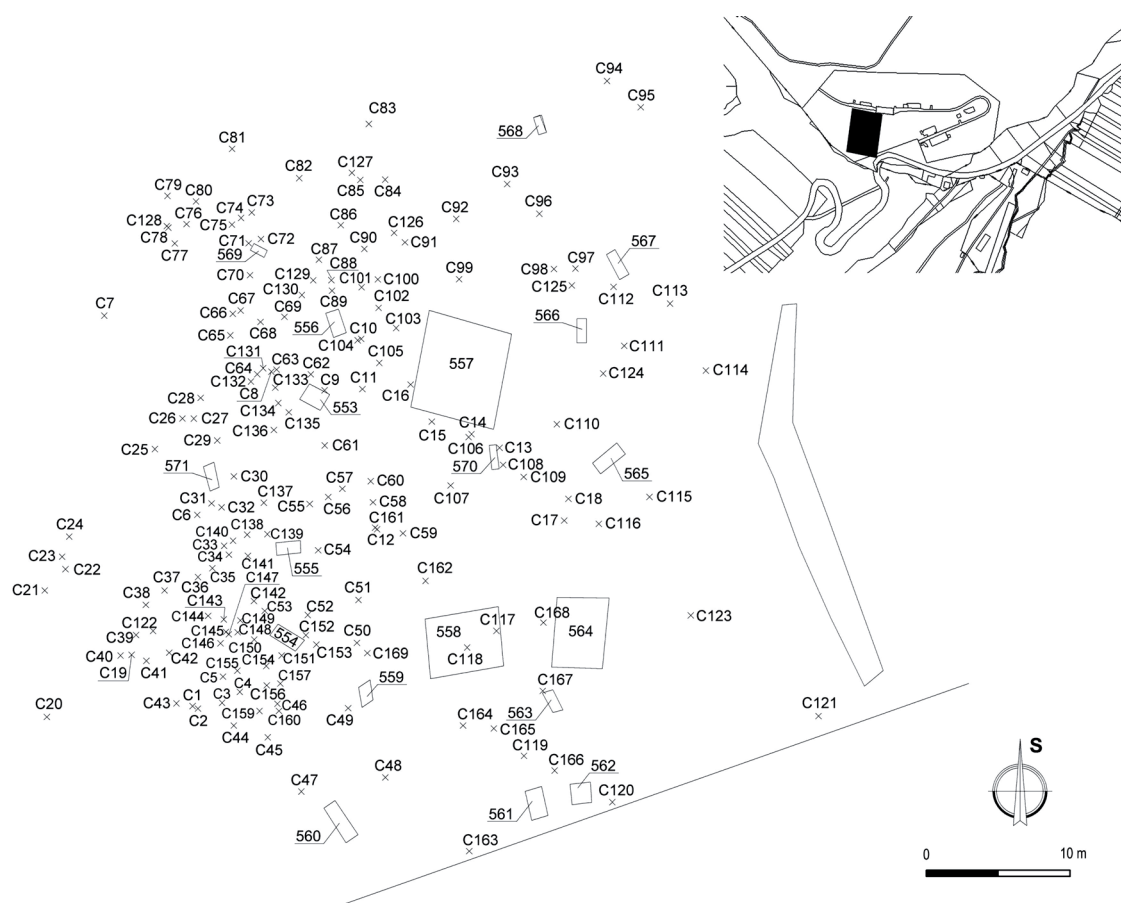


Fig. 3. Sector C. Defensive fighting positions and localisation of finds (top right is a detail of the cadastral map, the highlighted place shows the examined area).

observation post MO-S 42 “Nad Hájem” and the entrance blockhouse MO-S 41 “Nad Valchou”. The build-up of the complex began after 19 February 1936. The construction works were entrusted to the firm of Ing. Alois Beneš from Přerov after a selection procedure. After 8 October 1938, the almost completely finished fortress was involuntarily handed over to the Nazi army.

However, our research is focused on the field fortification features in the surroundings of the fortress and their use during severe fights. The preserved reports and historical records of the 4th Ukrainian Front from the time from 7 April to 1 August 1945 inform us that in January 1945, the German army began to build “a network of field strongpoints”. This “network” was actively used during military operations, inclusive of the facility of the entrance blockhouse in Smolkov, which was connected with field fortification elements through a trench and was used by the Wehrmacht soldiers as an area for rest and medical treatment (Durčák a kol. 2012, 181–183), defending the rear in the case of a rapid retreat. The fights in the surroundings of the fortress have taken place on 18 April and lasted until 28 April 1945. German soldiers gradually abandoned the fortress at the night from 26 to 27 April 1945.

Archaeological research

The survey of sectors A and C was based on the same standards as the survey conducted in 2018 (cf. Juchelka – Piętoň in print). Our aim in the second research season was to capture the spatial relations, identify individual elements of the field fortification system in the landscape (shell scrapes for gunmen,

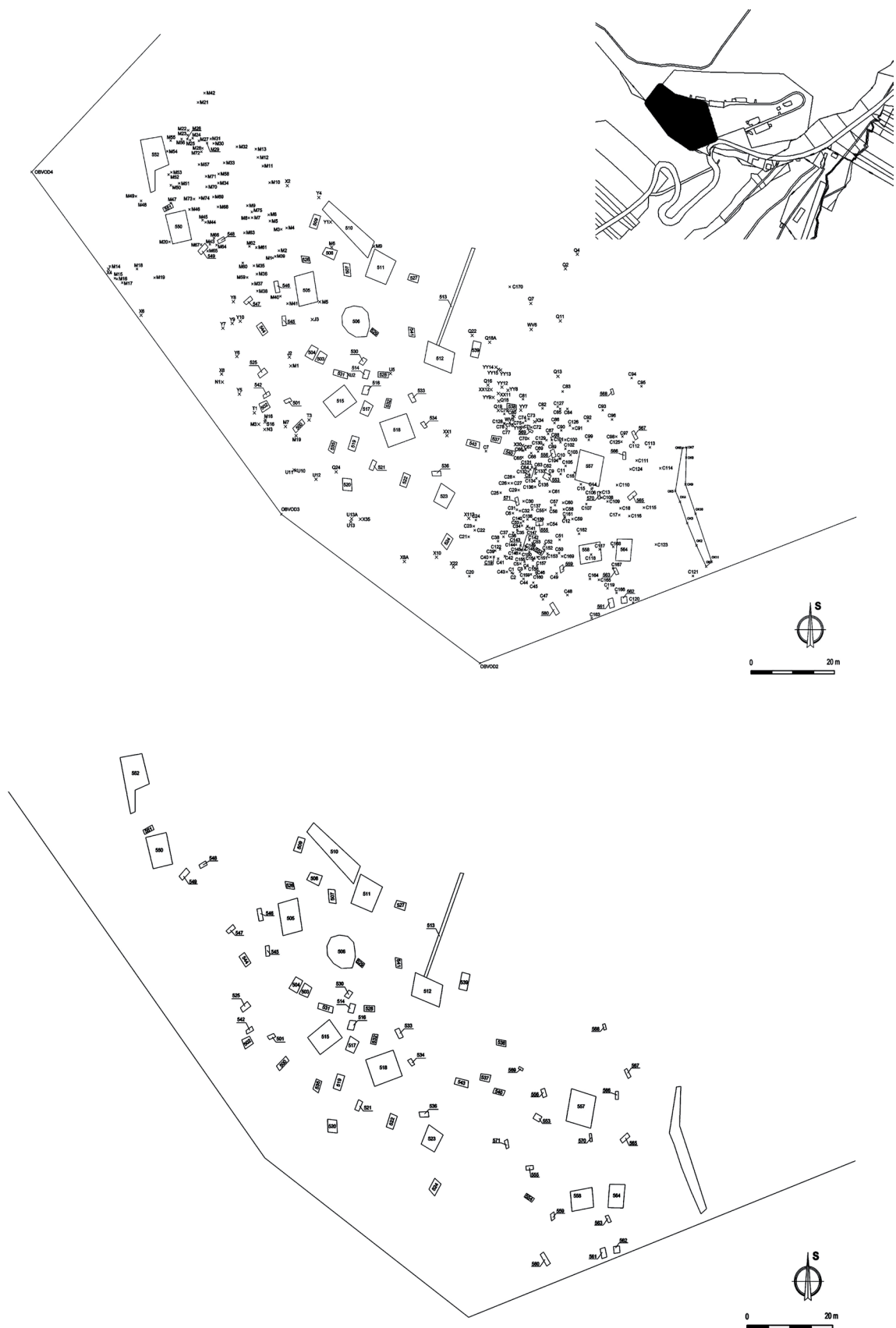


Fig. 4. The result of conducted research. Top right is a detail of the cadastral map, the highlighted place shows the examined area.

large timber-and-earth shelters, trenches, missile craters, etc.) and carry out a metal detector survey in the studied area. Individual terrain anthropogenic activities, including the surface finds collected with the help of a metal detector, were surveyed by the GeoMAX Zenith35 Pro GSM-UHF-TAG appliance and the acquired data were digitised and subsequently processed in the AutoCAD programme. The result is a map visualising the spatial relations (Fig. 4). Documentation of terrain features, their photogrammetric surveying and detection of proportions and dimensions were carried out with the help of an aerial photography drone DJI PHANTOM 4 PRO+. In the course of the 2nd phase of research we identified a total of 23 defensive fighting positions (7 in sector A and 16 in sector C) and 5 large timber-and-earth shelters (2 in sector A and 3 in sector C) (see Tab. 1–4).

OBJECT NUMBER	DESCRIPTION/FUNCTION	DIMENSIONS l/w/d (in meters)
544	one-man or two-men fighting hole	2,00x2,00x1,00
545	skirmisher's trench	2,40x1,30x0,20
546	skirmisher's trench	3,10x1,40x0,30
547	skirmisher's trench	2,00x1,20x0,20
548	skirmisher's trench; with one smaller trench and wall on the west side	1,60x1,20x0,30; the length of the whole situation is 3,30
549	skirmisher's trench	2,20x1,20x0,30
551	skirmisher's trench	2,00x1,5x0,40

Tab. 1. List of small field features from sector A.

OBJECT NUMBER	DESCRIPTION/FUNCTION	DIMENSIONS l/w/d (in meters)
550	Large timber-and-earth shelter	8,00x7,00x1,50
552	Large timber-and-earth shelter	7,00x8,00x1,50

Tab. 2. List of large field features from sector A.

OBJECT NUMBER	DESCRIPTION/FUNCTION	DIMENSIONS l/w/d (in meters)
553	skirmisher's trench	2,00x1,20x0,40
554	position for kneeling (?) soldier	2,00x1,20x0,60
555	one-man fighting hole	2,10x1,00x0,80
556	one-man fighting hole or position for kneeling soldier	2,10x0,80-1,00x0,70
559	one-man fighting hole or position for kneeling soldier	2,60x1,20x0,70
560	skirmisher's trench	3,00x1,20x0,40
561	position for kneeling soldier	1,80x1,50x0,60
562	two positions for kneeling soldiers	1,40x 1,40 a 1,30x0,60 a 0,45
563	skirmisher's trench	2,00x1,20x0,40
565	skirmisher's trench	2,60x1,20x0,45
566	skirmisher's trench	1,90x0,90x0,45
567	skirmisher's trench	2,00x1,10x0,40
568	skirmisher's trench	1,80x1,00x0,35
569	position for kneeling soldier	1,70x1,20x0,55
570	skirmisher's trench	2,00x1,10x0,40
571	skirmisher's trench	2,00x0,50x0,45

Tab. 3. List of small field features from sector C.

OBJECT NUMBER	DESCRIPTION/FUNCTION	DIMENSIONS l/w/d (in meters)
557	Large timber-and-earth shelter	8,00x7,00x1,90
558	Large timber-and-earth shelter	6,20x5,50x1,20
564	Large timber-and-earth shelter	4,20x3,20x1,00

Tab. 4. List of large field features from sector C.

Typology of examined features

Interpretation of several features is complicated because the non-destructive survey does not identify the original depth of individual field fortification features. Particularly in small defensive fighting positions it is difficult to identify whether they were intended for a standing, lying-down or kneeling soldier, or whether they were used by only one or by more personnel at the same time (cf. Zubalík – Komoróczy – Lukáš – Vlach 2017, 323). Despite this shortcoming we can identify basic types of features, which were detected on the site.

The terminology of fortifications is based on military engineering manuals or relevant articles dealing with the given type of field fortification features (e.g. Zubalík – Komoróczy – Lukáš – Vlach 2017; here also references to other literature and sources) and the names for individual groups of field fortification features were used according to Czech nomenclature based on Czechoslovak or Czech manuals (e.g. http://polni-opevneni.websnadno.cz/g-v-2_part_1.pdf; Ministerstvo národní obrany 1938). Very useful was an anonymous review of the article summarizing the results of the 1st phase of research (Juchelka – Piętoń in print), which contained very valuable advices regarding the identification and subsequent terminology of large defensive fighting positions including an overview of foreign literature.

Defensive fighting positions

In the sectors A and C, a total of 23 defensive fighting positions (7 in sector A and 16 in sector C) were identified (the appearance of individual features is sufficiently described in Zubalík – Komoróczy – Lukáš – Vlach 2017, 323–327, also with references to other literature). These defensive fighting positions had an elongated shape, the length was about 2.00 m and the width varied around 1.20 m (Fig. 5).

The depth mostly varied between 0.30 and 0.50 m (shell scrapes). Features whose preserved depth was more than 0.80 or 1.00 m were probably intended for a standing soldier and in those whose depth varied between 0.50 and 0.80 m we can rather suppose a soldier in kneeling position (see Tab. 1 and Tab. 3). Larger features, such as feature 546 (sector A), whose length reached 3.10 m, can be regarded as defensive fighting positions for more personnel. None of these features was explored by a destructive method and this fact must be taken into consideration in interpretations. We do not know the real original depth of these features and their remaining dimensions are not clearly identified, either. All interpretations must therefore be regarded as presumptive conclusions. The fact, on the other hand, is the localisation of individual defensive fighting positions in the studied area. The terrain in the whole examined area is sloping down from the north to the south, that is, from the entrance blockhouse MO-S 41 “Nad Valchou” towards individual field shelters and farther southwards to the road. This enabled the defenders to lay out individual defensive fighting positions in several rows one above the other, so that they had a very good view of the surroundings and covered the firing area to a maximum possible extent. For a higher efficiency of covering the area “in the front”, it was necessary to choose the proper orientation of defensive fighting positions. The presumed advance of the Red Army towards

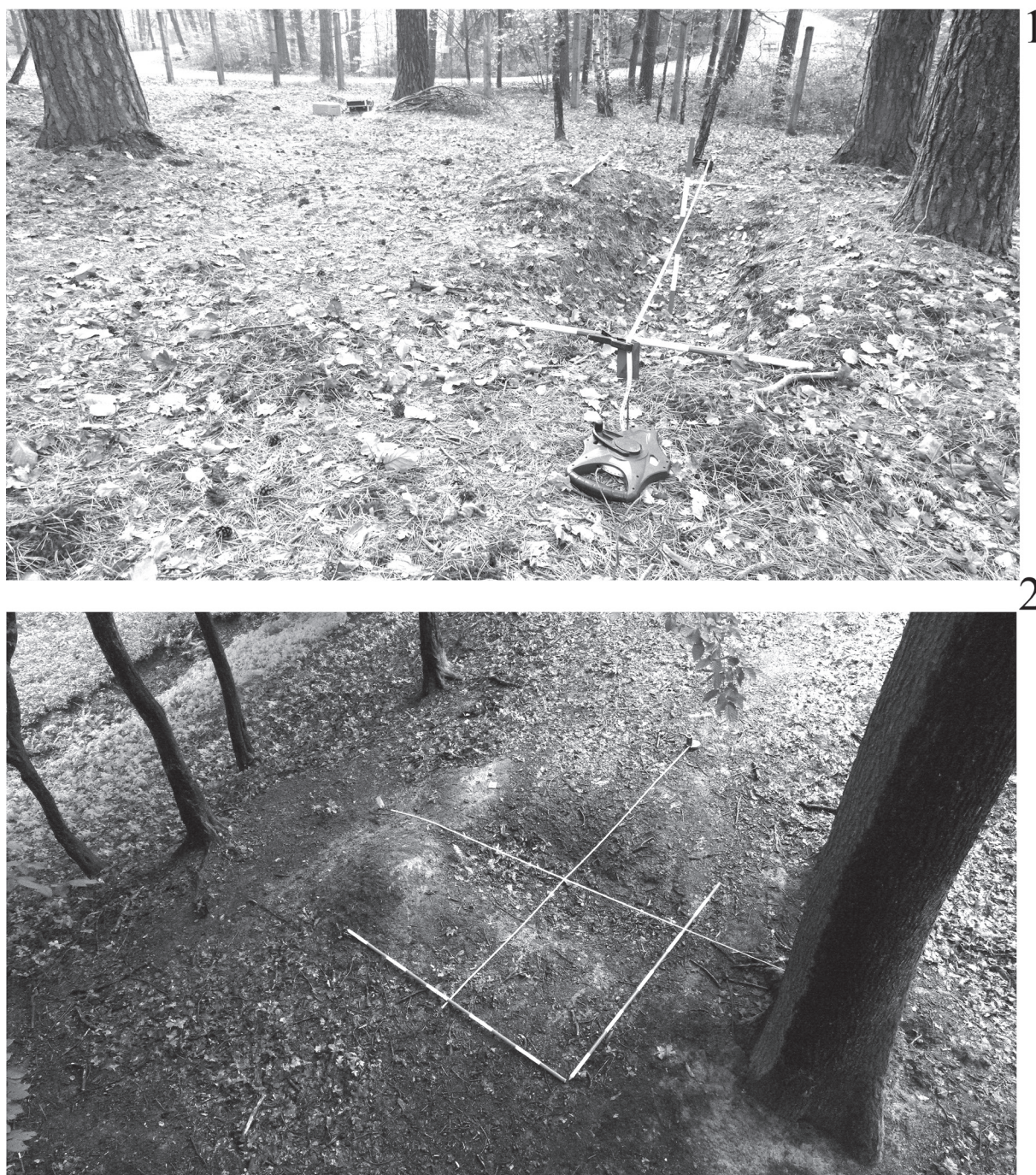


Fig. 5. Shell scrapes for gunmen. 1 – feature 547 (sector A); 2 – feature 559 (sector C).

the rear of the Smolkov Artillery Fort required the firing coverage of the whole area with a view to the SW, S and SE.

The orientation of defensive fighting positions in sector A is either SW (547, 548, 549) or S (545, 546). Only the feature 544 is notably oriented towards the SE. The vast majority of features in sector C, on the other hand, are oriented to the SE (554, 556, 559, 560, 561, 562, 563, 567, 568, 570, 571). Only the feature 566 is facing the southern direction and features 553, 555 and 569 are oriented towards the east. The only feature that deviates from the unified orientation is feature 565, which is facing the SW direction. When we take a look at the orientation of defensive fighting positions in all three hitherto explored sectors (Fig. 4), we can see that they are notably turned towards the course of

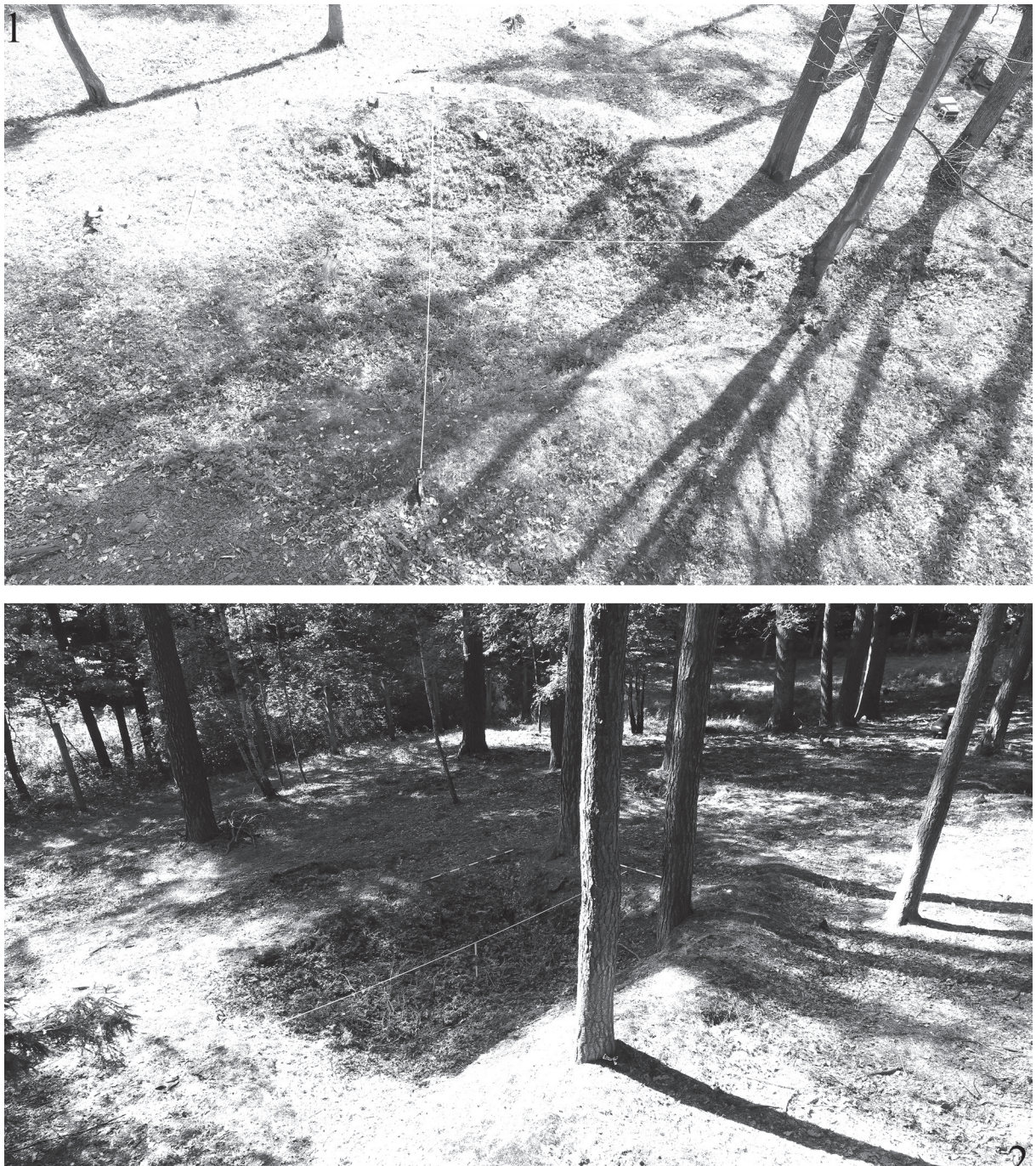


Fig. 6. Large timber-and-earth shelters. 1 – feature 552 (sector A), a long access corridor is visible on the right; 2 – feature 558 (sector C).

the road and at the same time respect the terrain morphology. While the features in sector A follow the SW direction and cover the Smolkov fortress from the right, the features in sector B in the left part of the polygon are rather oriented to the SW and in the eastern part to the S or SE. The position and direction of defensive fighting positions in sector C are oriented so that the gunmen covered the advance of the Red Army corps from the SE.

Large timber-and-earth shelters

A separate category is represented by large sunken features of rectangular shape (Fig. 6).

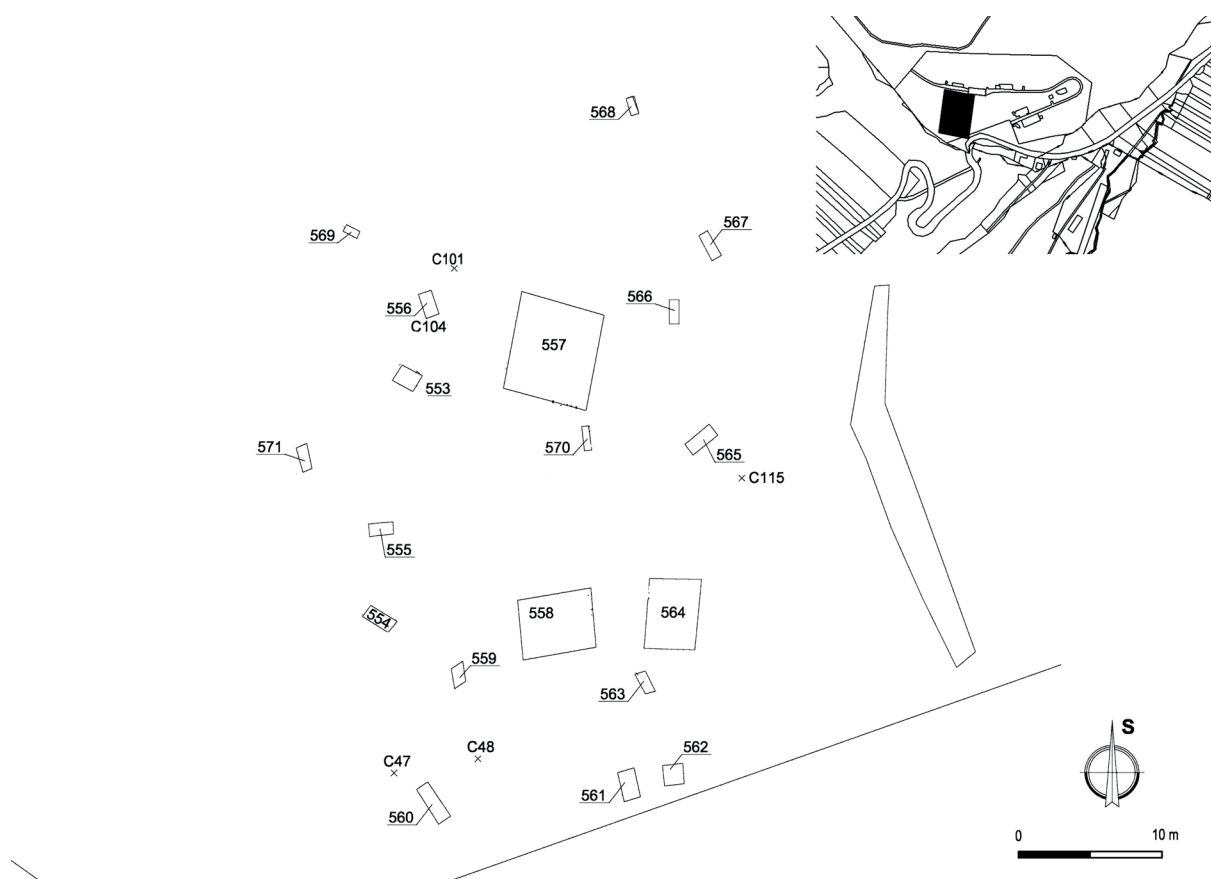


Fig. 7. The result of a metal detector survey. Finds from before 1939 (sector C).

Their interpretation is not clear and their functional use cannot be relevantly proved without careful archaeological trenching. Having in mind the hasty digging of fighting pits in the course of ultimate fights, we can suppose an adaptation to current combat situation rather than a systematic build-up. The dimensions of the largest among these features vary around 8 m in length and 7 m in width. Smaller features had the dimensions of 6.2 or 4.2 m and 5.5 or 3.2 m. Their preserved depth varied between 1.00 m and 1.90 m (see Tab. 2 and Tab. 4). On the SE side of feature 552 (sector A) there was a distinct entrance corridor (Fig. 6: 1). With regard to the shape, layout dimensions and depth, we can interpret the largest features as shelters for an infantry team (cf. Fleischer 1997). This assumption is based on the proportions as well as on the results of the first phase of research (Juchelka – Piętoń in print), where it was detected that some of the features were equipped with a light roof (remnants of wooden stakes were identified at the perimeter, and inside several features a sheet metal roofing with cardboard was found, which indicates the existence of a roof supported by stakes) (cf. Jürgens 2015; Müller-Kissing 2015; Zeiler 2018). The entrance corridor in feature 522 also might support this interpretation. In smaller types of these features we can also suppose another function, for example ammunition shelters or machine gun nests.

Metal detector finds

The depth monitored during the metal detector survey reached down to 15 cm and included the upper turf layer or forest litter. Every detected artefact was marked with a specific symbol, the findspot was surveyed by the GeoMAx Zenith35 Pro GSM-UHF-TAG appliance and the resulting data were spatially processed in the AutoCAD programme (Fig. 4). On the basis of chronological classification of individual acquired artefacts and their morphological and typological analysis it was possible to



Fig. 8. Finds from before 1939 (description see Tab. 7).

distinguish 3 temporal horizons. The first one is the period before 1939, associated with activities during the build-up of the Smolkov fortress and at the same time with the activity of the Czechoslovak Army. The second horizon represents the events at the end of the World War II and the third horizon followed after 1945 (these horizons are not the focal point of this article, but they are indicated in the general plans of individual examined sectors, see Fig. 2–4).

Finds from the period before 1939

The given period is most probably associable with six finds, all of them from the sector C (see Tab. 7). The finds are more or less densely distributed over the whole area of the sector (see Fig. 7).

They mostly represent relics of military features in the neighbourhood of the casemate (lightning conductor clamp), maintenance tools (drill bar) or a destroyed part of the defensive system of the fortress (anti-personnel obstacle, so-called pigtail). Interesting is the second find of a heavy cast-iron cleaning brush (Fig. 8: 2) with the inscription “Patent Bohnet, Patent Wessle D.R.G.M. Ausl. Pat.” (the first specimen was found in sector B in 2018, see Juchelka – Piętoń in print). It is a patented product bearing a 1871–1918 German trademark (Walter 1973). The activity of the Czechoslovak Army is evidenced by a military uniform button with crossed swords (Fig. 8: 1). The finds also comprise an Austro-Hungarian 2 Heller coin (the date is illegible).

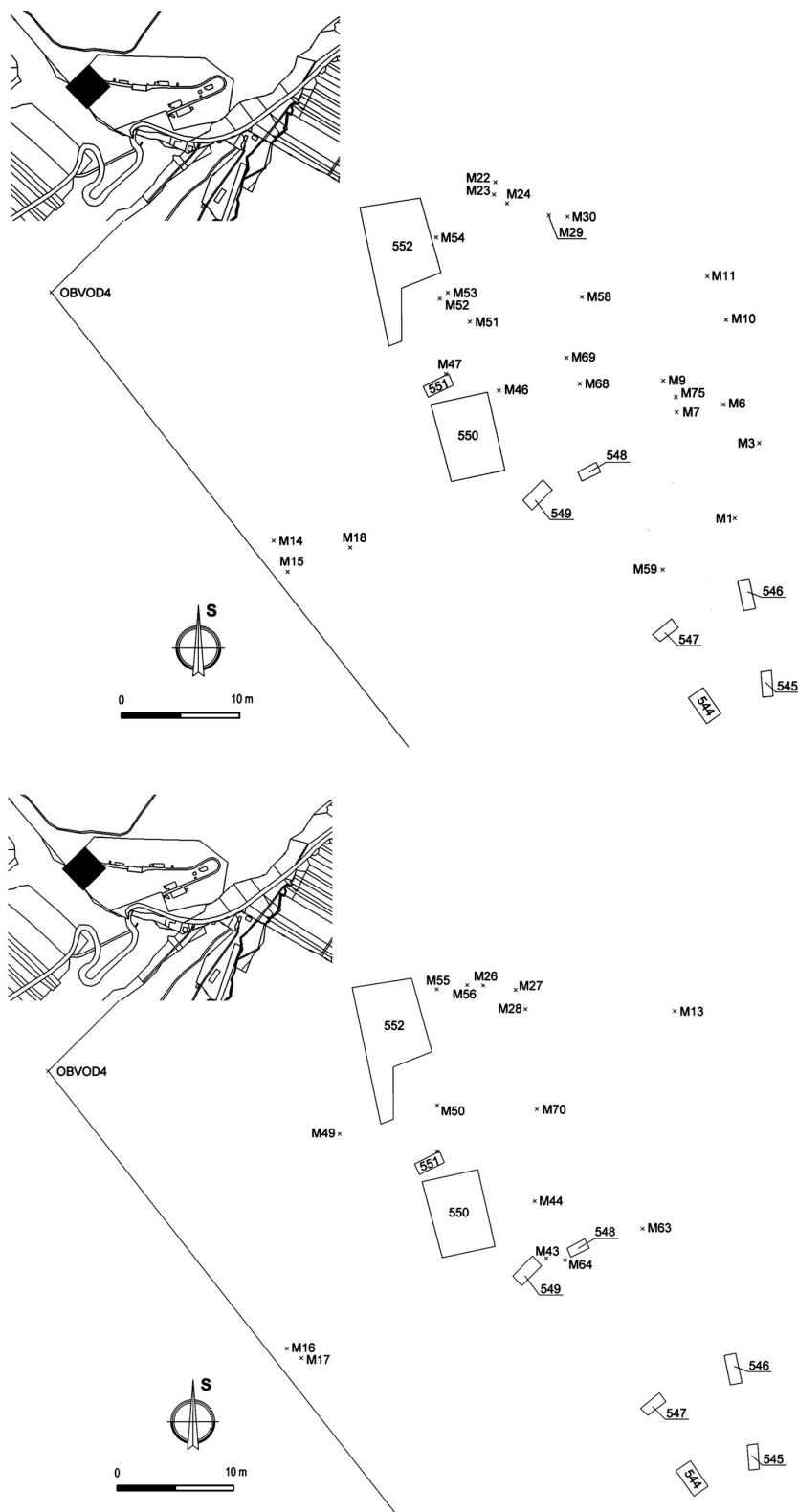


Fig. 9. The result of a metal detector survey in sector A. 1 – Wehrmacht finds (description see Tab. 5); 2 – Red Army finds (description see Tab. 6).

World War II finds

The vast majority of finds in sectors A and C date from the World War II (Tab. 5, 6, 8, 9). They are evenly distributed over the whole area of the given polygons (Fig. 9: 1, 2; 10: 1, 2). We can distinguish

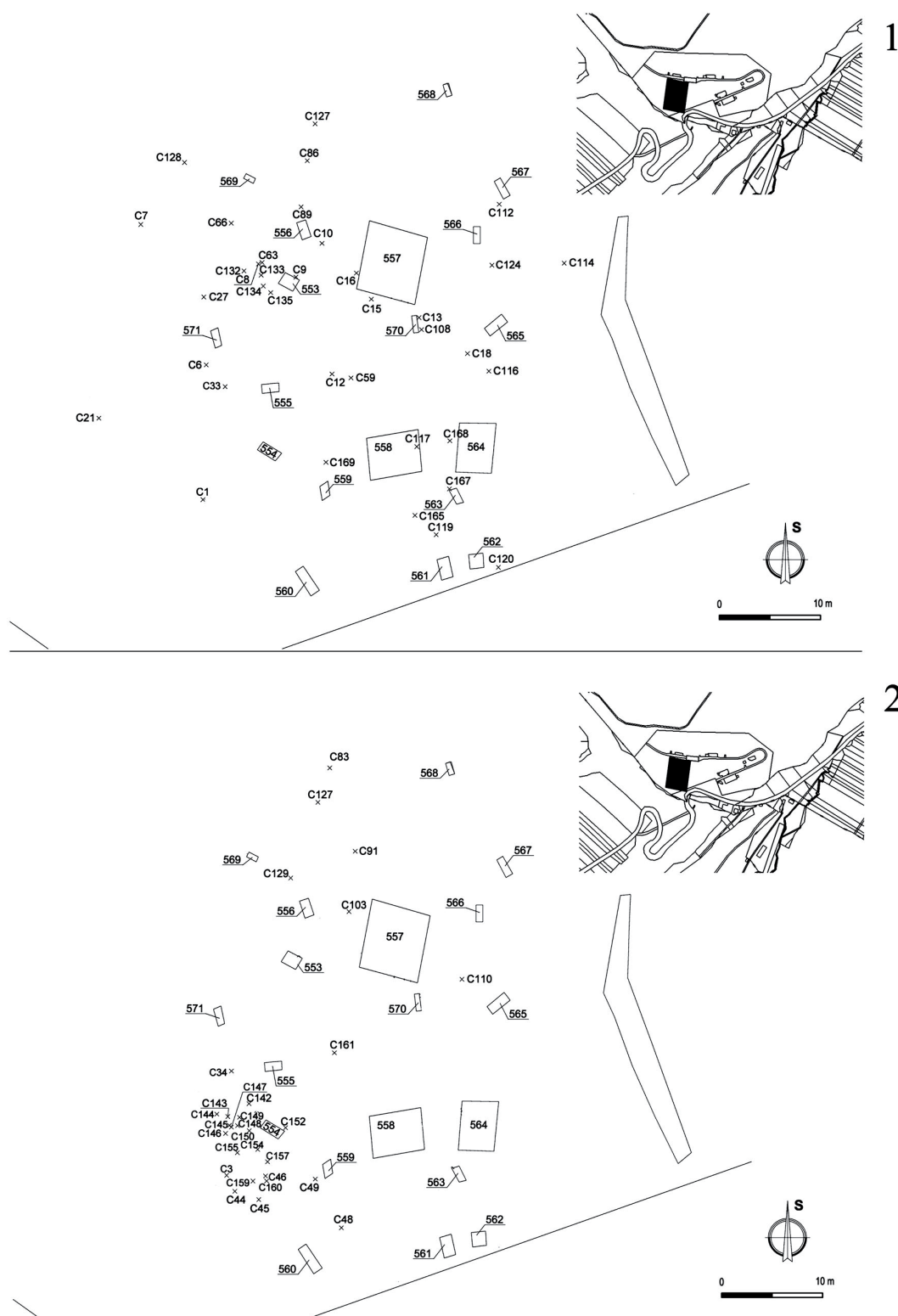


Fig. 10. The result of a metal detector survey in sector C. 1 – Wehrmacht finds (description see Tab. 8); 2 – Red Army finds (description see Tab. 9).

two provenances of these artefacts, namely the Wehrmacht and the Red Army. The finds refer to events within the period from January to April 1945 and are not only associated with “leisure” activities of soldiers in this area, but also testify to an armed conflict between two enemies.

Wehrmacht finds

The most frequently detected objects are metal components of ammunition boxes. The infantry ammunition itself is represented by Mauser cartridge cases (Fig. 11: 3, 4; 12: 4, 5, 6, 7). Surprising are the Italian Mannlicher-Carcano cartridges, which were used with repeating military rifles of the same name in 1892–1945 (Fig. 12: 1, 2, 3, 7). Also present are 16 pieces of Luger pistol cartridges (Fig. 12: 8), which were used from 1904 to 1945. The assemblage of finds also contains a part of the infantry armament, namely a blasting cap of an infantry grenade.

Heavy ammunition is represented by a protective cage for artillery projectiles (Fig. 12: 11) or a cap of an artillery shell found in sector C. Military machinery is represented by one part of a column tail light found in sector C. From among the finds of military equipment we can name parts of gas masks (buckles), uniform buttons (Fig. 11: 1), a button from military trousers (Fig. 12: 10) or a field flask (Fig. 12: 12). In sector A, a radio operator receiver from a field walkie-talkie was found (Fig. 11: 2).

Leisure activities are evidenced by finds such as a part of a tin can for cheese, lamellas from a mouth organ, toothpaste tubes or an oven hotplate.

Red Army finds

The presence of the Red Army in the surroundings of the Smolkov fortress is evidenced, exactly like in sector B (cf. Juchelka – Piętoń in print), solely by ammunition finds. Absolutely dominant are spent Tokarev cartridges for infantry weapons (Fig. 13: 1; 14: 1–21). This type of projectiles has been used with submachine guns PPŠ-41 Shpagin. One specimen of this weapon was found in the neighbourhood of feature 557 (sector C). Almost all of its metal components were preserved (Fig. 15) but their surface was heavily corroded. The weapon find was analysed in the Silesian University in Opava, using the YXLON Smart 160E/0.4 X-ray machine (analysis was conducted by Mgr. Zuzana Plachká from the Silesian Museum and Ing. et Mgr. Hana Rajhelová from the Silesian University in Opava). It was detected that although the surface of the object is disturbed by a continuous layer of corrosion products, the metal core is very well preserved. The internal trigger mechanism of the submachine gun as well as the perforated barrel cooler also were preserved in an excellent condition. It was found out that the corrosion processes strongly disturbed the follower of the magazine, which is held in place only by a thin layer of corrosion products and is thus prone to fall off. As expected, the XRF analysis (analysis was conducted by Mgr. Zuzana Plachká from the Silesian Museum) has identified that the basic material is an alloy of iron (Fe) in the average content of 98.61 % with an admixture of manganese (Mn) in the average content of 0.93 % (see Tab. 10). Trace elements were represented by Cu, Ni, Ti and Cr, which will subsequently help to specify the deposit of iron ore that was used for production of the given type of submachine gun or to reconstruct the production technology. In several places of the alloy, silicon appears in the content of 0.5 %.

Heavy ammunition is represented by artillery shells, which again confirm that the Smolkov fortress was also attacked using the ground-to-ground bombardment. In the collection of finds we also identify a heavy machine gun shell. An aerial attack on the fortress is evidenced by the finds of 20 mm cartridges from the Lavochkin La-5 fighter aircraft (Fig. 13: 2–11). An aircraft cannon shell for the Ilyushin II-2 “Shturmovik” ground-attack aircraft was also found (Fig. 14: 22).

Conclusions

The 2019 survey of the area of the Smolkov Artillery Fort, more precisely of the military area of the Army of the Czech Republic in the neighbourhood of the entrance blockhouse MO-Sm-S 41 in a location called “Nad Valchou”, followed up the non-destructive survey in 2018 (Juchelka – Piętoń



Fig. 11. Wehrmacht finds from sector A (description see Tab. 5).

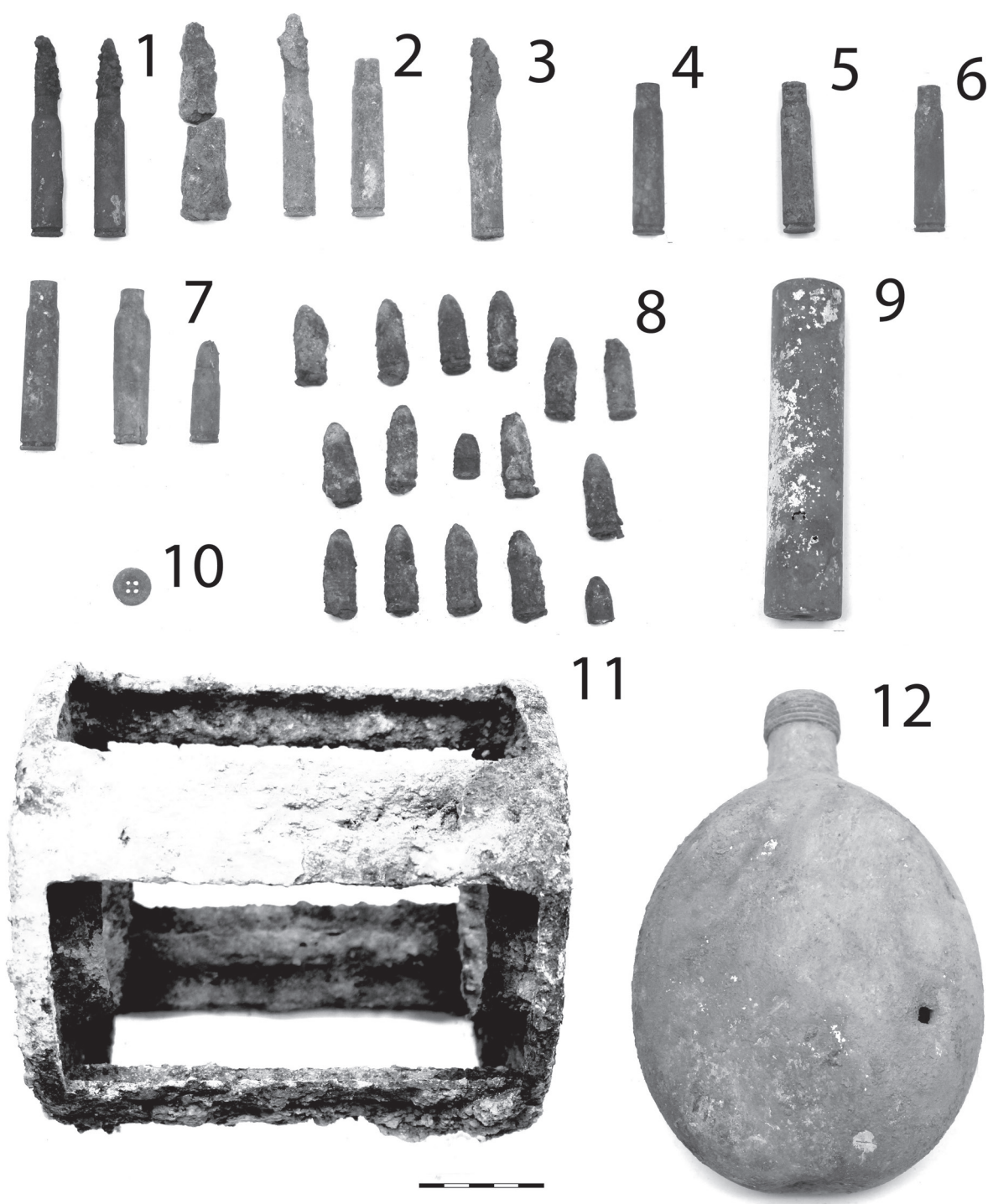


Fig. 12. Wehrmacht finds from sector C (description see Tab. 8).

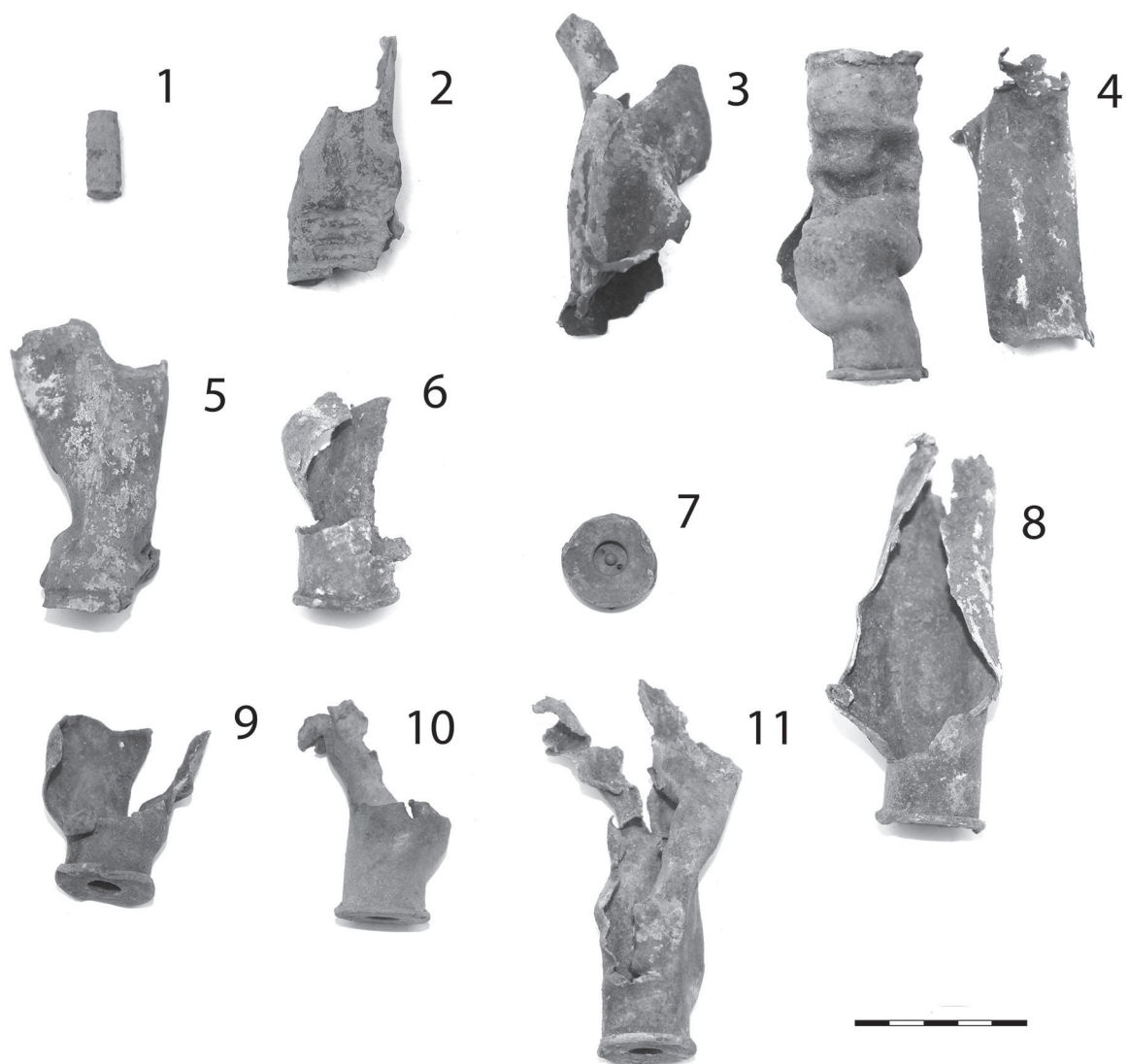


Fig. 13. Red Army finds from sector A (description see Tab. 6).

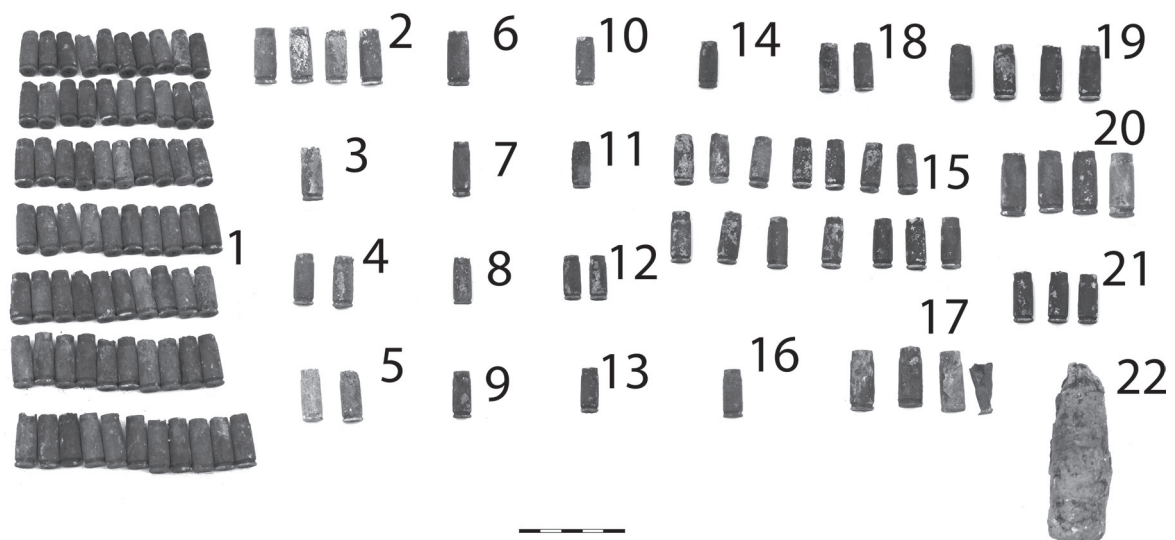


Fig. 14. Red Army finds from sector C (description see Tab. 9).

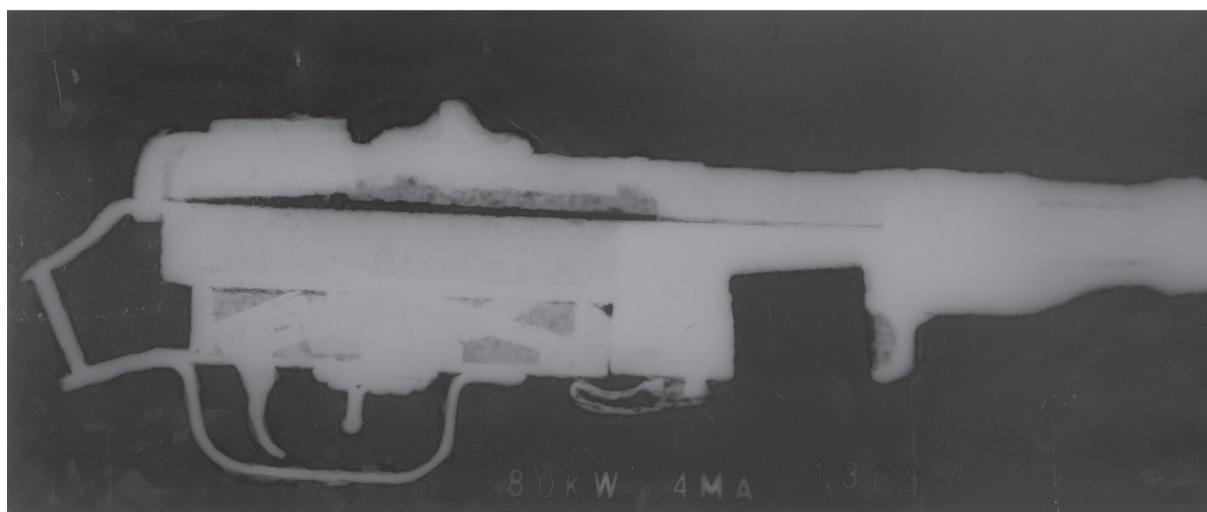
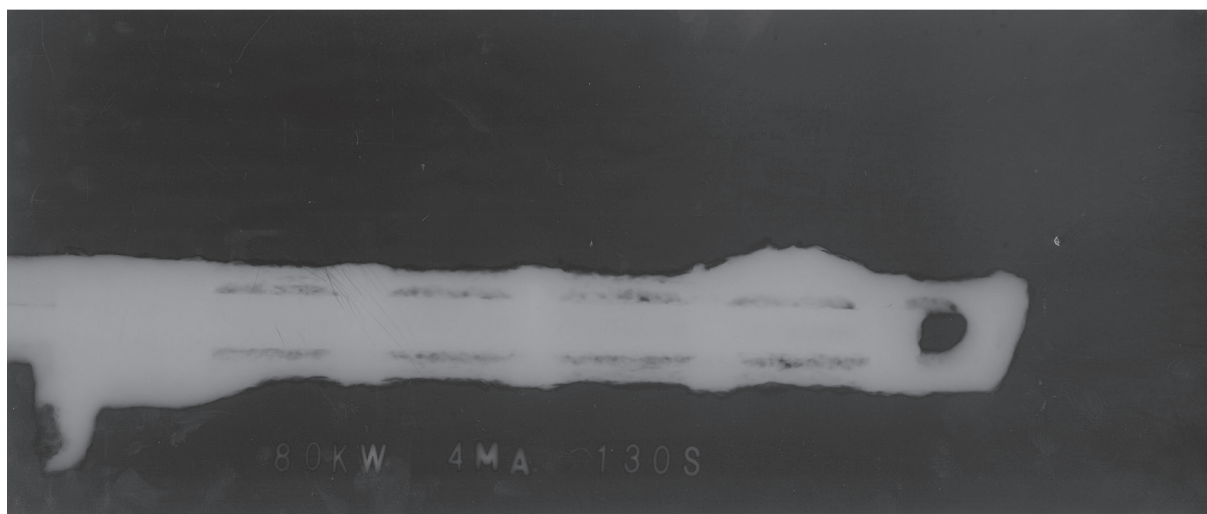


Fig. 15. Soviet submachine gun Shpagin. At the bottom is an X-ray image. Exposure settings: FFP 70 cm, 80kV, 4mA, 130s (Mgr. Zuzana Plachká, Silesian Museum and Ing. et Mgr. Hana Rajhelová, Silesian University in Opava).

Location	Description and name of the finding	Number	Notes	Fig.
MILITARIA				
SMALL ARMS AND HAND WEAPONS				
M18	Mauser	1		11:3
M22	offensive grenade	1	a blasting cap	
M30	Mauser	5		11:4
OTHER				
M1	metal component of an ammunition box	1	probably wehrmacht	
M3	metal component of an ammunition box	1	probably wehrmacht	
M6	a hinge and a metal component of an ammunition box	2	probably wehrmacht	
M7	metal component of an ammunition box	1	probably wehrmacht	
M9	a hinge of ammunition box	1	probably wehrmacht	
M11	a part of ammunition box	1		
M14	a hinge of ammunition box	1	probably wehrmacht	
M15	receiver from a field telephone	1	radio operator equipment	11:2
M23	metal component of an ammunition box	1	probably wehrmacht	
M24	a part of ammunition box (zinc sheet)	1		
M46	a part of an ammunition box	1	probably wehrmacht	
M47	a hinge of an ammunition box	1	probably wehrmacht	
M52	a hinge of an ammunition box	1		
M59	a hinge of an ammunition box	1	probably wehrmacht	
M68	metal component of ammunition box	1		
M69	metal component of ammunition box	1		
M75	a part of ammunition box	1	with an uniform button	
EQUIPMENT COMPONENTS				
M29	a part of gas mask (buckle)	1		
M51	a part of gas mask	1		
M54	an uniform button	1	an anchor with a rope	
M58	an uniform button	1		11:1
M75	an uniform button	1	with a part of an ammunition box	
MILITARY MACHINERY				
M10	a part of a column tail light	1	a fragment	
LEISURE ACTIVITIES				
M53	a part of a can	1	cheese (?)	

Tab. 5. World War II finds, Wehrmacht. Sector A.

Location	Description and name of the finding	Number	Notes	Fig.
MILITARIA				
SMALL ARMS AND HAND WEAPONS				
M16	tokarev	1		13:1
M44	?	1	a fragment of a cartridge	
HEAVY AMMUNITION				
M13	artillery shell „150“	1		
M27	part of artillery shell	1		
M70	cartridge 12,7	1	machine gun	
AIRCRAFT				
M17	cartridge 20 mm	1	cannon Lavočkin	13:2
M26	cartridge 20 mm	1	cannon Lavočkin	13:3
M28	cartridge 20 mm	2	cannon Lavočkin	13:4
M43	cartridge 20 mm	1	cannon Lavočkin	13:5
M49	cartridge 20 mm	1	cannon Lavočkin	13:6
M50	cartridge 20 mm	1	cannon Lavočkin	13:7
M55	cartridge 20 mm	1	cannon Lavočkin	13:8
M56	cartridge 20 mm	1	cannon Lavočkin	13:9
M63	cartridge 20 mm	1	cannon Lavočkin	13:10
M64	cartridge 20 mm	1	cannon Lavočkin	13:11

Tab. 6. World War II finds, Red Army. Sector A.

Location	Description and name of the finding	Number	Notes	Fig.
OTHER				
C47	drill bar	1		
C104	lightning conductor clamp	1		
C115	anti-personnel obstacle	1	so-called pigtail	
C170	a cast-iron cleaning brush	1	a part, with the inscription	8:2
COINS				
C101	an Austro-Hungarian 2 Heller coin	1		
EQUIPMENT COMPONENTS				
C48	a button with crossed swords	1		8:1

Tab. 7. Finds from before 1939. Sector C.

Location	Description and name of the finding	Number	Notes	Fig.
MILITARIA				
SMALL ARMS AND HAND WEAPONS				
C6	cartridge Mannlicher-Carcano	2		12:1
C8	cartridge Mannlicher-Carcano	3		12:2
C33	cartridge Mannlicher-Carcano	1		12:3
C112	Mauser	1		12:4

Location	Description and name of the finding	Number	Notes	Fig.
C119	Mauser	1		12:5
C124	Mauser	1		12:6
C127	Mauser	1		12:7 (on the sides)
C127	cartridge Mannlicher-Carcano	1		12:7 (in the middle)
C134	Luger 9 mm	16		12:8
ARTILLERY AMUNITION				
C12	a cap of an artillery shell	1		
OTHER				
C1	a part of a blasting cap	1+1		
C7	metal component of an ammunition box	1		
C10	a hinge of ammunition box	1		
C13	smoke grenade	1		
C16	metal component of an ammunition box	1		
C18	a part of an ammunition box	1		
C21	metal component of an ammunition box	1		
C27	a part of anti-personnel mine	1		
C63	metal component of an ammunition box	1		
C66	a part of an ammunition box	1		
C86	a part of an ammunition box	1		
C108	metal component of an ammunition box	1		
C116	a part of an ammunition box	1		
C117	a part of an ammunition box	1		
C120	smoke grenade	1		12:9
C132	metal component of an ammunition box	1		
C135	a part of an ammunition box	1		
C167	a part of an ammunition box	1		
C168	a protective cage for artillery projectile	1		12:11
C169	metal component of an ammunition box	1		
EQUIPMENT COMPONENTS				
C15	a field flask	1		12:12
C128	uniform button	1		
C133	gear hook	1		
C165	a button from military trousers	1		12:10
LEISURE ACTIVITIES				
C9	lamellas from a mouth organ (?)	2		
C59	an oven hotplate	1		
C89	toothpaste tube	1	toothpaste PARODONT	
C114	toothpaste tubes (?)	1		

Tab. 8. World War II finds, Wehrmacht. Sector C.

Location	Description and name of the finding	Number	Notes	Fig.
MILITARIA				
SMALL ARMS AND HAND WEAPONS				
C3	Tokarev	71		14:1
C44	Tokarev	4		14:2
C45	Tokarev	1		14:3
C46	Tokarev	2		14:4
C48	Tokarev	2		14:5
C103	submachine gun PPŠ-41 Špagin	1		15
C127	Tokarev	1		14:6
C129	Tokarev	1		14:7
C142	Tokarev	1		14:8
C143	Tokarev	1		14:9
C144	Tokarev	1		14:10
C145	Tokarev	1		14:11
C146	Tokarev	1		
C147	Tokarev	2		14:12
C148	Tokarev	1		14:13
C149	Tokarev	1		14:14
C150	Tokarev	14		14:15
C152	Tokarev	1		14:16
C154	Tokarev	3	and a blasting cap (?)	14:21
C155	Tokarev	2		14:18
C157	Tokarev	4	and a part of a cartridge	14:19
C158	Tokarev	4		14:20
C159	Tokarev	3		14:17
ARTILLERY AMUNITION				
C34	an artillery shell	1		
C49	a part of a driving band of an artillery shell	1		
C83	a part of an artillery shell	1		
C91	a part of an artillery shell	1		
C110	a part of an artillery shell	1		
AIRCRAFT				
C161	an aircraft cannon shell	1	Iljušin Il-2 „Šturmovik	14:22

Tab. 9. World War II finds, Red Army. Sector C.

	Fe	+/-	Mn	+/-	Cu	+/-	Ni	+/-	Zn	+/-	Ti	+/-	Cr	+/-	Si	+/-
%	98,61	0,47	0,93	0,003	0,15	0,02	0,23	0,025	0,15	0,01	0,22	0,03	0,10	0,01	0,5	nom

Tab. 10. Element analysis of a Soviet submachine gun Špagin. Analytical method – energy-dispersive X-ray fluorescence spectrometry; used device – DELTA ELEMENT portable XRF analyser, 4-watt X-ray tube (analysis was conducted by Mgr. Zuzana Plachká from the Silesian Museum).

in print) and verified and in many regards also enhanced our knowledge of the development of the given area from 1936 to the present day. The survey was conducted in sectors A and C in the south-western part of the area. As it was already mentioned above, methods of non-destructive archaeology were used to map out, verify the appearance, function and properties of the 1945 field defence line features, which are still preserved in open terrain. The resulting data were used to find out the spatial relations and to identify individual elements of the defence system. Several types of field fortification features were recognised, which were dug by the Wehrmacht soldiers in the forefield of the entrance blockhouse S 41 on southern slopes of the hill "Nad Valchou" to protect the casemate complex in the case of advance of the Red Army from the west, south or east. In 2019, a total of 23 defensive fighting positions and 5 large timber-and-earth shelters were identified.

The follow-up metal detector survey identified, exactly like in 2018, three horizons of activities in the area of the examined sectors A and C. Detected were objects dating from before 1939. There are notable traces of presence of the Wehrmacht soldiers and a large amount of ammunition of the Red Army from the course or from the end of World War II. The finds of artillery and aircraft ammunition of the Red Army again confirm an already earlier-presented conclusion that the area of the Smolkov fortress has been also assaulted by aircraft and heavy military machinery, which supplemented and supported the infantry attack. Also important is the knowledge of leisure activities, diet or personal hygiene of the Wehrmacht soldiers.

The features in the remaining parts of the military area will be documented in the following years. We also intend to conduct a dendrochronological analysis of selected trees which are growing in the area of several features, in order to complete and verify the dating of particular defensive fighting positions.

The result will be a complex map of the area showing the spatial relations of individual field fortification elements. We will follow up their orientation and function within the fights. Important information will also be acquired by the analysis of metal detector finds. We will try to answer the question whether the spatial relations and distribution of individual finds within the examined area can be a testimony of fights and whether they can evidence the course of events. Also important will be the statistical results, where we will try to determine the number of German soldiers on the basis of the number of defensive fighting positions and the dimensions of individual shelters for military corps, etc.

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