EXECUTIVE SUMMARY

INVESTIGATIVE FIELDWORK
HÜRTGEN FOREST DISMOUNTED LOSS LOCATIONS
VOSSENACK AND KOMMERSCHEIDT
NORTH RHINE-WESTPHALIA, GERMANY

SUBCONTRACT #S-15-DMS6-42-SEA

AUGUST 2016

ONA ALI'I
Leading Tomorrow's Solutions

SEARCH

EXECUTIVE SUMMARY

INVESTIGATIVE FIELDWORK
HÜRTGEN FOREST DISMOUNTED LOSS LOCATIONS
VOSSENACK AND KOMMERSCHEIDT
NORTH RHINE-WESTPHALIA, GERMANY

SUBCONTRACT # S-15-DMS6-42-SEA

DEFENSE POW/MIA ACCOUNTING AGENCY (DPAA)
DHHS BASE YEAR IDIQ CONTRACT HHSP233201500186I
TASK ORDER 006

PREPARED FOR
NA ALI'I

NA ALI'I
Leading Tomorrow's Solutions

PREPARED BY

SEARCH

(b)(6)

PROJECT MANAGER

AUGUST 2016

EXECUTIVE SUMMARY

INVESTIGATIVE FIELDWORK
HÜRTGEN FOREST DISMOUNTED LOSS LOCATIONS
VOSSENACK AND KOMMERSCHEIDT
NORTH RHINE-WESTPHALIA, GERMANY

SUBCONTRACT # S-15-DMS6-42-SEA

CONSULTANT:	SEARCH
PROJECT MANAGER:	(b)(6)
PRINCIPAL INVESTIGATOR:	
CLIENT:	Na Ali'i Consulting
DATE:	August 2016

The following Executive Summary is provided to Na Ali'i Consulting and the Defense POW/MIA Accounting Agency (DPAA) by SEARCH upon completion of investigatory fieldwork pertaining to dismounted US Army personnel losses in Hürtgenwald, North Rhine-Westphalia (NRW) Germany, during World War II (**Figure 1**). The purpose of this fieldwork was to investigate several loci identified in the SEARCH report titled *Hürtgen Research Support Services*, dated February 2014, completed under Contract No. N00604-12-C-3037.

Project tasks included: (1) desktop review of all available loss information, previous DPAA investigations, and witness statements; (2) pedestrian, remote, and subsurface survey; (3) multi-scalar progress updates in the form of weekly reports and daily situation reports (SITREPs); and (4) draft and final reports on the investigation. This Executive Summary provides an introduction to the survey areas, a brief discussion of the methods employed, and a summary of the results. All work detailed in this executive summary was completed in compliance with DPAA standard operating procedures (SOPs), in particular SOP 2.0 and 1.3, and was performed by professional archaeologists meeting the qualifications established in the Secretary of the Interior's Standards and Guidelines (48 FR 44716 [29 September 1983]).

LOCATION AND ENVIRONMENT

US Army losses related to the fighting in Hürtgenwald, in the areas commonly referred to as the Hürtgen Forest, are primarily located in the villages of Vossenack, Kommerscheidt, and Schmidt in North Rhine-Westphalia Germany (**Figure 2**). The three villages are positioned on broad upland terraces above a number of incised river valleys with steeply sloping sides. Vossenack is situated on the north side of the Kall River gorge, while Kommerscheidt and Schmidt are on the

Figure 1. Map of Germany indicating the location of Hürtgenwald.

south. The villages are connected via a steep, winding trail known as the Kall Trail, one of many improvised supply paths of varying width, condition, and use throughout the valley.

BACKGROUND RESEARCH

Background research related to the losses at Hürtgen Forest and the possible location of unaccounted for American personnel for this investigation is derived primarily from the 2014 Search report, *Hürtgen Research Support Services*. This report provides a history of the military engagement in Hürtgenwald in 1944 and details troop and supply movements, daily casualties and personnel changes, and possible locations for unaccounted for personnel. In addition, SEARCH utilized DPAA investigation reports and recovery documents from Hürtgenwald, Individual Deceased Personnel Files (IDPFs), and a variety of historical documents and publications related to the engagement.

SEARCH 2014 Hürtgen Research Support Services Report

The 2014 SEARCH report was reviewed to identify areas of high probability warranting additional field investigation. Five high-probability areas (HPs) were selected for investigation during a 25-day field period, designated HP-1 through HP-5. Areas were selected based on the specificity of witness or informant data, correlation with historic reports or documents of losses in a given area, and the ability to spatially constrain all data to a fixed geographic point. HP-3 and HP-4 were determined to be less valuable targets for survey upon field inspection and are thus not included in this investigation. SEARCH added four additional areas, HPs-6 through 9 (**Figure 2**), based on field inspection, informant interviews, and review of aerial imagery, and these loci are discussed below.

DPAA Investigation and Recovery Documents

Defense POW/MIA Accounting Agency internal reports from investigative and recovery operations within Hürtgenwald were reviewed for additional information related to US losses, witness and informant statements, and previous survey work. In addition, DPAA allowed SEARCH access to X-File data for all unidentified remains recovered in the area.

METHODS

Historic Aerial Photography Analyses

Aerial photographs from early fall of 1944 and early winter of 1945 were reviewed throughout investigative operations. Early 1944 aerial imagery provided information about pre-war structures, movement routes, and modifications to the landscape not related to military

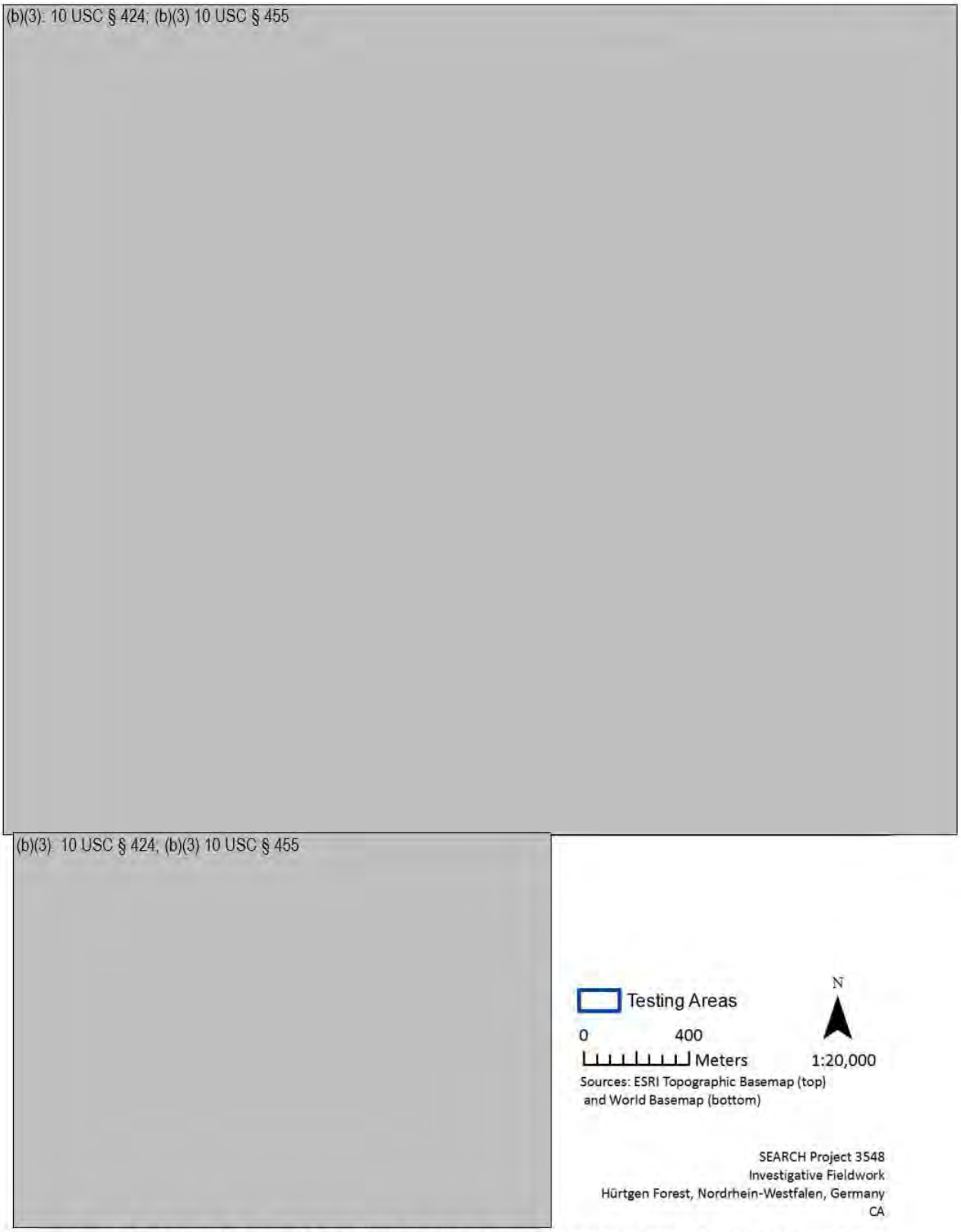

Figure 2. Topographic map of the Kall Valley area indicating the survey areas included in this summary.

activity. Early 1945 aerial imagery was critical in identifying modifications to the built and natural landscape of each survey area as was related to military activity. In many areas surveyed, particularly agricultural properties, significant post-war efforts were made to restore the landscape, rendering surface features that may contain remains of fallen personnel invisible. SEARCH personnel identified surface features in these aerial photographs that may have been related to fighting or defensive positions of dismounted personnel, SEARCH and georeferenced these locations using modern aerial photographs and high-accuracy GPS units for further analyses with remote-sensing equipment and subsurface excavation.

Remote-Sensing Survey

Areas of interest identified during historic aerial imagery analyses were initially investigated with remote-sensing equipment to further refine and target their locations. Each georeferenced point was plotted and bounded with a survey grid. These grids were then systematically analyzed with Ground-Penetrating Radar (GPR), a magnetometer, or both. All GPR survey was completed using a GSSI model 5103A 400 MHz antenna paired with a GSSI SIR-3000 receiver in a three-wheeled survey cart. Magnetometer survey was conducted using a Geometrics G858GAP gradiometer array in a backpack mount. Remote-sensing survey grid corners were placed using a Trimble GeoHX Geoexplorer 6000 series handheld Global Positioning System (GPS) with an average estimated positional error (EPE) of less than one meter. Positions within survey grids were controlled via 50-meter fiberglass tape measures.

Archaeological Survey

Archaeological survey was conducted at selected locations dependent on the results of both historic aerial imagery review and remote-sensing survey. Test locations were placed to best capture extant surface features, subsurface anomalies, or witness/informant identified locations. The size and orientation of test locations was adapted to capture the majority of identified targets while minimizing “negative space,” or natural soils with limited or no value to the study. Large-scale block excavation was not used, as the short duration of the investigation and number of targets requiring analysis precluded dedicating resources to volumes of soil rather than number of targets.

All subsurface excavation complied with DPAA SOP 2.0 for Field Recovery. Test units were excavated with straight, clean margins cut vertically to assess soils and stratigraphy. Excavations proceeded to verified subsoils (e.g., soils that possessed all the observable characteristics of structure, color, and composition of unmodified or undisturbed basal sediments). Excavation to natural subsoils across all test locations provided allowed analysis of all extending below the plow zone. All test locations were photographed before excavation and upon completion. Excavation was completed with hand tools including shovels, mattocks, trowels, and dust pans. Soils were excavated by visible stratigraphy or by approximately 10-centimeter levels in strata exceeding 10 centimeters in thickness. All levels were excavated across the entirety of the test location prior to proceeding to the subsequent level.

Excavated soils were processed immediately adjacent to test locations. Excavation teams processed soils with 1/4-inch galvanized steel mesh screens. All non-natural objects encountered in the soil were transferred to a bucket adjacent to each screen for review by the recovery leader. Items of potential probative value or items considered to be small, friable, or fragile were placed in a separate bucket adjacent to the test location. All recovered and retained materials were bagged, labeled, and secured in accordance with DPAA SOP 1.3 on Evidence Handling.

SURVEY LOCATIONS

High Probability Area 1

Interviews with local residents and informants by the DPAA in 2010, 2013, and 2014 identified a location in the village of Kommerscheidt believed to be a burial site for up to three fallen US soldiers from the 112th Infantry Division (I.D.), A Company. Local informant (b)(6) (b)(6) indicated that this location, (b)(5) (b)(5) was likely the location of the remains three individuals, possibly including those of PFC Carl F. KIME, PFC Michael LONCAR, PFC Joseph C. MERLOCK, and PVT Sydney E. WEAVER, all of whom are listed as missing and not recovered following the fighting in Kommerscheidt in November 1944 (see DPAA Detailed Report of Investigation, 14-2GM, 1500-J). In addition, SEARCH conducted survey operations in the sheep pasture across the street, where a large barn stood prior to the war, and historic aerial photograph review indicated several possible subsurface features.

High Probability Area 2

On 4 November 1944, the 3rd Battalion established the "Blue Aid Station" (b)(5) (b)(5) This pre-war structure, though small, served as refuge for the most critically wounded personnel brought to the aid station, while others bivouacked nearby, with up to 100 injured personnel reportedly present at this location by 7 November, both American and German. On 11 November the aid station was evacuated by American and German forces; critically injured German soldiers were transferred to American field hospitals. Initial reports from those evacuating the aid station indicated that numerous dead personnel remained in the vicinity during the evacuation.

High Probability Area 5

In early November 1944, US forces had occupied the town of Vossenack. The village would be so heavily and systematically targeted by German artillery that it was commonly referred to as the "rubble pile", as personnel moved from one destroyed structure to another to evade artillery. (b)(5) personnel from the 112th I.D., F and G Companies, had established a series of positions (b)(5)

(b)(5) German artillery positioned in Brandenberg and Bergstein had an unobstructed view of the American positions out in the agricultural fields. Systematic shelling of these positions resulted in heavy losses and numerous unaccounted for personnel.

High Probability Area 6

HP-6 (b)(5) The area has an extensive network of defensive fighting positions (DFPs) and foxholes (b)(5) (b)(5) Initially these positions were mapped by SEARCH in an effort to document extensive looting damage to fighting positions in the area. A limited number of undamaged positions were systematically excavated, as well as a suspected burned log and earth structure.

High Probability Area 7

HP-7 was initially identified during intensive analysis of historic aerial imagery of the town of Kommerscheidt taken in 1945. (b)(5) the recovery of 12 sets of remains by the Army Graves Registration Command (AGRC) in 1948. In addition, (b)(5) now completely infilled but identified via GPR, allegedly had the remains of three US soldiers recovered from its foundation between 1948 and 1950.

Aerial photographs from 1945 (b)(5) (b)(5) The orientation of the feature shifted slightly at several points; a common feature of defensive trenches constructed by both US and German Army personnel designed such that should an enemy combatant enter the trench, they were not afforded an unobstructed view down its length.

High Probability Area 8

HP-8 (b)(5) (b)(5) The area was identified as a high-activity area in Kommerscheidt using historic aerials, (b)(5) (b)(5) The nature of the US offensive in Kommerscheidt, (b)(5) (b)(5) and the retreat of personnel (b)(5) prompted remote-sensing survey of this heavy-traveled and modified landform.

High Probability Area 9

The area around HP-9 was selected for expanded survey following discussions with local historian (b)(6) who detailed the use of the landform throughout early

November 1944, as a fortified position for the 112th I.D. before and during the occupation of Kommerscheidt. When the US hold on Kommerscheidt was lost on 7 November 1944, US forces pulled back (b)(5) until their eventual full retreat to Vossenack on 9 November 1944. The area is covered with evidence of this occupation, including a variety of DFPs, artillery scars, and improvements to the Kall trail to facilitate movement of US armor. Much like HP-6, this area suffers from its proximity to well-traveled multi-use trails, and shows evidence of modification of existing features by reenactors, as well as destruction of features by looters and metal detector users.

RESULTS

Remote-Sensing Survey

Remote-sensing surveys were conducted at five of the seven site areas investigated. GPR surveys were completed over a total of 7,633 square meters across 13 separate measurement grids. GPR was used to detect subsurface features, compare results to historic aerial photographs of the survey areas, and select areas for excavation.

Magnetometer surveys were completed at four of the seven site areas included in this summary. A total of 8,158 square meters were surveyed across 12 survey grid locations. Magnetometer was used to detect broad changes in the soil and geology and to map concentrations of metal across a landform; however, the sheer volume of metal in the soils throughout Hürtgen due to heavy artillery shelling and infilling of depressions post-war with metallic debris was problematic in the processing and interpretation of data to identify potential loss sites.

High Probability Area 1

SEARCH completed three remote-sensing survey grids at HP-1 in Kommerscheidt. A summary of these survey grids is presented in **Table 1**. In total, 1,195 square meters were subjected to remote-sensing survey at HP-1, including 1,195 square meters of GPR and 1,120 square meters of magnetometer survey.

Table 1. Summary of Remote-Sensing Survey Conducted at HP-1 by SEARCH.

Grid Designation	Grid Dimensions (m)	Instrumentation
Grid 1	5 x 15	GPR
Grid 2	20 x 40	GPR and magnetometer
Grid 3	8 x 40	GPR and magnetometer

Remote-sensing survey at HP-1 can be divided into two separate efforts: assessment of possible buried deposits beneath and adjacent to (b)(5) and analyses of surface features identified in historic aerial photographs (b)(5) (b)(5) The former included a single 5 x 15 meter survey grid completed with GPR, and the

latter one 20 x 40 meter and one 8 x 40 meter grid completed with GPR and magnetometer (**Figures 3-5**).

No evidence of deep intrusions into the subsoil were detected in the vicinity of the (b)(5) (b)(5) via GPR survey; however, a single subsurface feature infilled with a dense collection of objects was identified immediately to the east of (b)(5) This feature was later excavated. No other subsurface features indicative of possible buried remains or features warranting excavation were identified in this location.

Survey (b)(5) included two grids positioned to investigate surface features from historic aerial photographs taken in early 1945. In particular, a large structure identified by local witnesses as a wooden barn appears to have been destroyed and burned. This structure is easily visible in both radar and magnetometer survey results of Grid 2 (see **Figures 3-5**). This structure was later investigated archaeologically. Additional anomalies identified in this area and in Grid 3 were later identified archaeologically as artillery impacts.

High Probability Area 5

Survey efforts at HP-5 included the collection of 3,000 square meters of GPR data and 3,600 square meters of magnetometer data (**Figure 6**). A summary of these survey grids is presented in **Table 2**. Spatially, remote-sensing grids at HP-5 can be divided into three locations. Survey Grids 1 and 2 are positioned (b)(5) of the survey area, and are positioned to locate a series of surface features visible in historic aerial photographs from 1945. Survey grids 3 and 4 are positioned (b)(5) of the survey area, and are similarly placed to assess areas identified in historic aerial photographs. Additionally, grids 3 and 4 are where, in 2007, the remains of two US soldiers, PFC ROGERS and PVT MARQUEZ, were recovered. Survey grids M1 and M2 are positioned northeast of grids 1 and 2 and were placed to assess a series of artillery impact features visible in historic aerial photographs (**Figure 7**).

Table 2. Summary of Remote-Sensing Survey Conducted at HP-5 by SEARCH.

Grid Designation	Grid Dimensions (m)	Instrumentation
Grid 1	20 x 20	GPR
Grid 2	20 x 40	GPR
Grid 3	15 x 40	GPR and magnetometer
Grid 4	30 x 40	GPR and magnetometer
M1	30 x 30	Magnetometer
M2	30 x 30	Magnetometer

Results of the GPR survey in grids 1 and 2 revealed two well-defined subsurface anomalies later excavated and identified as well-preserved fighting positions. These features appear in historic aerials as three asymmetrical surface features with irregularly deposited spoil sediments, and were visible as two linear subsurface anomalies in the same orientation in GPR radargrams (**Figures 7-8**). The third aerial feature was investigated outside of the GPR grids as a single GPR transect.

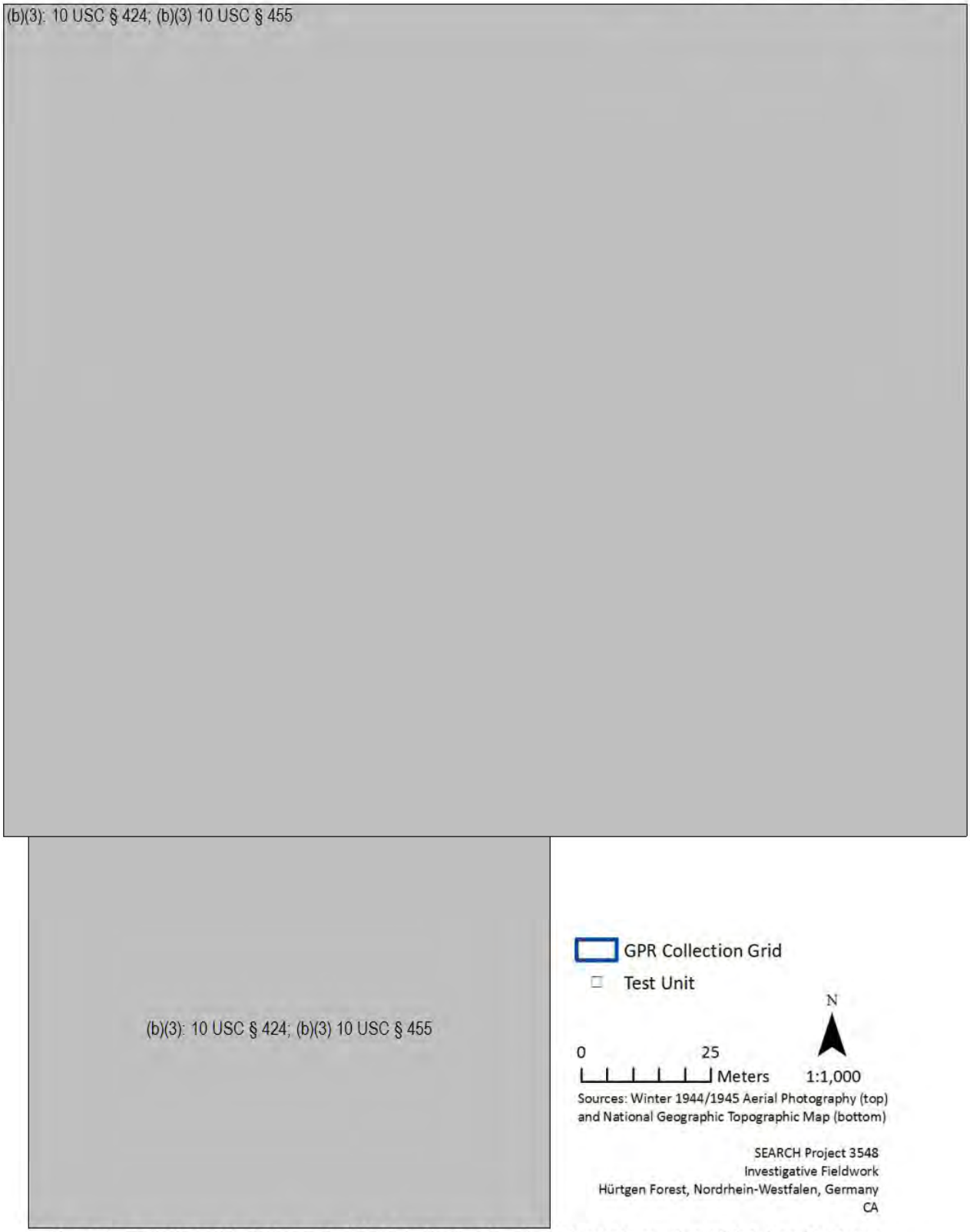

Figure 3. Historic aerial photograph of HP-1 indicating location of remote-sensing grids 1-3 and test unit locations.

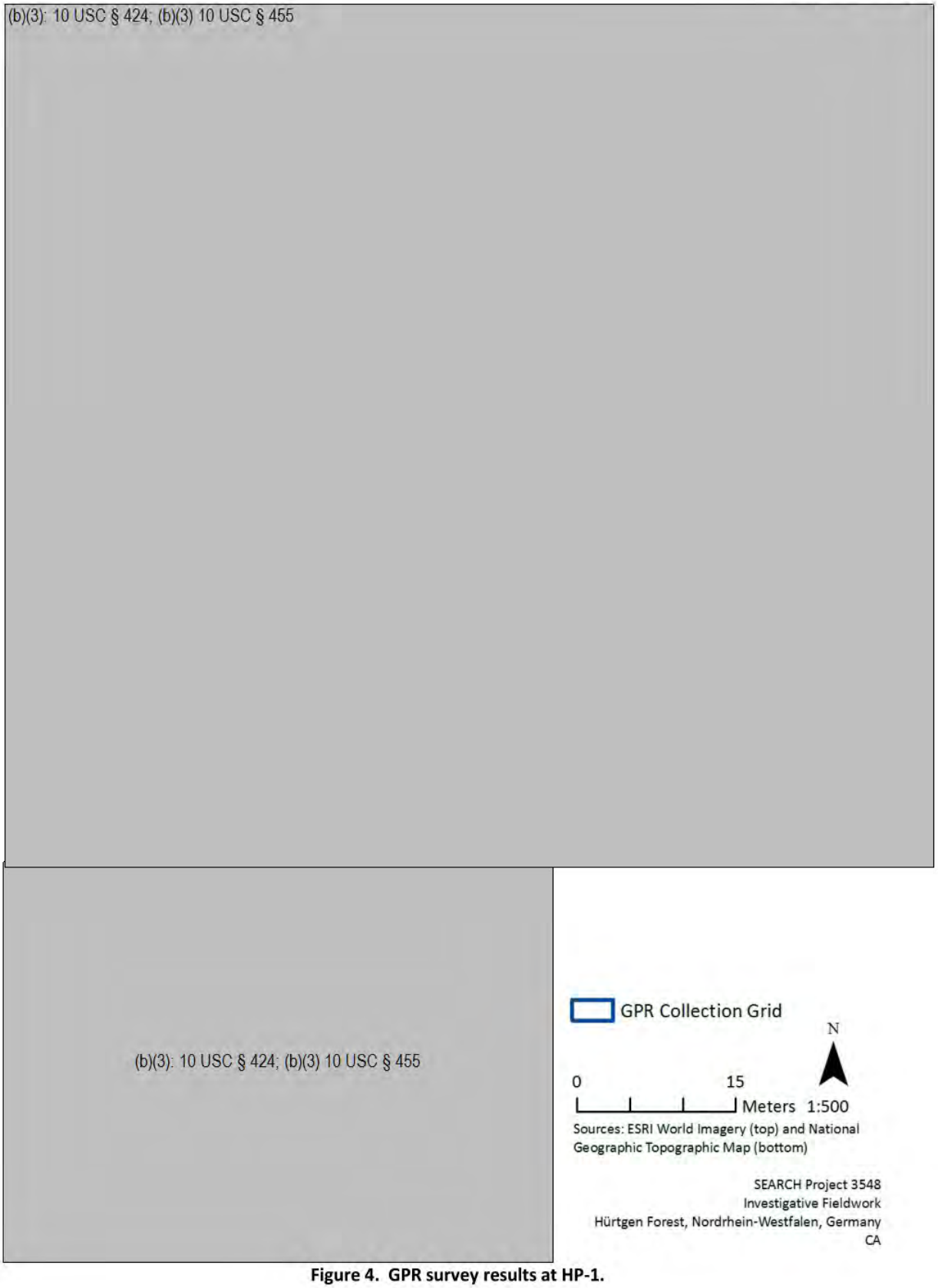

Figure 4. GPR survey results at HP-1.

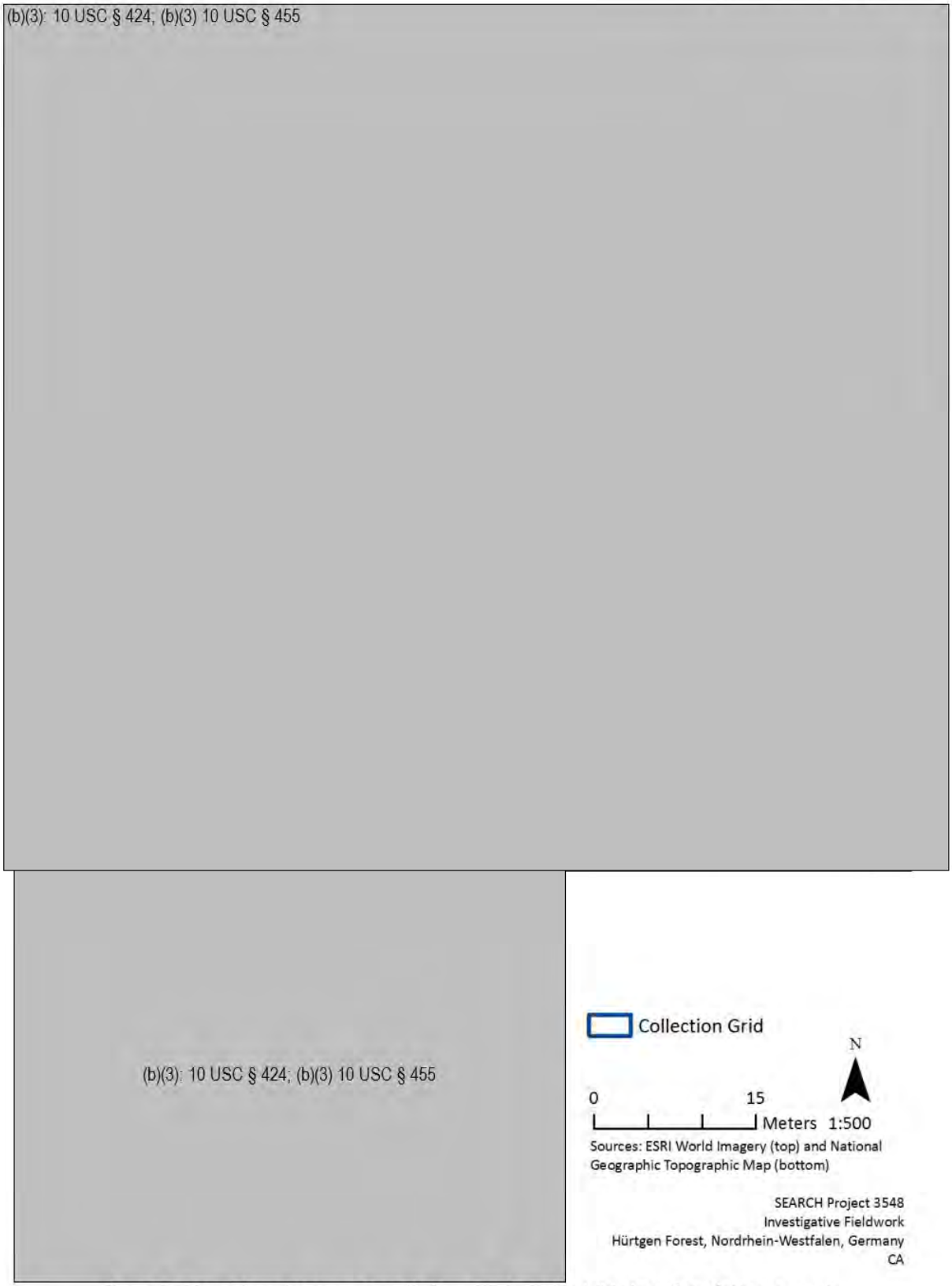

Figure 5. Magnetometer survey results from HP-1. Note visible barn foundation supports in southwest corner of survey grid 2 at center (A) and dipole anomaly, likely from an artillery impact (B).

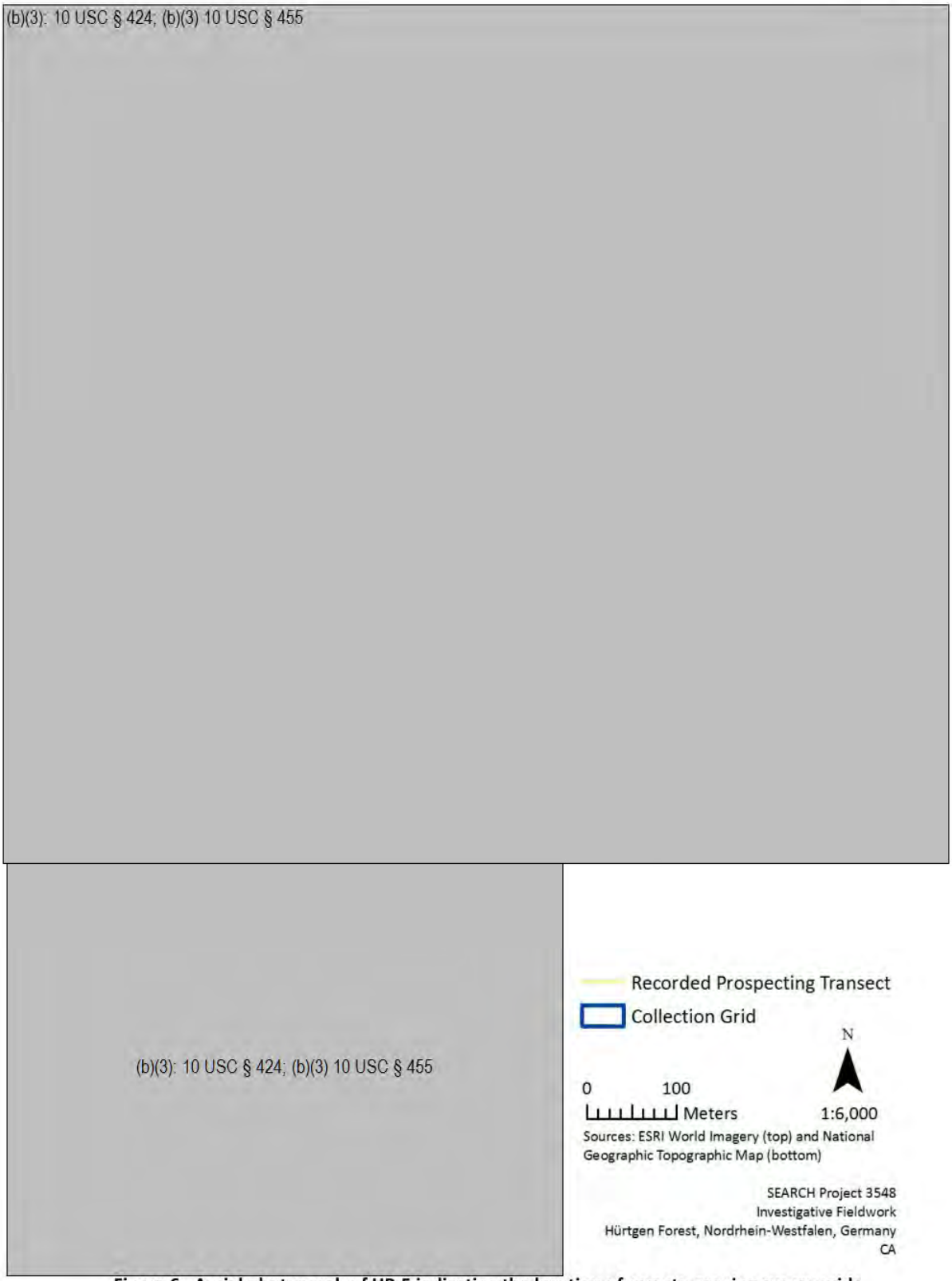

Figure 6. Aerial photograph of HP-5 indicating the location of remote-sensing survey grids.

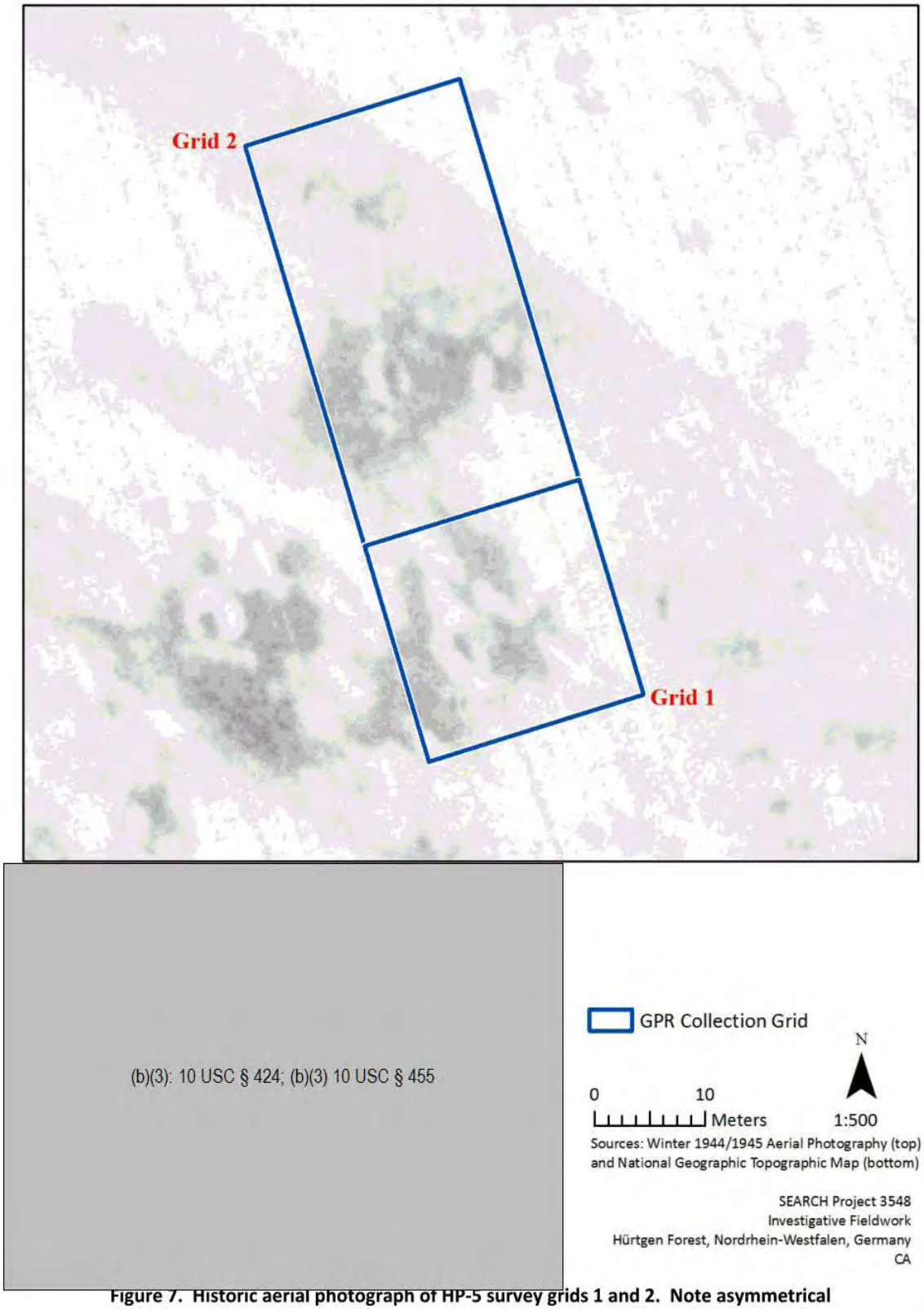

Figure 7. Historic aerial photograph of HP-5 survey grids 1 and 2. Note asymmetrical surface features.

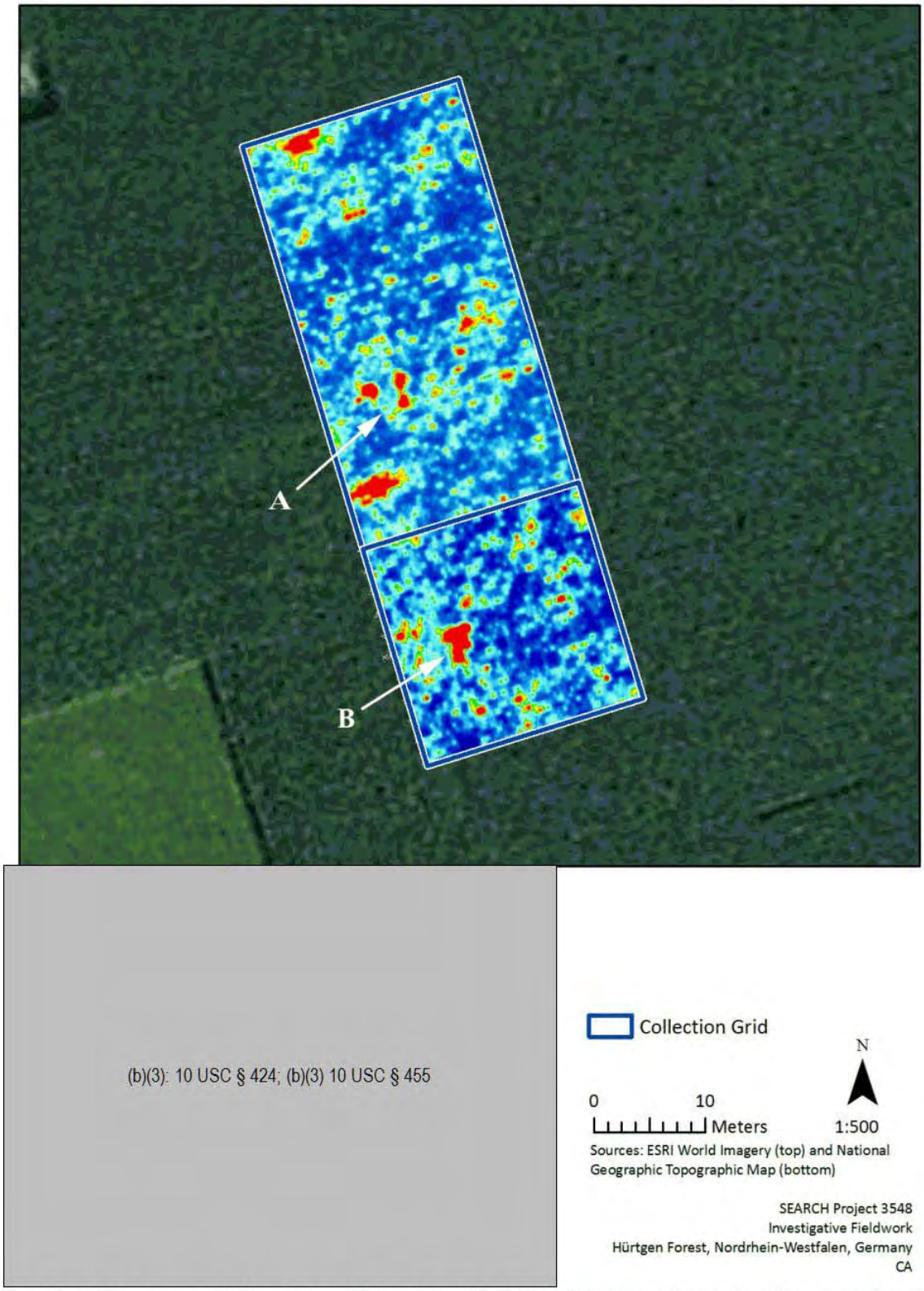

Figure 8. GPR survey results for survey grids 1 and 2 at HP-5. Note fighting position and artillery crater in grid 1 (A) and fighting position in grid 2 (B).

Survey grids 3 and 4 at HP-5 were positioned over less well-defined features in the historic aerial imagery and resulted in less easily interpreted data. This portion of the survey area appears to have been heavily shelled and bears a variety of subsurface features (**Figures 9-11**). Magnetometer survey in this area indicates a number of dipole magnetic signatures. Similar anomalies are present in the GPR results, with numerous shallow mid-to-high amplitude point source reflections interpreted as high density metal objects in the plow zone. Deeper reflections observed in the GPR data did not appear to correlate with observed surface features in the historic aerial photographs. Several such anomalies were investigated archaeologically and identified as geologic in nature.

Grids M1 and M2 identified a dipole signature at the location indicated as an artillery strike in historic aerial photographs (**Figures 12-13**). However, no excavation was conducted at this location, as there were no other viable targets detected or features identified in the historic aerial images.

High Probability Area 6

SEARCH completed a single remote-sensing grid at HP-6 (b)(5) (b)(5) The feature, visible on the surface as a flattened terrace with numerous animal burrows, was cleared of brush and a 6 x 8 meter GPR and magnetometer grid was completed prior to excavation of two 1 x 2 meter units. The remaining trees and uneven ground, as well as the numerous burrow entrances and exits, complicated data collection, with only five of the 20 transects for either instrument completely unimpeded.

Analyses of the GPR data indicate several weak, shallow reflections in upper soil strata with a few notable deeper point source reflections closer to the subsoil (**Figure 14**). These deep signals did not appear patterned or possess clarity allowing for ready interpretation. The animal burrows at this location are visible in transect data as hollows. Three of the deeper anomalous signals did not correspond with burrows and are more likely individual objects.

Magnetometer data from HP-6 benefited greatly from the low volume of metal and the relatively smooth soils present in the feature, discussed further below. The magnetometer revealed a roughly square subsurface feature with slight changes in density at the corners, possibly related to support columns or supports of the original structure.

High Probability Area 8

HP-8 was investigated solely with remote-sensing survey while excavations were being conducted at HP-7. SEARCH completed five remote-sensing survey grids totaling 3,390 square meters at this location using both GPR and magnetometry. A summary of completed

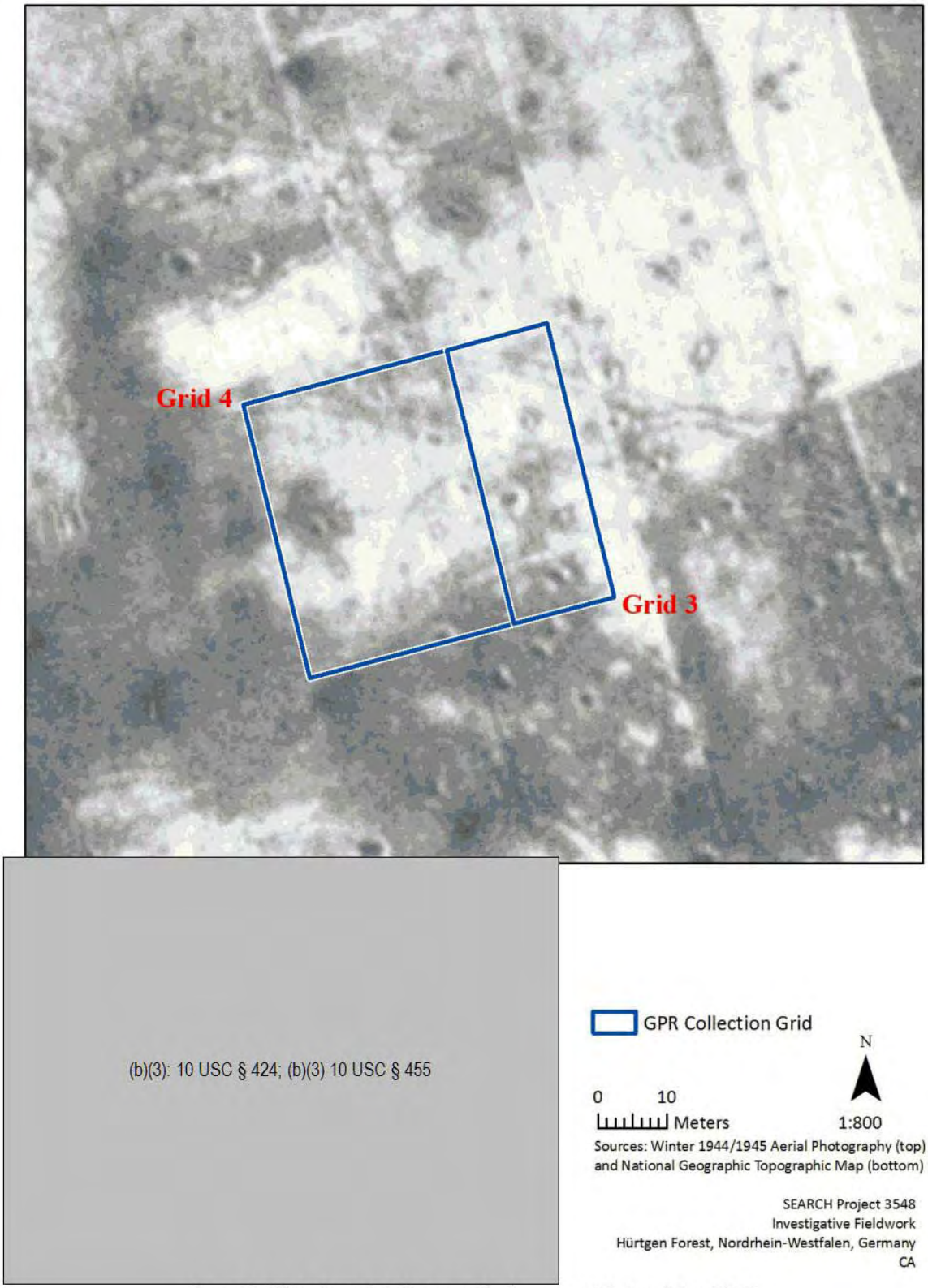

Figure 9. Historic aerial photograph of survey grids 3 and 4 at HP-5.

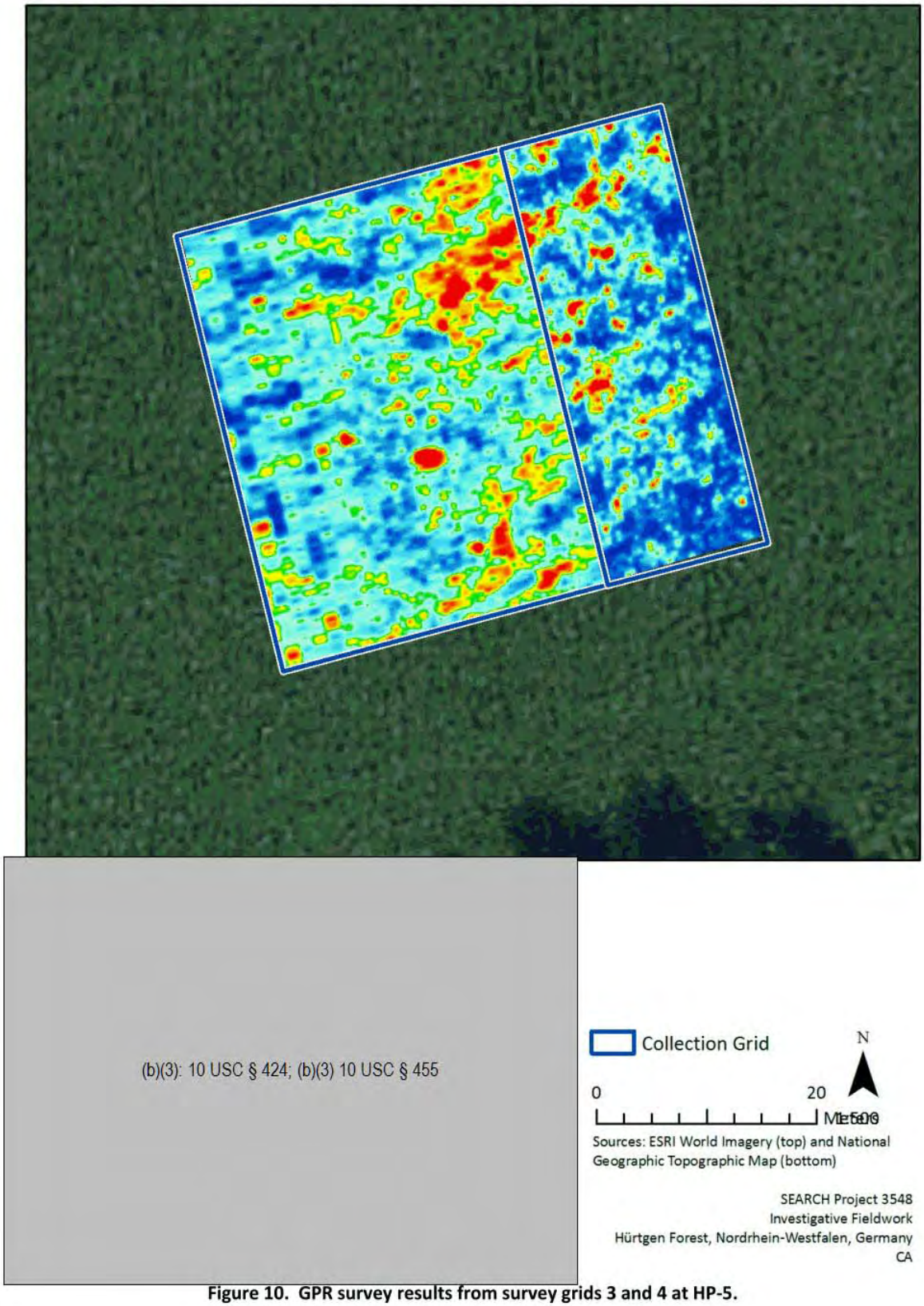

Figure 10. GPR survey results from survey grids 3 and 4 at HP-5.

Figure 11. Magnetometer survey results from survey grids 3 and 4 at HP-5.

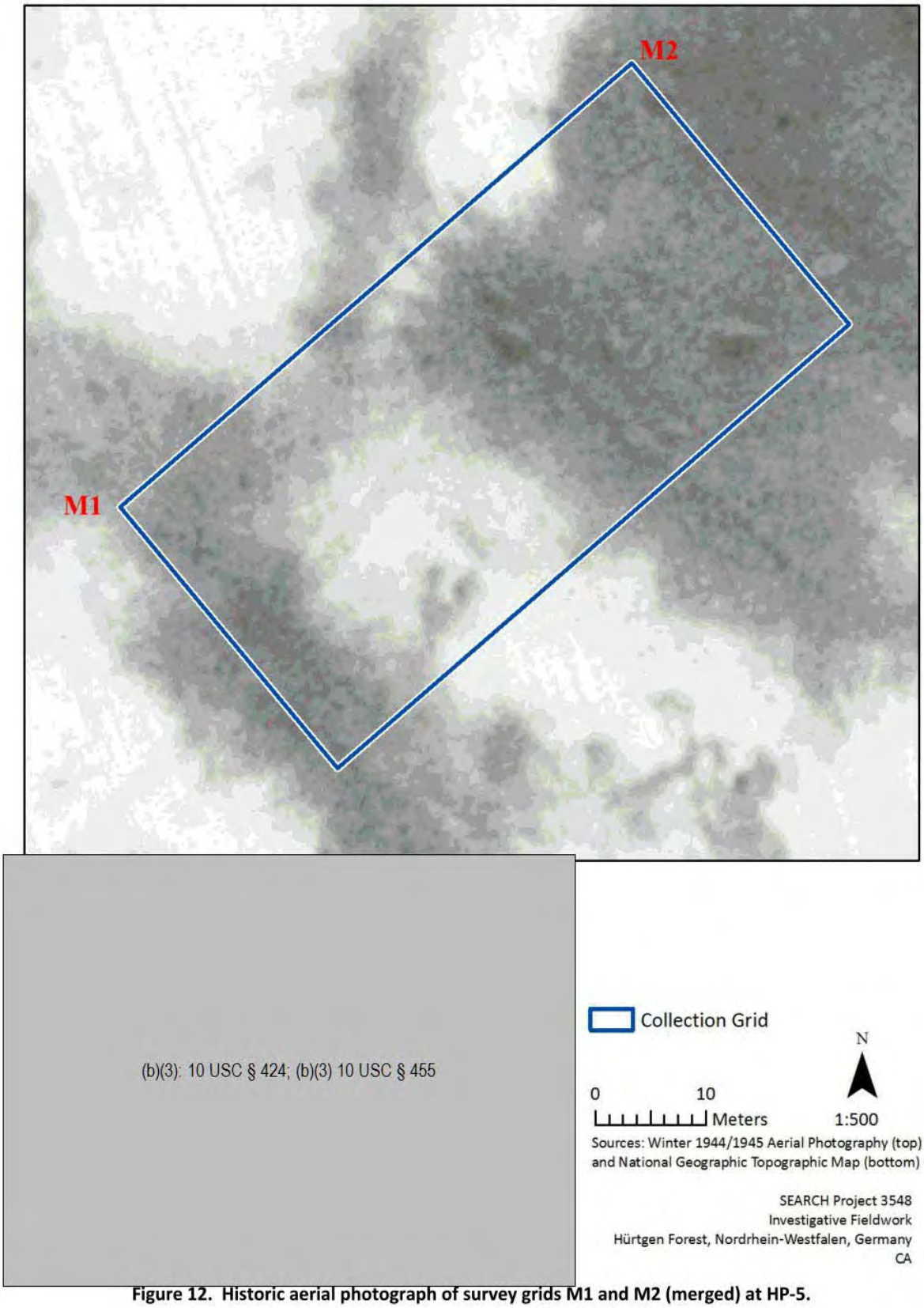

Figure 12. Historic aerial photograph of survey grids M1 and M2 (merged) at HP-5.

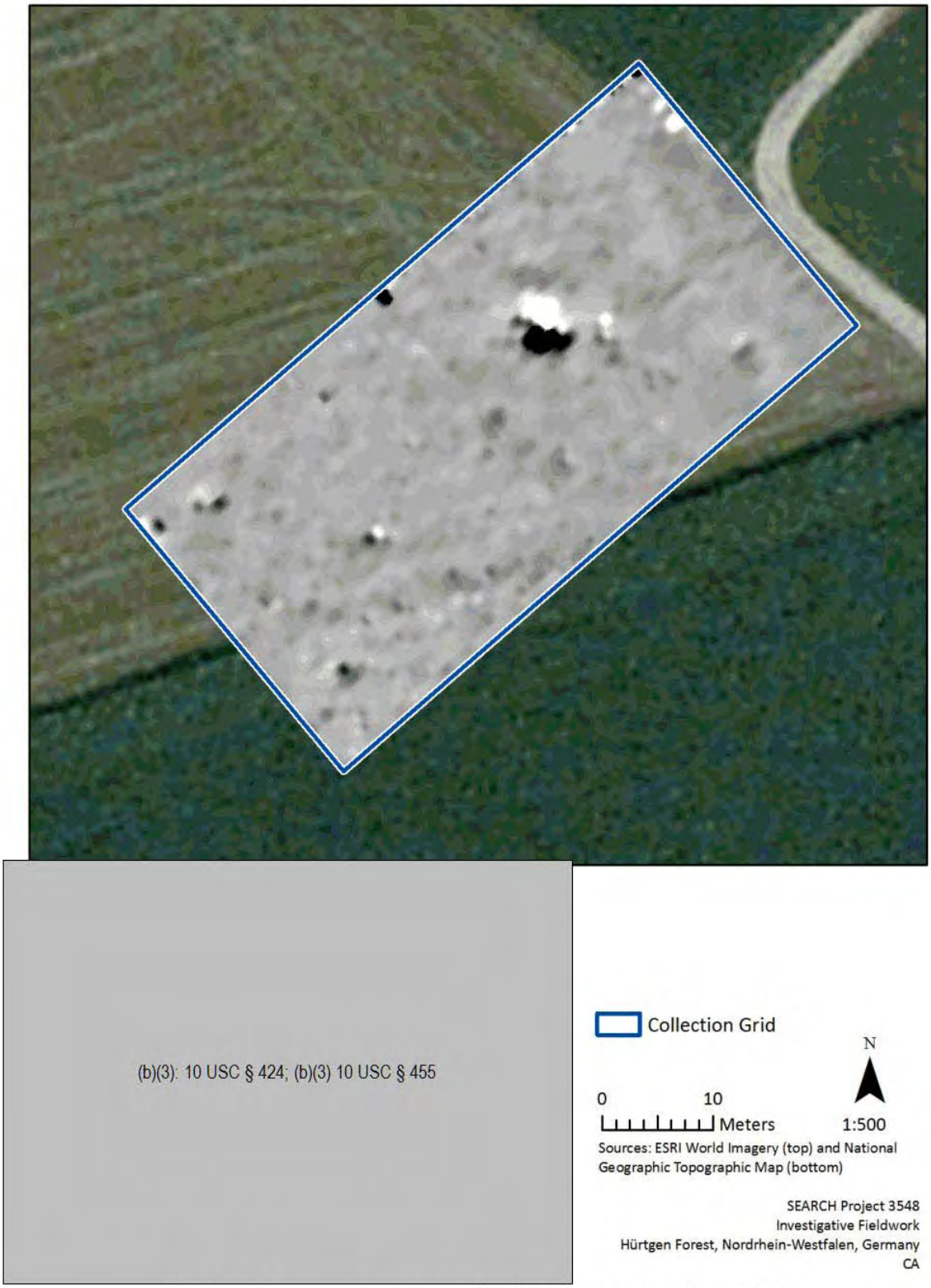

Figure 13. Magnetometer survey results of survey grids M1 and M2 at HP-5.

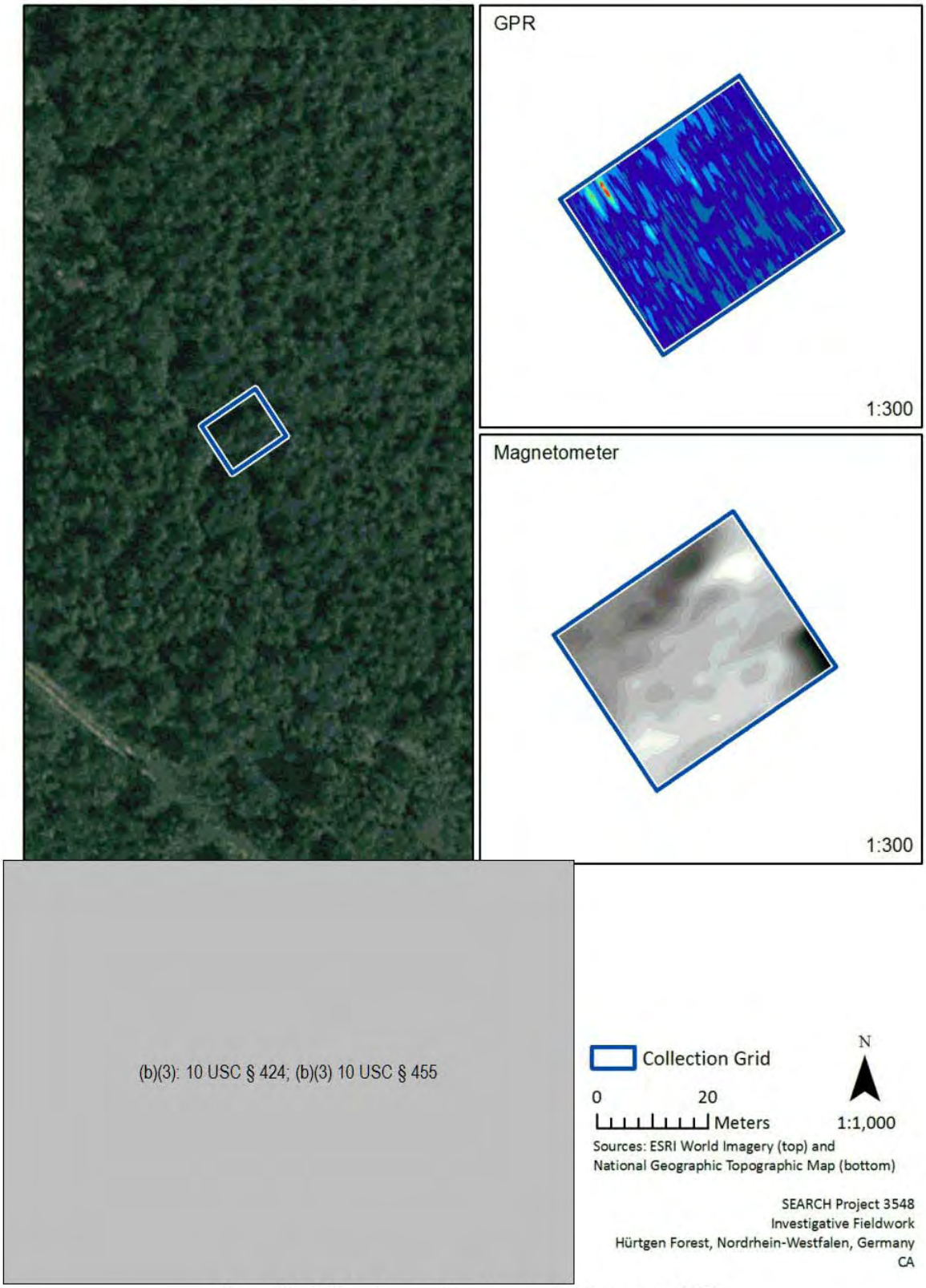

Figure 14. GPR and magnetometer results of survey at HP-6.

remote-sensing grids at HP-8 is presented in **Table 3** below. The area was identified for survey following review of historic aerial photographs of the town of Kommerscheidt, which indicated (b)(5) were heavily impacted by tank tracks, craters, and a number of possible fighting positions (**Figure 15**).

Table 3. Summary of Remote-Sensing Survey Conducted at HP-8 by SEARCH.

Grid Designation	Grid Dimensions (m)	Instrumentation
Grid 1	10 x 20	GPR and magnetometer
Grid 2	20 x 20	GPR and magnetometer
Grid 3	30 x 33	GPR and magnetometer
Grid 4	30 x 30	GPR and magnetometer
Grid 5	30 x 30	GPR and magnetometer

Survey grids were positioned (b)(5)
(b)(5)
was surveyed with three contiguous grids, (b)(5)
During GPR data collection, the transition from disturbed, upper sediment and the subsoil was approximated at 25-30 centimeters below surface (cmbs), with an additional transition to a denser matrix at about 50 cmbs. Numerous significant large and strong reflectors are noted, consistent with buried metal.

Remote-sensing results at HP-8 correspond very well with the surface features visible in historic aerial photographs (**Figures 16-17**). The majority of these signals are not readily identifiable as either artillery impact locations or fighting positions, though the distinguishing characteristics between these two features are admittedly subtle, even in analysis of an excavated feature. Further discussion of identified targets and archaeological recommendations for this area are included in the Site Survey Form for HP-8.

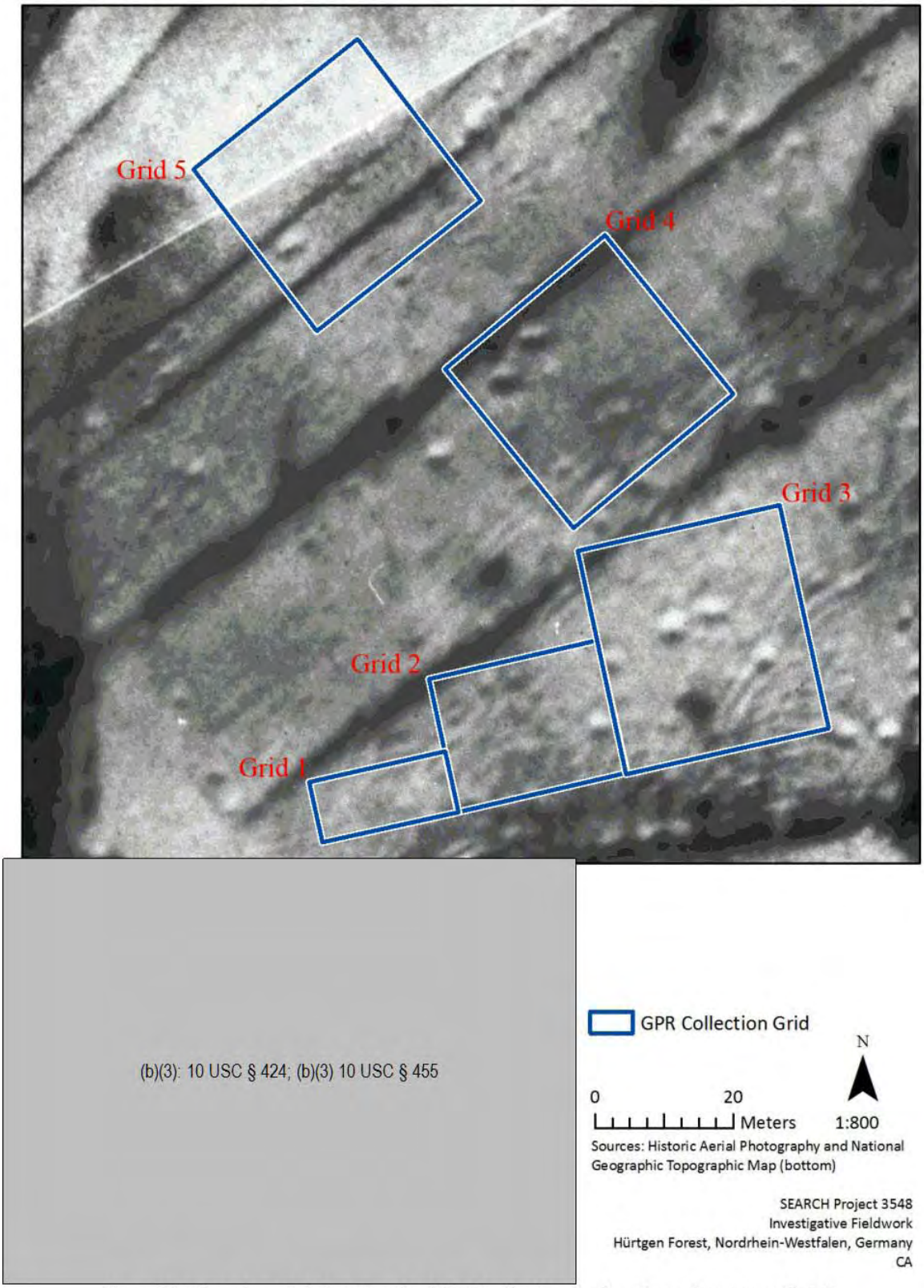

Figure 15. Historic aerial photograph of HP-8 indicating the locations of survey grids 1-5.

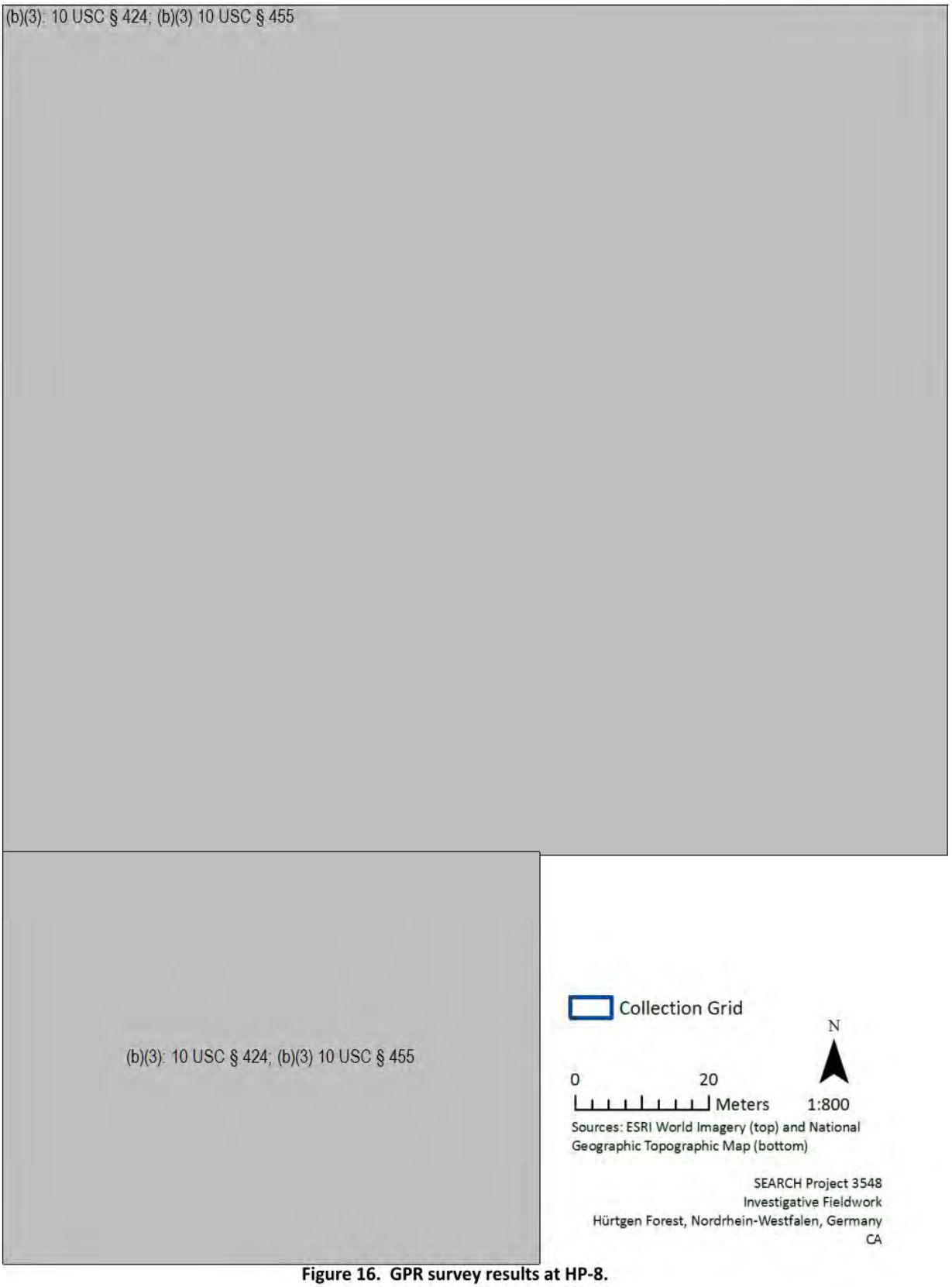

Figure 16. GPR survey results at HP-8.

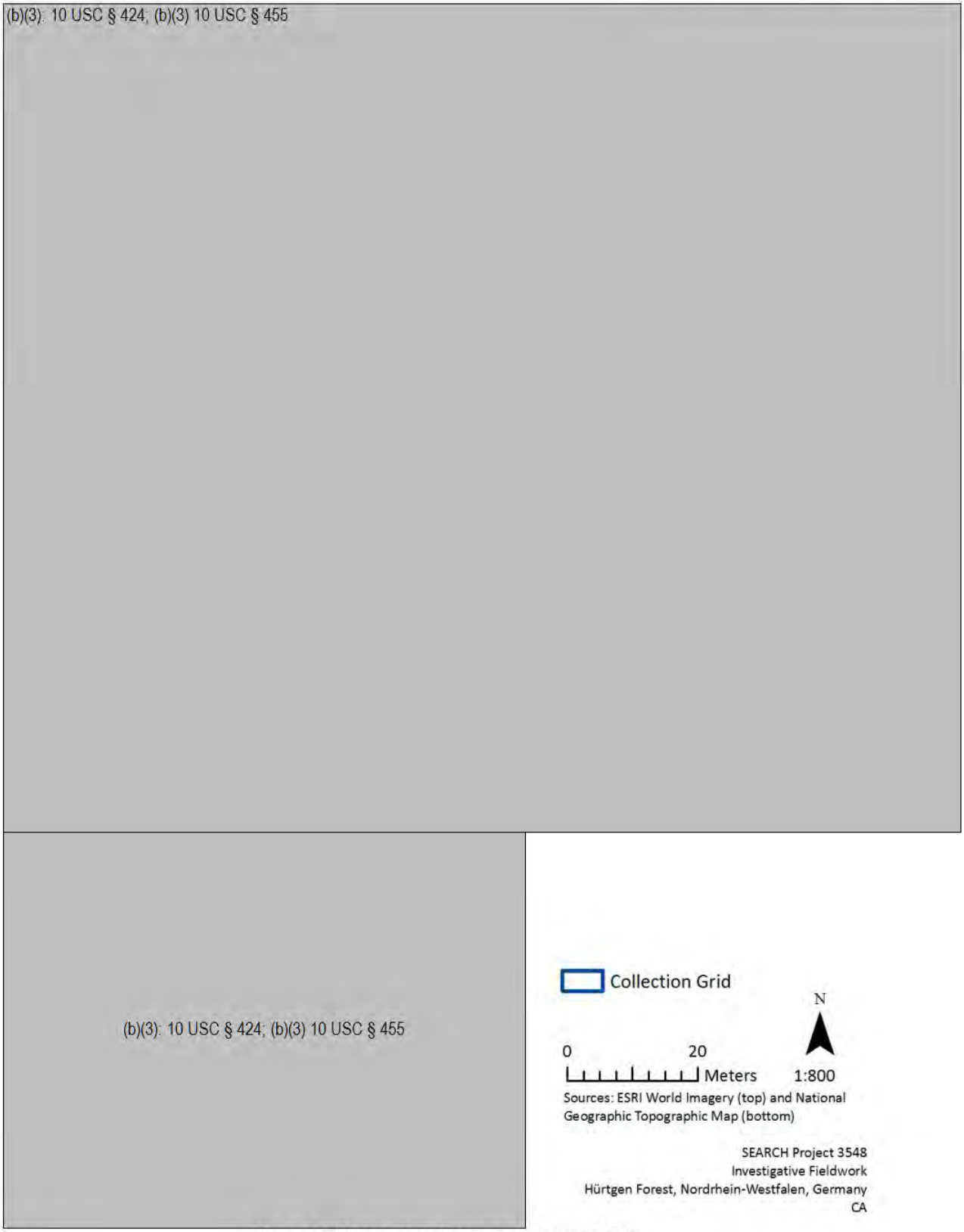

Figure 17. Magnetometer survey results at HP-8.

Archaeological Survey

SEARCH excavated a total of 46 test locations in six of the seven site areas investigated, covering 97.5 square meters. Excavated locations were selected based on results of surface inspections, informant and witness interviews, DPAA reports, and remote-sensing surveys. A summary of results are presented for each excavated probability area below.

High Probability Area 1

SEARCH excavated seven test units (TU) of varying dimensions at HP-1, totaling 19 square meters (**Table 5; Figure 18**). Six of the test locations were selected based on a combination of prior investigative work by DPAA, informant interviews conducted on site, review of historic aerial photographs, and remote-sensing survey using GPR and magnetometer. A single test unit, designated TU 2, was positioned to address reports that local collectors had excavated a small pit behind the chapel structure and recovered a US canteen and webbing equipment. At the close of investigations at HP-1, all test locations were backfilled, sod was replaced, and the area restored.

Table 5. Test Locations Excavated at HP-1 by SEARCH.

Unit Designation	Dimensions (m)	Depth (cmbs)	Date Opened	Date Closed
Test Unit (TU) 1	2 x 2	0-60	13 April 2016	14 April 2016
Test Unit (TU) 2	1 x 2	0-35	14 April 2016	15 April 2016
Test Unit (TU) 3	1 x 3	0-36	7 May 2016	7 May 2016
Test Unit (TU) 4	1 x 2	0-33	7 May 2016	7 May 2016
Test Unit (TU) 5	1 x 2	0-57	7 May 2016	7 May 2016
Test Unit (TU) 6	1 x 3	0-53	7 May 2016	7 May 2016
Test Unit (TU) 7	1 x 3	0-29	7 May 2016	7 May 2016

Excavations at HP-1 did not reveal any evidence of buried remains in the vicinity of the chapel structure, and in fact showed no intrusions into the subsoil beneath the chapel apart from the reinforced concrete pad upon which the chapel is built. A subsurface feature, identified in historic aerial photographs and in remote-sensing data, was identified immediately north of the chapel, and this anomaly was excavated as TU 1. This feature consists of a filled, basin-shaped depression, likely an artillery impact crater. Fill soils used to repair this depression post-war were rich in household debris, architectural debris, and light scatters of both US and German military equipment. The manner of repairing surface depressions post-war, by first filling them with debris and capping them with clean fill soils, was discussed frequently during interviews and observed in numerous locations during excavation. Excavation (b)(5) (b)(5) the alleged location that collectors had recovered US equipment, yielded additional household debris and a female end of a US .30 caliber cartridge belt assembly. However, no intrusions into the subsoil were evident in this location, and no evidence of any excavations, modern or historic, were visible. All debris encountered in this location was present in the topsoil, and possibly related to fill deposits in the depression at TU 1 approximately 4 meters to the east.

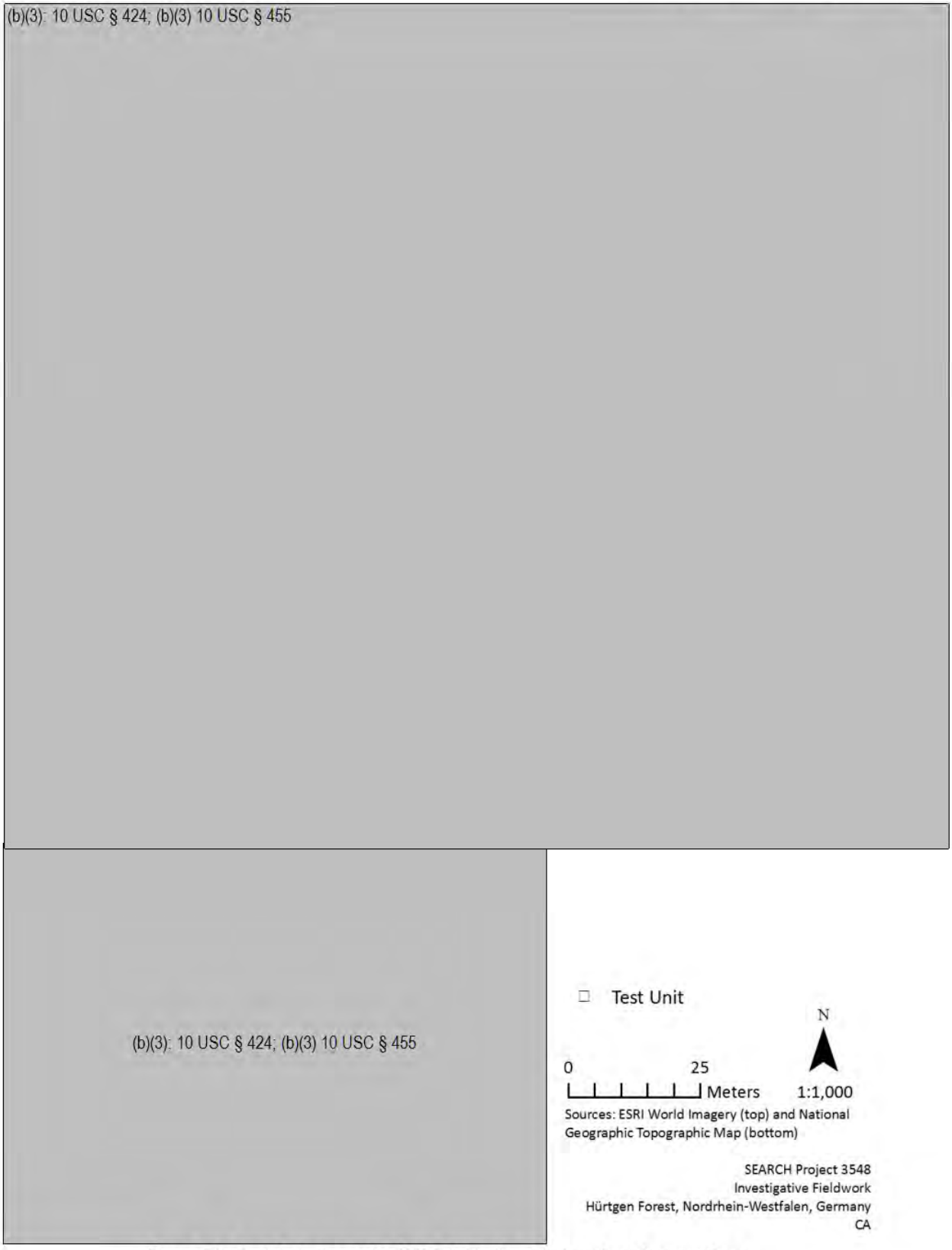

Figure 18. Aerial photograph of HP-1 indicating the location of excavations.

Test units were also located (b)(5) This area, now a sheep pasture, was described by local collectors as highly productive, yielding several dozen US Mk II hand grenades, a US compass, and a bayonet. (b)(5) (b)(5) Historic aerial photographs indicate that pre-conflict, the field contained a large barn, which was destroyed in the war. The barn sill supports are no longer visible on the surface, but were identified in remote-sensing survey. Several anomalies generally consistent with fighting positions or artillery impacts were also identified during survey and selectively excavated. Two test units were excavated (b)(5) (b)(5) concrete and local stone, are generally intact. The interior portions (b)(5) yielded several expended US .30 caliber rifle cartridges and snap fasteners consistent with a US-issued rain poncho. The rifle cartridges were stamped with 1943 manufacture dates, consistent with the loss information. The majority of these items were recovered below a layer of architectural rubble including brick, roof tile ceramic, and burned wood. Distribution and density of these materials suggests a short occupation of the structure by US personnel prior to its destruction. (b)(5)

High Probability Area 2

SEARCH conducted systematic and target directed excavations in the vicinity of the 3rd Battalion Aid Station (b)(5) in Vossenack. Pedestrian and GPS mapping of the landform revealed 39 small, shallow surface depressions oriented in an approximately north-south grid pattern in the immediate vicinity of the structure believed to be the foundation of the 3rd Battalion Aid Station. For further discussion of the Aid Station's relocation, construction, and associated landforms, witness reports, and mapping efforts, please see the Search and Recovery Report (SAR) for HP-2.

All 39 surface depressions were surveyed with a metal detector to assess their potential contents. Test locations were placed to maximize representative sampling of these features, to characterize their construction and contents, and to determine their purpose (**Figure 19**). In addition to the surface depressions, selected defensive fighting positions in the vicinity were excavated for comparison. In total, 12 surface features totaling 14.5 square meters were excavated (**Table 6**). At close of investigations, all test locations were backfilled and restored.

The smaller surface depressions in the immediate vicinity of the aid station structure are generally characterized archaeologically as a shallow excavation into the sloping hillside to depths of between 20 and 45 cmbs, with spoil soils distributed along the downslope margin. Though not formally filled, the depressions appear to have accumulated sediments, possibly from erosion post-war following a series of forest fires and silviculture, as the landform is now used as a commercial timber plot. Additionally, the temperate, wet environment and natural catchment of the depressions likely accelerate development of topsoils and organic duffs, as seen during excavation. These depressions are believed to have been excavated to create level platforms on the slope side to facilitate placement of litters during the operation of the medical

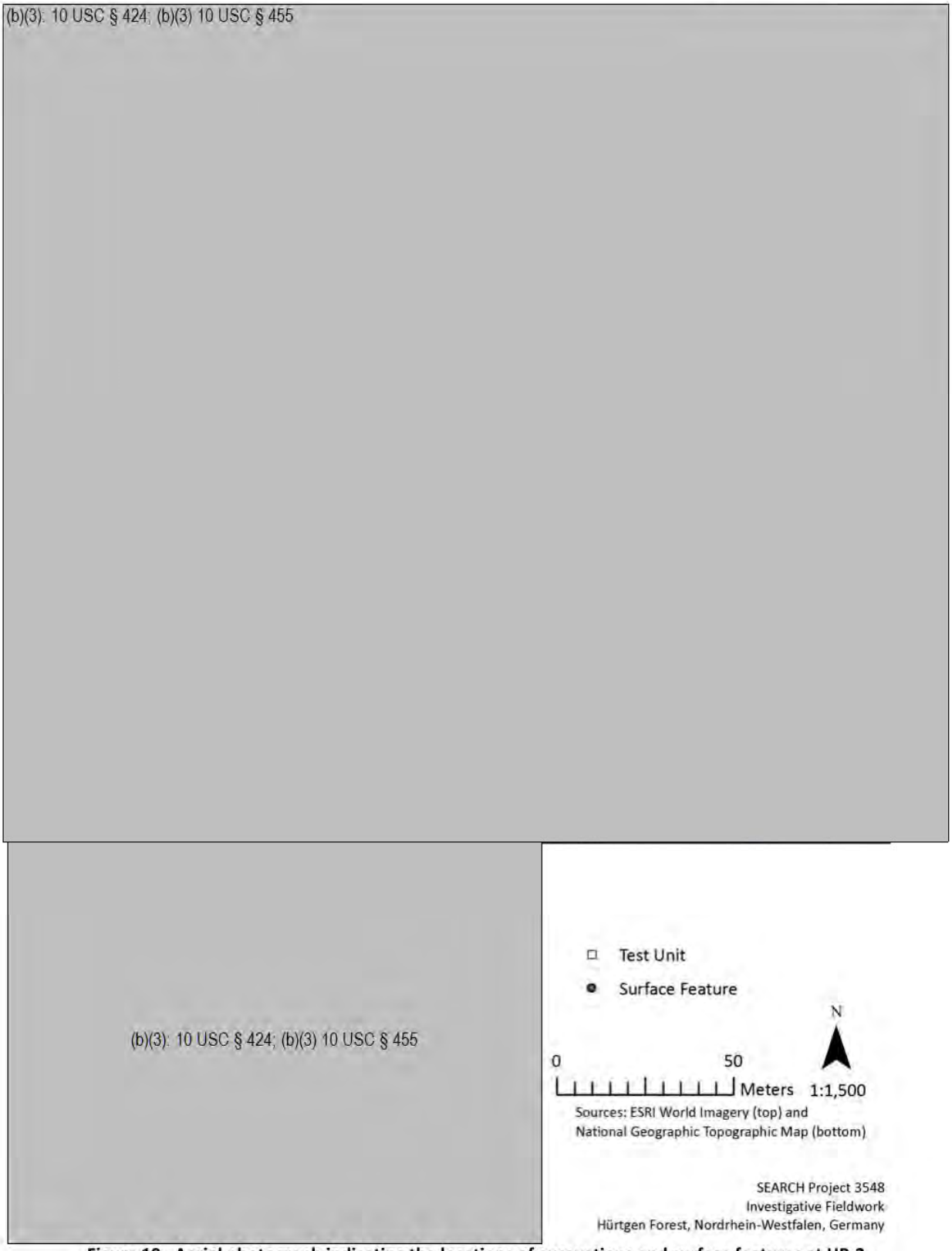

Figure 19. Aerial photograph indicating the locations of excavations and surface features at HP-2.

Table 6. Test Locations Excavated at HP-2 by SEARCH.

Unit Designation	Dimensions (m)	Depth (cmbs)	Date Opened	Date Closed
Feature 21	1 x 1	0-45	23 April 2016	23 April 2016
Feature 4	1 x 1	0-39	23 April 2016	23 April 2016
Feature 6	1 x 2	0-60	23 April 2016	25 April 2016
Feature 13	1 x 1	0-40	24 April 2016	24 April 2016
Feature 14	1 x 1	0-30	24 April 2016	24 April 2016
Feature 1	1 x 1	0-54	24 April 2016	25 April 2016
Feature 8	1 x 1.5	0-52	25 April 2016	26 April 2016
Feature 28	1 x 1	0-70	25 April 2016	26 April 2016
Feature 36	1 x 2	0-61	25 April 2016	28 April 2016
Feature 35	1 x 1	0-60	26 April 2016	28 April 2016
Feature 18	1 x 1	0-60	25 April 2016	25 April 2016
Feature 22	1 x 1	0-60	26 April 2016	26 April 2016

station. Field reports indicate as many as 60 litter patients in the vicinity of the hospital at times, and given the 55-60 degree slope, level platforms would have had to have been created to place patients on the ground without the litter being severely angled. Arrangement of litter cases in rows would have facilitated access by medical personnel, and as litter cases would presumably have been more urgent, they may have been positioned closer to the aid station.

Recovered materials at HP-2 primarily consist of US-issued equipment and material. Nearly all excavated features contained refuse from US ration kits, including food cans and drink mix packets, and these items account for the bulk of items recovered from HP-2. Additional items include fragmentary hardware from clothing or equipment, including lace eyelets and hooks from M-1938 leggings, .30 caliber cartridge hardware, Type II webbing belt buckles, and snap fasteners. In addition, SEARCH personnel also recovered coinage from the United States and United Kingdom with dates ranging from 1938 to 1941, consistent with the incident date.

High Probability Area 5

SEARCH excavated 10 test units within the defensive lines of the 112th I.D. Company F and G defensive positions (b)(5) (**Figure 20; Table 7**). Test units were positioned to assess remote-sensing anomalies and historic aerial imagery features. The survey area is located in a series of agricultural properties, primarily plowed and sown with silage corn. Test units were excavated to between 28 and 110 cmbs with an average depth of 63 cmbs, and yielded a variety of US-issued equipment, ammunition, and ordnance. At the close of investigations at HP-5, all test locations were backfilled and fully restored.

Survey areas at HP-5 (b)(5) (b)(5) n the vicinity of the defensive lines for G Company 1st Platoon, while (b)(5) where the defensive lines for G Company 3rd Platoon were located. The historic aerial photographs of the lower field are significantly more difficult to assess due to the density of visible surface features, thus the test units in this area were placed primarily to investigate remote-sensing data. No definitive fighting positions were identified archaeologically (b)(5)

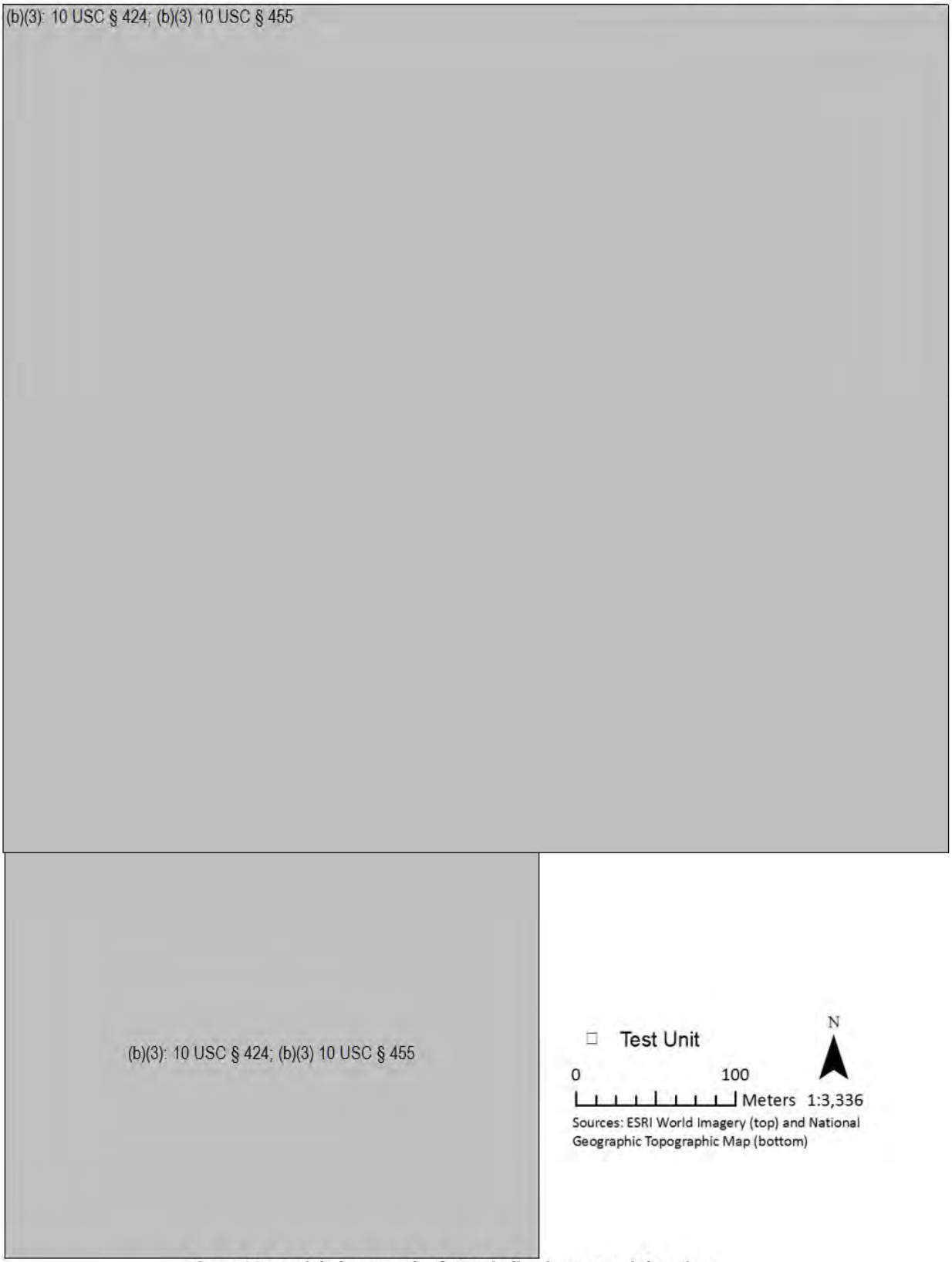

Figure 20. Aerial photograph of HP-5 indicating test unit locations.

Table 7. Test Locations Excavated at HP-5 by SEARCH.

Unit Designation	Dimensions (m)	Depth (cmbs)	Date Opened	Date Closed
Test Unit (TU) 1	2 x 2	0-30	15 April 2016	15 April 2016
Test Unit (TU) 2	1 x 3	0-95	16 April 2016	17 April 2016
Test Unit (TU) 3	1 x 3	0-88	17 April 2016	18 April 2016
Test Unit (TU) 2 Ext.	1 x 1	0-78	18 April 2016	18 April 2016
Test Unit (TU) 4	2 x 3	0-90	19 April 2016	20 April 2016
Test Unit (TU) 5	2 x 2	0-26	19 April 2016	19 April 2016
Test Unit (TU) 4 Ext.	1 x 2	0-40	20 April 2016	21 April 2016
Test Unit (TU) 6	1 x 3	0-48	22 April 2016	22 April 2016
Test Unit (TU) 7	1 x 3	0-110	22 April 2016	23 April 2016
Test Unit (TU) 8	1 x 3	0-28	22 April 2016	23 April 2016

Excavations at HP-5 exposed two well-defined defensive fighting positions (b)(5) (b)(5) Both locations were later expanded to further examine the shape and contents of the features. The fighting position (b)(5) contained a fairly sparse amount of equipment, including limited snap fasteners and a single .30 caliber carbine cartridge recovered in contact with the subsoil. Much like the position located (b)(5) (b)(5) excavated an additional 25 centimeters into the subsoil. This pit has been tentatively interpreted as a grenade sump. Grenade sumps are fairly common additions to fighting positions of the war and serve as a place to quickly deposit incoming live grenades to contain the lateral fragmentation and reduce the potential for shrapnel movement inside the position. The paucity of equipment and ordnance in this feature is interesting when compared to the feature (b)(5) though it is possible that additional items were present, but removed prior to the feature being filled. Fill soils (b)(5) were similar soils to the parent topsoil, but contained additional architectural rubble and bomb fragmentation. Three destroyed bicycle frames were also used as fill in this feature, deposited in different fill events with one frame in contact with subsoil and two others in the middle of fill horizons.

(b)(5) contained a well-preserved and linear fighting position with a variety of US equipment, ammunition, and ordnance in contact with subsoil at its base. SEARCH personnel recovered an intact gas mask, M-1 bayonet, and a variety of rations and medical kit materials. Several Mk. II hand grenades, rifle-propelled grenades, .30-06 M-1 Garand magazines, and a smoke grenade were also recovered from this feature and disposed of by the NRW State Explosive Ordnance Disposal (EOD) Authority (Kampfmittelbeseitigungsdienst Rheinland). The feature extends approximately 45 to 65 centimeters below the base of the plow zone for a total approximate depth of 90 cmbs and is roughly 138 centimeters across at the base of the plow zone. The east and west margins of the feature are well defined and cut fairly steep into the subsoils. In addition, (b)(5)
Fill soils in both the impact crater and the fighting positon contain very little rubble or debris and appear to be lightly mottled subsoil/topsoil fills. It is possible that the artillery impact to the west of the fighting position contributed a soil cap, perhaps accounting for the higher volume of equipment as these materials would have been buried or partially buried as the agricultural fields were being repaired and restored in the later 1940s and early 1950s.

In addition to the two well-defined fighting positions in the vicinity of the defensive lines for G Company 1st Platoon on the upper field, SEARCH excavated three additional subsurface tests. (b)(5) was excavated as a control test unit to assess soil composition and depth of naturally occurring strata, and (b)(5) (b)(5) (b)(5) with uniformly distributed spoil in aerial photographs from early 1945. A single transect inspection with the GPR revealed a large, metal-rich anomaly in a rough basin-shape situated just below the plow zone. Excavation of this feature revealed a basin-shaped circular or semi-circular intrusion into the subsoil filled with a variety of architectural rubble and farm equipment. The rubble was so dense in areas that soil had not filled the gaps in the piles of brick and roofing tile, and large voids were present. Also present in the rubble were a metal bucket, a portion of a metal harrow, and a damaged mechanical wheat thresher. This method of filling depressions to restore agricultural property, (b)(5) was further discussed by (b)(6) a local resident who lives with her husband (b)(5) (b)(5),(b)(6) described returning to the area in 1946 as a child and seeing the bodies of soldiers and livestock scattered throughout the town and fields, and the efforts taken to pile rubble and debris into craters and foxholes prior to capping them with topsoil. An additional example of this practice was observed in another filled bomb crater in the lower fields (b)(5) which was filled almost entirely with brick and roof tile down to 110 cmbs.

High Probability Area 6

HP-6 was initially identified during an assessment of the landform at HP-2 (b)(5) (b)(5) (b)(5) Upon further investigation, the team discovered a large network of systematically looted fighting positions. Damaged or undesirable artifacts at the looting site included ponchos, wool blankets, leather gloves, ammunition, entrenching tool sheaths, ration and medical kit components, and barbed wire support stakes that were left on the ground surface or in spoil piles, while other materials were presumably collected and removed.

SEARCH conducted large pedestrian surveys with a small team during excavation operations at HP-2 in an effort to document the extent of looting activity and the damage to both archaeological resources and potential recovery locations on the landform. In the small area surveyed, (b)(5) 73 fighting positions were identified. Of these 73 positions, 58 had been completely destroyed by looting. Given that the archaeological integrity of 79 percent of these positions had been compromised by looting, efforts focused on excavation of several features that had not yet been destroyed in an effort to both characterize the network of features and preserve archaeological data at high-risk of loss due to looting activities.

SEARCH excavated six test units at HP-6, totaling 11 square meters (**Table 8; Figure 21**). Test units were excavated to between 25 and 81 cmbs, with an average depth of 44 cmbs.

Table 8. Test Locations Excavated at HP-6 by SEARCH.

Unit Designation	Dimensions (m)	Depth (cmbs)	Date Opened	Date Closed
Test Unit (TU) 1	1 x 1	0-35	28 April 2016	28 April 2016
Test Unit (TU) 2	1 x 2	0-52	28 April 2016	29 April 2016
Test Unit (TU) 3	1 x 1	0-25	28 April 2016	28 April 2016
Test Unit (TU) 4	1 x 1	0-40	28 April 2016	29 April 2016
Test Unit (TU) 5	1 x 2	0-32	29 April 2016	29 April 2016
Test Unit (TU) 6	1 x 4	0-81	30 April 2016	30 April 2016

Six test units were placed across the landform at HP-6, and a single remote-sensing survey grid was positioned atop a suspected burned and collapsed earth and log structure. Observations of looted versus non-looted positions suggested that areas more visible to pedestrian traffic were less likely to be targeted for excavation. As such, SEARCH prioritized positions that were obscured from view from pedestrian trails, or on the margin of high visibility areas. TUs 1-4 excavated surface depressions generally consistent with defensive positions in shape, size, and distribution of spoil sediments. These test locations produced similar materials when compared to the fragmentary equipment observed in the back dirt of the looted locations, including poncho fragments and hardware, fragments of blanket fabric, and expended .30 caliber rifle cartridges. TU 3 was determined to be an oblique artillery impact and excavation was terminated at 25 cmbs. TU 5 was positioned to investigate a partially looted and unusually shaped fighting position. The surface depression at this location appears to have originally been T-shaped, with a linear trench oriented perpendicular to the slope and a shallow spur or extension excavated perpendicular to the trench. The trench had been destroyed, with back dirt deposited downslope. Excavation of the spur revealed no intrusion into the subsoil nor any equipment or fragmentation, suggesting perhaps the original position had taken advantage of a natural depression in the landform.

Excavations at the wood and earth structure were limited to a single 1 x 5 meter trench with a 1-meter balk, totaling 4 square meters. The structure is evidenced on the landform as an intentionally leveled platform on a 35-45 degree slope. Numerous animal burrows, later determined to be European badger (*Meles meles*) perforate the southern half of the structure, and the removed sediment at the entrances of these burrows is smooth, generally free of gravel, and is nearly completely black with charcoal. Fired and thermally-burst US .30 caliber rifle cartridges with 1943 head stamp dates were recovered from the surface of the structure near animal burrow entrances.

Stratigraphically, the structure is positioned atop naturally sloping subsoil that appears to follow the slope of the landform. The eastern end of the trench is significantly deeper than the west, creating the leveled platform observed on the surface. Soils in this area are nearly completely black with charcoal and free of gravel. No US equipment or materials were recovered during excavation of this feature, and no additional excavation is recommended at this time. At the close of investigation at HP-6, all test locations were backfilled and restored.

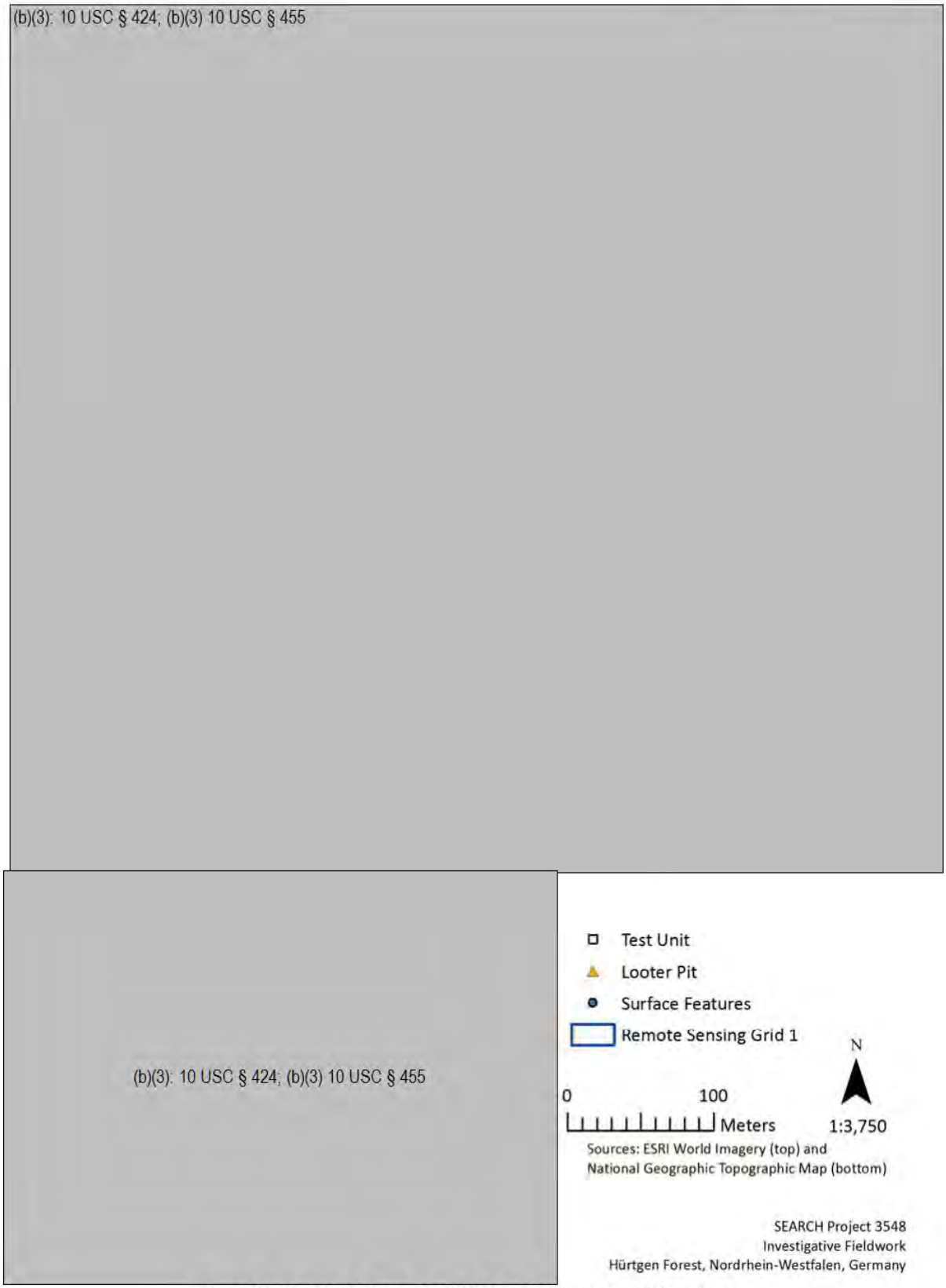

Figure 21. Aerial photograph of HP-6 indicating test unit locations.

High Probability Area 7

HP-7 was selected for both remote-sensing and archaeological survey based on analyses of historic aerial imagery of the village of Kommerscheidt from 1945, which indicated an (b)(5) (b)(5) Historic aerial images were georeferenced, and the location of the trench was verified in several places via GPR prior to excavation.

Excavations at HP-7 included investigation (b)(5) (b)(5) and a dark spot identified in aerial photographs, which appeared to be shallow subsoil on the ground surface during initial site inspection (TU 1). In total, SEARCH excavated six test units totaling 14 square meters (**Table 9; Figure 22**). Excavation depths ranged from 38 to 88 cmbs and averaged 71 cmbs.

Table 9. Test Locations Excavated at HP-7 by SEARCH.

Unit Designation	Dimensions (m)	Depth (cmbs)	Date Opened	Date Closed
Test Unit (TU) 1	1 x 4	0-38	1 May 2016	1 May 2016
Test Unit (TU) 2	1 x 2	0-52	1 May 2016	1 May 2016
Test Unit (TU) 3	1 x 2	0-75	1 May 2016	2 May 2016
Test Unit (TU) 4	1 x 2	0-87	2 May 2016	2 May 2016
Test Unit (TU) 5	1 x 2	0-88	2 May 2016	4 May 2016
Test Unit (TU) 6	1 x 2	0-88	4 May 2016	4 May 2016

TU 1 and 2 were revealed via excavation to be an unusually shallow area of extremely rocky subsoil and a pair of artillery impacts, respectively. No artifacts were recovered from these locations. TUs 3-6, by contrast, proved extremely complex and produced a wide variety of artifacts. Single GPR "prospecting" transects were used to verify variability in the depths of the dense, rocky subsoil in the approximate coordinates of the linear trench, determined by geo-referencing the historic aerial photographs from 1945. Areas where the subsoil was significantly deeper in cross-section were flagged, and test units were placed to capture the anomaly either in cross-section (TU 3) or lengthwise (TUs 4-6).

Excavations of the trench feature at HP-7 indicate that it is roughly 80-90 centimeters deep from the current ground surface, extending roughly 55-65 centimeters into the subsoil. The base of the trench is approximately 35 centimeters across, and roughly 50 centimeters across at the interface of the plow zone and subsoil. Excavations revealed two changes in direction of the trench, with an additional two detected via GPR. Materials recovered from the trench, in particular TUs 5 and 6, are the most dense and well-preserved evidence of an infantry fighting position encountered during the SEARCH fieldwork in Hürtgenwald. Recovered items include numerous elements of LBE/LCE hardware, medical and ration kit components, M-1 bayonet, a damaged M-1 Garand rifle, M-1938 legging components, VS-17 signal panel marker, entrenching tool, complete poncho, and a canteen and nested canteen cup with the letters "MS" scratched into the base of the canteen. No US personnel listed as missing in the area of Kommerscheidt are known by SEARCH to have the initials "MS."

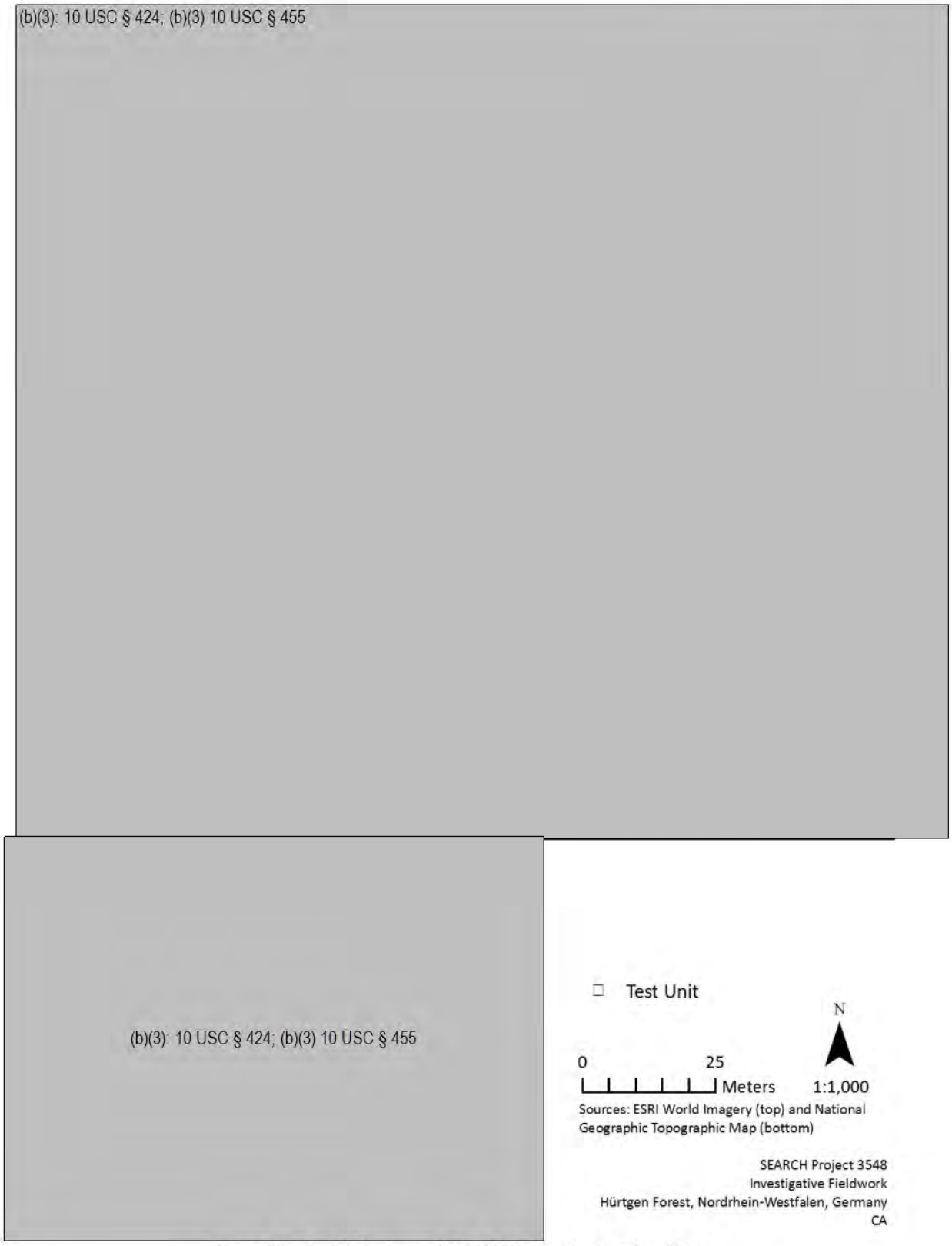

Figure 22. Aerial photograph of HP-7 indicating test locations.

High Probability Area 9

HP-9 is a series of defensive positions and artillery impact features (b)(5) (b)(5) (b)(5) Preliminary mapping efforts in this location by SEARCH identified 107 surface features that are morphologically consistent with observed and recorded fighting positions in the area. In addition to fighting positions, SEARCH mapped 41 surface features morphologically consistent with artillery impacts, as well as 211 surface depressions or features of unknown type.

SEARCH excavated five test locations within HP-9. In total, 7 square meters were excavated to depths ranging from between 32 and 89 cmbs, at an average depth of 67 cmbs (**Table 10; Figure 23**). Test locations were placed on the landscape to address two analytical points. First, (b)(5) were placed to identify potentially infilled looting pits, as described in a report from 1977 detailing the recovery and subsequent reburial of PVT Wilder L. HENDRICKS by Belgian tourists (Individual Deceased Personnel File: Hendricks, Wilder L.). Second, SEARCH excavated an indeterminate depression and a looted fighting position (TU 3 and 4, respectively) (b)(5) HP-9 in order to refine the interpretation of surface feature morphology in the specific soils and terrain of HP-9.

Table 10. Test Locations Excavated at HP-9 by SEARCH.

Unit Designation	Dimensions (m)	Depth (cmbs)	Date Opened	Date Closed
Test Unit (TU) 1	1.5 x 1	0-89	3 May 2016	4 May 2016
Test Unit (TU) 1 Ext.	1 x 1	0-87	6 May 2016	6 May 2016
Test Unit (TU) 2	1.5 x 1	0-32	6 May 2016	6 May 2016
Test Unit (TU) 3	1 x 2	0-45	6 May 2016	6 May 2016
Test Unit (TU) 4	1 x 1	0-81	6 May 2016	6 May 2016

Excavations at TU 1 revealed a large, filled excavation capped with displaced rocks. SEARCH recovered a variety of debris from the fill of the feature, including metal hardware from a locking chest, numerous batteries, and miscellaneous snap fasteners. A one-meter extension was placed to the west of TU 1 to capture the west margin of the original feature. The basal shape of the feature at TU 1 is similar morphologically to fighting positions observed in the area, although military artifacts in the feature and backfill are relatively sparse. TU 2, located to the west of TU 1, also appeared to be a stone capped and filled excavation area. Investigation of this feature indicated an extremely shallow depression with minimal intrusion into subsoils. A single Mk II fragmentation grenade was recovered in contact with the subsoil in this unit. Excavation was terminated at the natural subsoil interface.

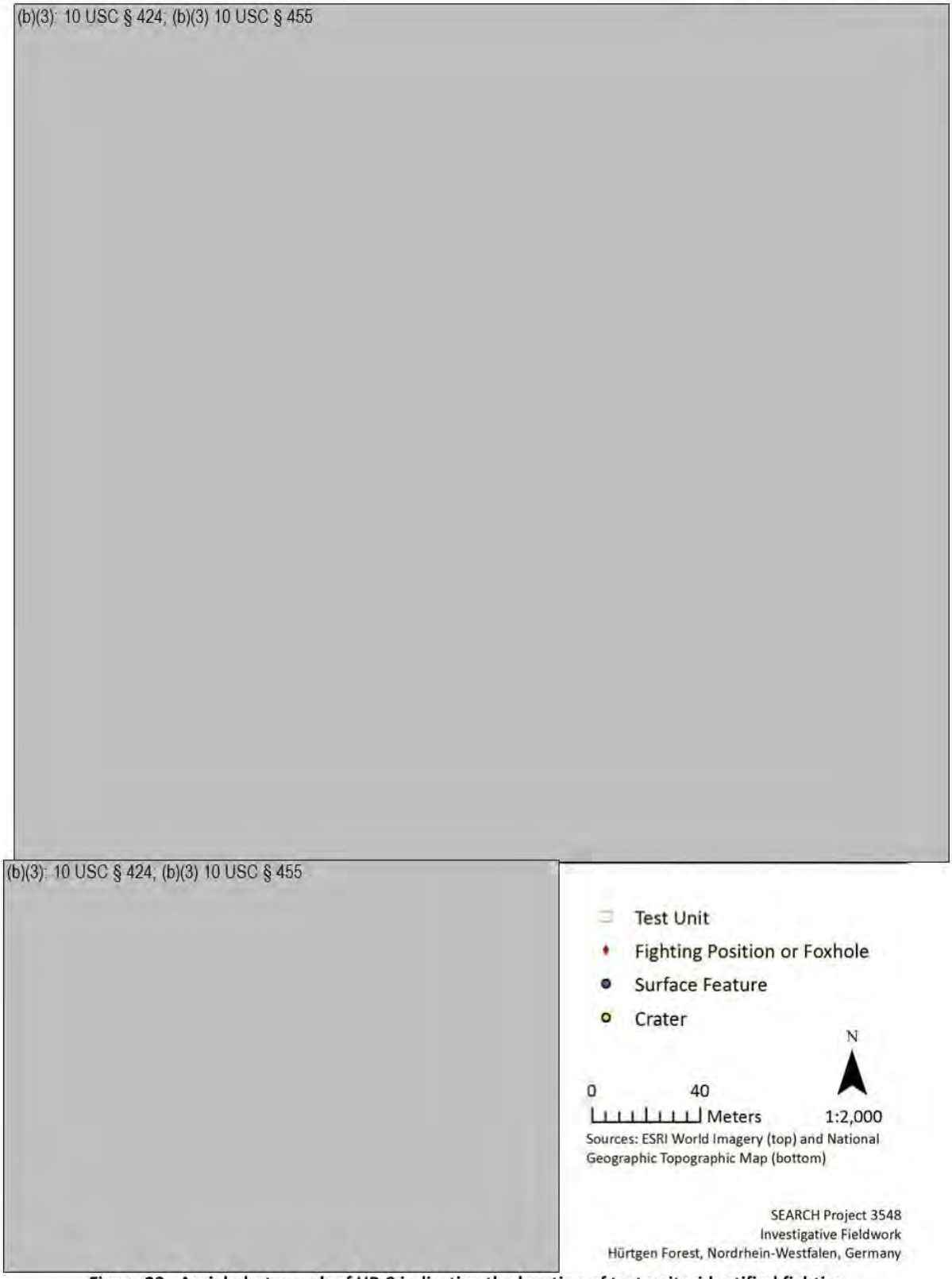

Figure 23. Aerial photograph of HP-9 indicating the location of test units, identified fighting positions, artillery impacts, and indeterminate surface depressions.

TU 3 was positioned to investigate an indeterminate depression (b)(5) (b)(5) The surface feature in this location was a broad, shallow depression with sparse spoil distribution around its margins. Excavation proceeded at TU 3 to confirm morphological assessment of other similar surface features on the landform. TU 3 was excavated to a maximum depth of 45 cmbs, at which point the broad, basin-shaped feature transitioned into a compact subsoil and slate. Recovered materials from this location were exclusively ordnance-related, including bomb fragmentation and segments of brass artillery rifling band. At the close of excavations at HP-9, all test units were backfilled and restored.

DEPOSITION OF RECOVERED MATERIALS

Collection, labeling, storage, and security of recovered materials during excavation was discussed as part of the kick-off meeting for the Hürtgen Forest project. The methodology employed following that discussion was strict adherence to DPAA SOP 1.3—Evidence Management and Security. All items would be collected in 4-millimeter zip-top plastic bags and labeled with all relevant provenience information. Collected materials were to be stored in a locked container in the custody and supervision of the Recovery Leader. Collection of materials was to be restricted to items of probative value as pertains to a specific individual or group of individuals. Thus items in association with remains, identification media, or items demonstrably correlated to a missing individual would be retained for DPAA review and analyses.

SEARCH retained, at the request of (b)(3):10 U.S.C. § 130c,(b)(6) DPAA, all recovered US equipment for review by DPAA personnel at the close of the investigation. On 8 May 2016 (b)(3):10 U.S.C. § 130c, (b)(6) DPAA Recovery Leader, reviewed all recovered materials from all High Probability Areas included in the Archaeological Survey section of this summary report. All materials were determined to be non-probative, in that no materials could be definitively attributed to a specific individual.

No mechanism, guidelines, or policy had been in place prior to the field investigation to allow for the disposition of recovered materials. The value of the equipment recovered to collectors, as well as the ethical concerns related to disposal, precluded on-site or off-site disposal of materials. Subsequently, the North Rhine-Westphalia Archaeologist's office, under the direction of (b)(6) agreed to accession the recovered materials. Of the numerous advantages to this course of action, the most significant is the continued traceability of these materials in the event that probative value is determined via future investigation, excavation, or survey. Recovered materials were transferred to the custody of the NRW State Archaeologist on 10 May 2016. Contact information for (b)(6) is:

(b)(6)
LVR-Amt für Bodendenkmalpflege im Rheinland
Außenstelle Nideggen
Zehnthosstraße 45, 52385 Nideggen

Telephone: (b)(6)
Email: (b)(6)

SUMMARY AND CONCLUSION

From 12 April to 7 May 2016, SEARCH completed initial investigative survey and mapping efforts of seven areas related to US dismounted personnel losses in Hürtgen Forest, North Rhine-Westphalia, Germany. Surveys included close analyses of historic and modern aerial photographs, witness and informant interviews, pedestrian survey, GPS mapping, GPR and magnetometer survey, and systematic subsurface excavation. In total, SEARCH completed 8,158 square meters of remote-sensing survey and excavated 97.5 square meters. SEARCH recovered a variety of US equipment from a variety of environmental conditions and cultural contexts. However, no remains were observed, reported, or recovered, and none of the recovered materials could be directly correlated with missing personnel. All survey and excavation operations were terminated on 7 May 2016 by the Recovery Leader due to the end of the project window. On 8 May 2016, the Recovery Leader transferred all recovered materials to the NRW State Archaeologist's office.

Field identification and recovery of missing dismounted personnel is problematic. Compared to aircraft losses, the archaeological and remote-sensing signature presented by a single individual is ephemeral and confounded or complicated by myriad archaeological signals, anomalies, features, and signatures associated with an infantry or mechanized conflict area. Moreover, bomb craters, foxholes, vehicle tracks, and other modifications to the landscape can often become places of aggregation for remains of fallen personnel, and these features can often be ubiquitous in areas where personnel are missing.

Efforts to recover the remains of fallen personnel were made throughout the war and increased in scale and scope following the end of the war in Europe in May 1945. The Army Graves Registration Command completed systematic survey and recovery operations for fallen soldiers in Hürtgen, recovering hundreds of sets of remains with poor documentation of their location and context. Since the late 1950s, the majority of recoveries and subsequent repatriations of missing service members from the battles in Hürtgenwald have stemmed from illegal looter activity.

SEARCH surveys yielded data for hundreds of surface features, both extant and buried in agricultural fields that could feasibly contain the remains of service personnel. SEARCH also mapped and documented significant illegal excavation activity throughout the area and spoke with several persons actively engaged in this pursuit. The fact remains that the most constant and widespread excavation related to wartime features in Hürtgenwald is occurring illegally and by private parties without any oversight. Although remains have been occasionally reported to authorities by looters and collectors, the extensive looting throughout the conflict area has undoubtedly disturbed and potentially unearthed or destroyed the remains of missing personnel. For example, less than one week after the close of this investigation, remains were discovered by a local collector, who reported them to authorities, only after his activities were spotted by a passerby.

In the absence of professional excavations, the Recovery Leader recommends close coordination with collectors, enthusiasts, and looters operating in Hürtgenwald. Communication with these parties is vital to ensure that the remains encountered are not disposed of off-site or otherwise obfuscated and/or destroyed. In the vicinity of HP-6 alone, more than 79 percent of the recorded fighting positions had been excavated and destroyed by collectors. It is likely that collectors and enthusiasts operating on this scale have encountered remains. An open dialogue with these parties may increase the probability of gaining access and reporting of remains for identification and repatriation.

For the purposes of identification and long-term management of personnel loss locations in Hürtgenwald, SEARCH recommends a continuation of target oriented excavation (i.e., targets identified in historic aerial imagery analysis, metal detector survey, and GPR/magnetometer survey), rather than large-scale contiguous block excavation in this environment.

INVESTIGATIVE FIELDWORK
HÜRTGEN FOREST DISMOUNTED LOSS LOCATIONS
VOSSENACK AND KOMMERSCHEIDT
NORTH RHINE-WESTPHALIA, GERMANY

SUBCONTRACT #S-15-DMS6-42-SEA

(b)(6)

ONA ALI'I
Leading Tomorrow's Solutions

SEARCH