

Leftovers at the battlefield.

Pieces of French Flak guns at Arnhem

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Keywords: Conflict archaeology, Metal detection, Alternative archaeology, Second World War, World War 2 Heritage, the Netherlands, Luftwaffe, Captured arms, Battle of Arnhem, Market Garden

Introduction

As an archaeologist specializing in World War 2 remains, in my spare time I visit many features and landscapes in and around my home town of Arnhem. During these strolls I occasionally come across objects that have been lying there for time to be consumed. Some of these are too interesting not to share with others. In this article, I will discuss these leftovers from one particular site: a former German anti-aircraft site or *Flak-Stellung*. What make these finds stand out is the fact that these are remains of German *Beutewaffen* (captured arms), in this case French guns, which may also have a direct link with operation Market Garden. This document simply serves as the documentation of these finds, so the archaeological relevance and historical context of them can be understood.

Short history of the site

The site is situated in the woods north of Arnhem (the Netherlands), near the former German airfield Deelen. This region is widely known for its involvement in the Allied operation Market Garden in September 1944, where its local events are

referred to as the Battle of Arnhem. However, the German occupation has left scars in the landscape already from 1940 onwards, up until the spring of 1945.

Although this location has not been further investigated, nor inventoried, it is widely known among people who are interested in World War 2 remains in this region for decades. In oral history, people are familiar with the place being a German anti-aircraft position or *schwere Flak-Stellung*. In short, this kind of locations serve as small 'settlements' for the personnel including barracks, washing rooms, kitchens et cetera, besides the evident heavy and small calibre guns and accompanying equipment. These sites could have been inhabited for months or even years, so they in fact are important archaeological sites for examining daily life of German soldiers in World War 2.

The first find

The site is being searched actively with a metal detector at least from the 1980s onwards by private individuals. Nowadays, it is littered with dozens of large holes dug by enthusiasts and looters, which have taken but also left presumably hundreds of objects at the site. Only a few objects will be further discussed here, for now at least. Of all finds that were left behind and taken by me, some of them could be attributed to the core of the *schwere Flak-Stellung*, namely, the heavy guns themselves (*Feuerstelle*). These were all found during field walks and surveys, outside of archaeological work or regular cultural heritage management (CRM), so by myself as an independent researcher. As already has been stressed, the found objects were already unearthed and left behind when I found them.

I have been visiting this site since 2011 at least annually, and to date almost every time new objects catch my eye. In all probability, these objects were



Figure 1. Semi-in situ remains of a *Formstein*-wall within a gun position at the Flak site near Arnhem (photo: Author, during first survey in August 2011).



Figure 2. Hole dug by a metal detectorist in the core of the site (*Feuerstelle*) (photo: Author, August 2023).

found by metal detectorists, but were either not recognized or they weren't considered important or interesting. It is also possible that forest management have contributed to the surfacing of these objects. This, I have not examined.

In the summer of 2015, a large, heavy and long object caught my attention. It was positioned against a tree in the middle of the *Feuerstelle*. Knowing the layout of the site (at first by drawn maps, later by GPS-tools) by the context of this big object it was immediately suspected that this was in fact part of one of the heavy guns.

This first find initiated my (private, archaeological) research on this *Flak-Stellung*. Besides contact with an expert from Erfgoedcentrum Arnhem (H. Timmerman), I have also consulted members of the Museum Deelen. All in all, this investigation is characterized by an interdisciplinary approach and, to some extent, as a participation project. Without the expertise of the aforementioned people, this article would not have been so detailed.

French 7.5 cm Flak guns in German service

As several hints towards the use of French instead of standard German Flak guns were known beforehand, it was quickly discovered the items belonged to so-called *Beutewaffen*: weapons from

other nationalities re-used by the German armed forces. The most used subtype of the French 7.5 cm anti-aircraft gun was the 7.5 cm *Flak M 36 (f)*, originally: *Canon de 75mm Contre Aeronefs Modèle 1936*, produced by Schneider et Compagnie in Le Creusot, central France.¹ Popularly, it is also called "7.5 cm Schneider gun". A large quantity of this type of French heavy anti-aircraft gun was captured by the *Wehrmacht* in 1940. In their second life, these became useful on several locations in the German *Reich*, among them in France along the Atlantic coast, for example near the Spanish border and in Normandy.²

From the summer of 1943 onwards, the air war in Western Europe was starting to shift in the favour of the Allies, and, as a result, the amount of Flak-batteries was simultaneously increasing.³ In April 1943, a military prescription on the ammunition of this type of gun was published.⁴ The fact this detailed report was drawn up at that moment, emphasizes the importance recognized by this type of *Beutewaffen* at that point in the war. In March 1944, the *Luftwaffe* had the capacity of 103 of these French guns, divided over 66 batteries.⁵ The total of French 7.5 cm guns used by the *Wehrmacht* declined from 303 to 193 between June and August of that year, probably because of the loss of large parts of France as a result of the Allied advance



Figure 3. 7.5 cm Flak M 36 (f) gun in German use. Note the *Formstein*-walls, which remains can be spotted in Figure 1 too. Arrows indicate the (possible) found parts (source: Axis History Forum (2011)).

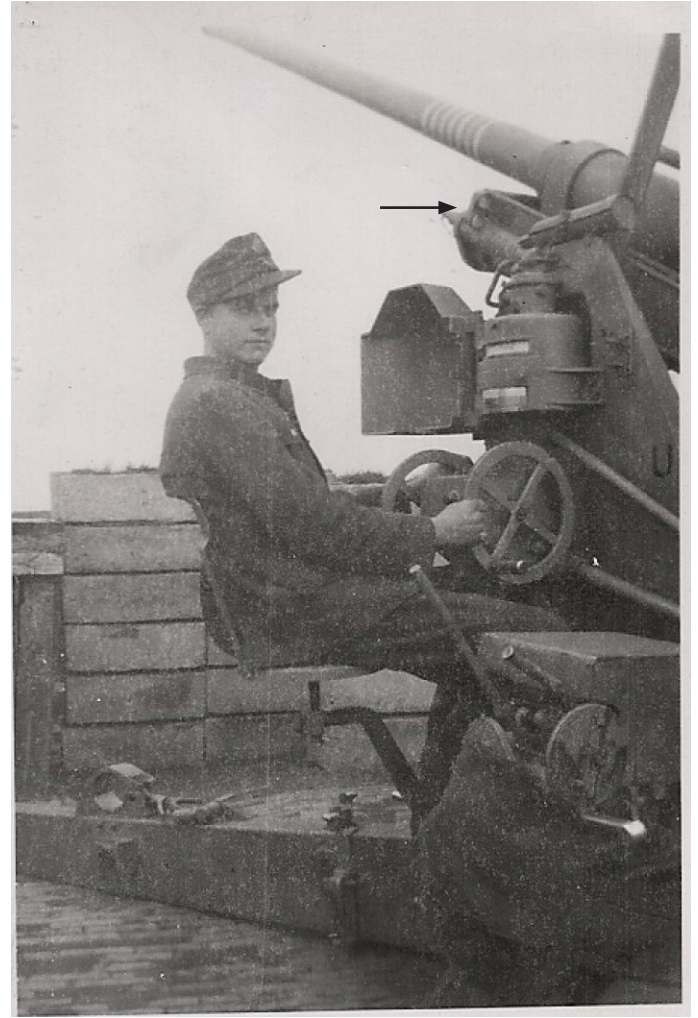


Figure 4. 7.5 cm Flak M 36 (f) gun operated by a young German boy of the *Reichsarbeitsdienst*, which in fact is comparable to the situation in the Arnhem site. The arrow again indicates two of the finds (source: Axis History Forum (2011)).

in the west. Not surprisingly, after the fighting of September 1944, only 16 (!) French 7.5 cm Flak M 36 guns were left.⁶

With the guns came specific ammunition (*Beutemunition*), in this case of calibre 75x518mm, which not only were available from the captured French factories but also had to be created from the summer of 1940 onwards. The Germans renamed the ammunition to 7,5 cm *Sprenggranatpatrone* 28 (high explosive). These could have two different types of grenades and fuzes, which details will be omitted here. At least until spring 1943, the ammunition for the 7,5 cm Flak M 36 (f) contained original French brass cases (adopted as *Patronenhülse* M 28).⁷

French 7.5 cm Flak M 36 guns in the Netherlands

A *schwere Flak-Batterie* was equipped with an average of four to ten heavy guns for the main task of attacking bomber streams at high altitudes. In most cases, a number of light guns was added,

to defend the site itself against low flying enemy airplanes. So, a heavy anti-aircraft (Flak) battery was outfitted with both heavy and light guns, but in this article I will only focus on the former.

On the deployment of Flak-units with French 7.5 cm guns in the occupied Netherlands, the following examples can be given. In 1941-1942 the second battery of the *gemischte Flak-Abteilung* 155 (2./155) made use of them at Leusderheide.⁸ Early 1943, the third battery of that unit (3./155) was at airfield Deelen, as was the third battery of the *schwere* (later: *gemischte*) *Flak-Abteilung* 594 (3./594). Both of these batteries consisted of six of the aforementioned French guns.⁹

At different moments in the summer of 1944, including during the start of Market Garden that September, several batteries of both the *gemischte Flak-Abteilung* 591 and 594 were moving between different *Flak-Stellungen* in the southern part of the Netherlands, Nijmegen and Arnhem. These heavy

batteries were fitted with the M 36 French guns.¹⁰ The first battery of the aforementioned *Abteilung* (1./591) with their six 7.5 cm guns was located at Meinerswijk near Arnhem. The parallels with this unit will be discussed later on.

In the winter of 1944-1945, when the Arnhem region was in the frontline and evacuated from civilians, at least two batteries with 7.5 cm M 36 French guns were in service with the aforementioned *gemischte Flak-Abteilung 591*: 3./591 operating with five heavy guns near the location which is discussed here, and 2./591 from the south-eastern part of airfield Deelen.¹¹ As mentioned earlier, batteries with 7.5 cm French guns were almost completely vanished at that moment.

Most of the operating personnel of these two *Abteilungen* consisted of young recruits of the *Reichsarbeitsdienst* (RAD), who at that moment were 16 and 17 years old. Because of the efforts of both independent researchers and volunteers of the Museum Deelen, several of these men could be contacted and, consequently, multiple eyewitness accounts were documented.¹²

These are just a few, incomplete examples of the historical sources mentioning this type of *Beutewaffen* in the Netherlands. Further investigation should incorporate a combination of historical sources, oral history and archaeology, in order to get to reconstruct these stories as complete as possible.

The 7.5 cm Flak M 36 (f) gun from Meinerswijk

Speaking of French captured Flak-guns in Arnhem, the copy that was discovered in the Meinerswijk floodplains south of the Rhine could not be ignored. Many people living in this area know the sight of the large gun, since it is standing for about a quarter century already in front of the Museum Deelen. This museum is a private initiative located at the former German airfield north of the city. In the past, these volunteers were enthusiastic metal detectorists and referred to themselves as the Dutch Aircraft Examination Group (DAEG). In this context, they dug up a 7.5 cm *Flak M 36 (f)* gun with the help of an excavator in August 1996 – an almost unimaginable find.¹³

Presumably, the fact the Flak gun was still present underground was a sort of public secret, of which was spoken of by individuals throughout the decades after the war. Ironically, it is claimed that archaeologists already found parts of this gun in 1973 but given their focus on other, older periods (the monumental, medieval castle Meinerswijk), did not proceed in excavating it. I could not find any documentation or proof of this event.

When in 1996 the large gun was salvaged it was present no less than 15 cm beneath the surface. Brass plates on the gun mentioned French text with the years 1938, 1939 and 1940, proving the weapon was originally produced and assembled in the years of building tension towards the ultimate German aggression. On these parts, also German acceptance stamps could be seen, from the moment the gun was captured.



Figure 5. 7.5 cm *Flak M 36 (f)* gun of 1./591, recovered from the Meinerswijk Flak-Stellung in 1996 by volunteers of DAEG (Museum Deelen). Among the black, original primer remains of yellow and brown camouflage paint are present (photo and source: Museum Deelen).



Figure 6. Detail of the barrel with E in white paint, indicating this was the fifth gun nicknamed Emil (photo and source: R. Markus, Museum Deelen).

Moreover, the original paint could still partially be discovered. On top of the French black primer, multiple colours of a camouflage scheme, among them *Dunkelgelb*, came to light. In white paint the letter “E” indicated the found gun was the fifth gun of the battery, as this letter stands for “Emil”, the standard nickname (A to F). Also, nine rings in black paint were still present at the barrel, all of them indicating a claimed victory (shot down Allied airplane).

In the context of the Battle of Arnhem, it is a significant detail the barrel of the gun was originally, before ending up underground, pointing horizontally. As it is said this particular battery was firing towards the advancing British Airborne troops at 18 September 1944 on the opposite side of the river (Onderlangs), it could very well be Emil was involved in spreading this havoc.

The Meinerswijk Flak gun Emil was (end of September 1944) used by the men of the first battery of the *gemischte Flak-Abteilung 591* (1./591), consisting of young men of the *Reichsarbeitsdienst* (RAD).¹⁴ As said, oral history from these and other RAD-men from several Flak batteries from the Arnhem vicinity have been documented in the past. The then still living gun crew of 1./591 even visited ‘their’ Emil when it was positioned in front of Museum Deelen.



Figure 7. Detail of the barrel with nine rings in black paint, each standing for a shot down Allied airplane. In the background, the Klingelbeek area with TV tower (built 1969) can be seen. There, British Airborne troops have seen fierce fighting against a German blocking force during the Battle of Arnhem (Market Garden) (photo and source: R. Markus, Museum Deelen).

Flüssigkeitsausgleicher

After this introduction on the 7.5 cm *Flak M 36 (f)* in the Netherlands and Arnhem vicinity, we will discuss the finds I did in the *Flak-Stellung* north of Arnhem, where nearby, at least at a given moment, the third battery of the *gemischte Flak-Abteilung 591* (3./591) was deployed.

As said, in 2015 my investigation began by the large, heavy object from the *Feuerstelle*. A German manual of this French gun shows the exact object, giving it a name and a function. This *Flüssigkeitsausgleicher* can be translated as “balancing/compensating of fluids/liquids”. Situated at the left side of the gun, about halfway the barrel, it consists of a steel and a smaller, bent brass part (*Anschluss d.Flüssigkeitspresse d.Rohrbremse*). The total object measures about 0.6 meters (23.6 inches) and weighs about 8.7 kg (19.1 lbs).

It was an integral part of the operation of the gun barrel (*Seelenrohr*). The recoil system with the *Rohrbremse* was hydraulic, hence the need to “balance” the fluids after shooting a grenade.¹⁵ In other words, without this part, the gun was useless. The hydraulic system also was the most vulnerable to be damaged or break off, for example during an explosion nearby.¹⁶

In 2019, several more items came to light. Now even a second *Flüssigkeitsausgleicher* was discovered. Moreover, a smaller steel part of the gun with two holes with yellow paint remains was present. Contemporary pictures of this type of gun show this object was located just above the *Flüssigkeitsausgleicher*. Its purpose has not been discovered yet. It is heavily dented, which points to brute force like an explosion.

Other items

Also, a rectangular steel plate with four holes for screws was found. As this object contains remnants of the same yellow camouflage paint, it must have been part of a gun or of the accompanying equipment, it was reasoned. Under the yellow paint remnants of black are visible, probably the primer.

The object measures 28 x 22.5 cm (11 x 8.8 inches) and weighs about 2.2 kg (4.8 lbs). On the long sides it has three holes for screws (six in total), meaning it was attached to another, larger item. Only on one of the shorter sides two other holes for screws are present. Another hole is in the middle, along with the remains of a small switch.

Only one side contains paint, making this probably part of the exterior. At this same side, a broken “box” of bakelite is attached to the plate. Probably,



Figure 8. *Flüssigkeitsausgleicher* from one of the six French 7.5 cm *Flak M 36* guns, found in the Amhem/Deelen site in 2015 (2015-001 on the map). Compare with Figure 3. Detail at the right: remains of yellow camouflage paint (photo: Author).



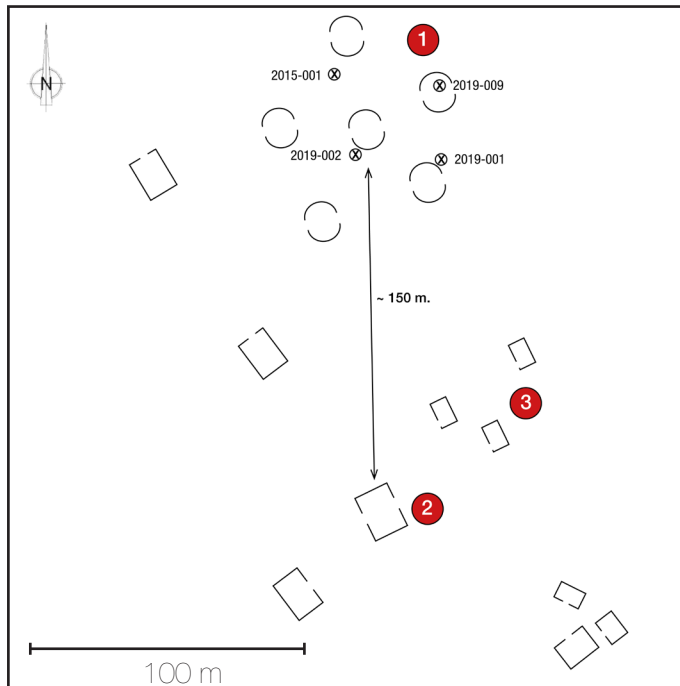
Figure 9. Object with two holes, found in 2019 (2019-001 on map). Compare with Figure 4 (photo: Author).



Figure 10. Shard of bakelite, painted in the bright yellow camouflage colour in which remains are found on multiple other objects (2019-009 on map) (photo: Author).



Figure 11. Refitting of the finds on the still existing gun 'Emil' (here in restored condition), with the help of Vincent Evers and Robert Markus of Museum Deelen. The brass part at the right is clearly bent by the explosion causing these parts to fall off. The 7.5 cm *Flak M36 (f)* of the 1./594 saw its last action in the *Flak-Stellung* in Meinerswijk, Arnhem, and was recovered there in 1996 (photo: Author, August 2023).



- 1: Six circular positions for the heavy guns (*Feuerstelle*).
- 2: Most probable location of *Befehlsstelle I* with *Kommandogerät*.
- 3: Three rectangular positions for light guns.

Appointed finds:

- 2015-001: *Flüssigkeitsausgleicher 1*.
- 2019-001: *Flüssigkeitsausgleicher 2* and object with two holes, originally attached to it.
- 2019-002: Rectangular plate with bakelite 'box'.
- 2019-009: Shard of bakelite with yellow camouflage paint.

Figure 12. Reconstruction of the Arnhem/Deelen *schwere Flak-Stellung*.

it must have been placed straight on the steel; the tilted position must then have been caused by an explosion. This would also explain not only the two corresponding holes for screws, one of them holding the bakelite, but also why there is only black primer and no yellow paint in a rectangular shape where the “box” is expected.

Inside, what looks like a brass sliding contact is visible, along with a small part of a technical diagram in the relief. The plastic must have been housing wires or other electronics. Lastly, the top of the bakelite contains an octagonal stamp with the codes BAL and 930. This abbreviation, meaning *Bauaufsichten des Reichsluftfahrtministeriums*, is a so-called “licensed firm auditor”.¹⁷

The fact this find was produced by an “accepted organization” by the Ministry of Aviation, makes it plausible this object was produced during the war, and in that case may not have been part of the inventory when the armaments were captured in 1940. In other words, this device could have been produced or was at least adapted by the Germans themselves for the French types of guns they used.

Examples of adapting parts in captured material to “*Wehrmacht* standards” are also known from the finds of the interior of a French Char B2 tank of *Panzer-Kompanie C (ND) 224*, that was deployed during the Battle of Arnhem.¹⁸ Another example where such an adjustment at least in the German language is suspected, comes from a site near Oosterhout (Nijmegen vicinity), where in all probability one of the heavy batteries with 7.5 cm *M 36 (f)* guns saw action during Market Garden.¹⁹

In conclusion, the find is reminiscent of a device because of the electrical indications and furthermore part of one of the Flak guns because of the same camouflage paint. Comparing it to contemporary drawings and photographs, it most likely could have been part of the *Sammler* (collector, where electrical “data” was gathered) or one of two *Empfänger*. Of course, it also could have been part of another device, like the French equivalent of the *Kommandogerät (Aufiere M 35 or 44)*. However, to date, no decisive answer to this mystery object has surfaced.

Shrapnel

In the north-western part of the *Feuerstelle* steel shrapnel of grenades and brass parts of shells are present. These could have been blown up during the war by the Germans themselves, however, locals also thought to remember the Dutch Explosive Ordnance Disposal (EOD) of the Armed Forces used the terrain in the 1970s or 1980s for



Figure 13. Rectangular object with bakelite and remains of yellow camouflage paint and black primer (2019-002 on map) (photo: Author).



Figure 14. Detail of the bakelite interior with diagram and the BAL stamp (photo: Author).



Figure 15. Besides adaption by the *Wehrmacht* following the capture of the guns, some parts were kept in their original, French condition. On Emil, pre-war brass plates indicating which way the mounts of the gun should be pulled apart (“*tirer*”) have survived its full history (photo: Author).

cleaning up found unexploded ordnance (UXO).

Either way, the found shrapnel can be determined. Two elongated, steel pieces of shrapnel contain the remains of not one, but two brass driving or rotating bands (*Führungsringe*). This relatively soft metal band shows rifling marks when a grenade has been fired through a barrel. In this case, however, the rotating band on the shrapnel remains unmarked. So, these grenades were not fired, but blown up to dispose them, like mentioned.

The width of the upper brass band is about 11 mm, the space in between is 8 mm, and the lower band is about 13 – 15 mm. The approximate measures can be explained by the explosion, causing the brass to melt and dent, making it hard to measure them exactly. Nevertheless, these details match the technical drawings of the aforementioned 7,5 cm *Sprenggranatpatrone* 28, which was fired by the French M 36 Flak guns.²⁰ Again, these finds point towards the use of those type of guns in the Arnhem *Flak-Stellung*.

Some thoughts and conclusions

Concluding this essay, a few remarks can be made. Speaking of ensemble value, a parallel is present with the (almost) complete at Museum Deelen. This gun provided a relevant reference for this research of this article.

On the found items themselves in the *Flak-Stellung* which is the subject of this article, it can be concluded the heavy calibre guns were French, captured ones, namely 7.5 cm *Flak M 36 (f)* which before their capture in 1940 was called *Canon de 75mm Contre Aeronefs Modèle 1936* (produced by Schneider). It is known that the aforementioned *gemischte Flak-Abteilung* 594, for example, was equipped with this subtype of French Flak gun from August 1943 onwards.²¹ At least from June to September 1944, both the *gemischte Flak-Abteilung* 591 and 594 were present in the Arnhem, Oosterhout and Nijmegen vicinity too, consisting of several batteries of six 7.5 cm M 36 French guns.



Figure 16. The shrapnel found in the *Feuerstelle*, identified as parts of a 7,5 cm *Sprenggranatpatrone* 28, used in the French Flak guns (photo: Author).

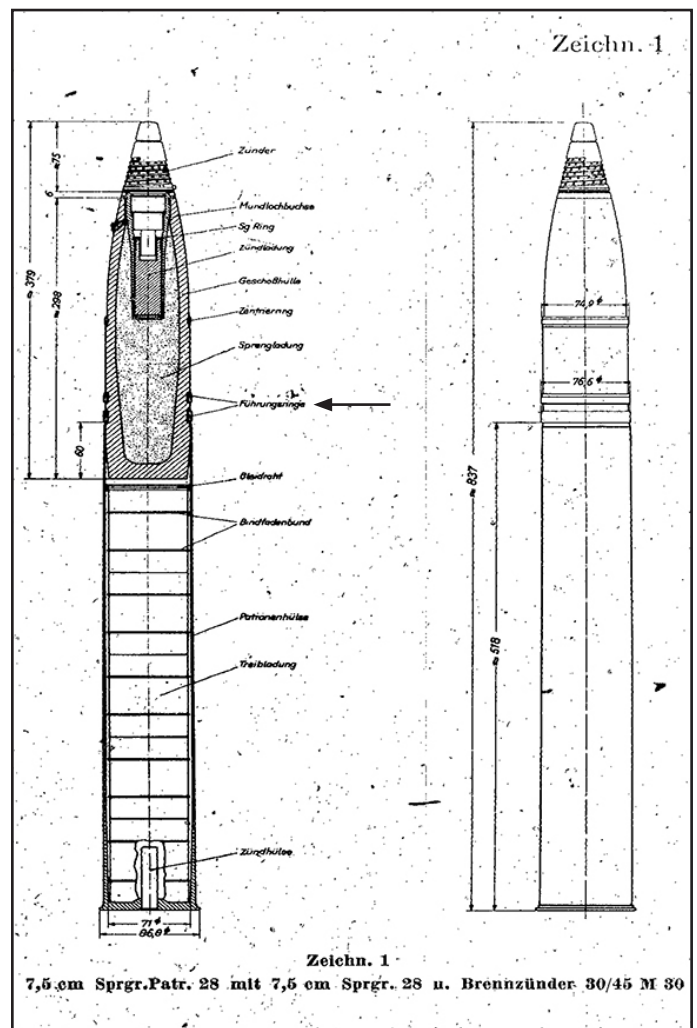


Figure 17. Schematic drawing of the aforementioned ammunition. Note the two *Führungsringe* on the grenade (source: Der Reichsminister der Luftfahrt und Oberbefehlshaber der Luftwaffe, 1943).

Aerial pictures of both 12 and 19 September 1944 show the Arnhem site (the subject of this article) being inhabited by a *schwere Flak-Batterie*, while at 6 September the site was empty. This could mean it was probably in use during the start of Market Garden (17 September). At least at the 12th and 19th, all six of the heavy gun positions were occupied. The Flak site was also included in an Allied intelligence report on the eve of Market Garden, with detailed interpretations of the locations of the heavy and light guns.²²

However the exact moment still is unknown, eventually the French guns from this battery were probably blown up by the Germans themselves. This is suspected because of the following facts. Parts of at least two of the six French guns of an unknown heavy Flak battery have been found there in the previous years. It is known the gun from Meinerswijk was certainly destroyed by a *Sprengkommando* with explosives in the barrel, resulting in several parts to break off, which can still be seen.²³ In fact, the Meinerswijk example

is missing its *Flüssigkeitsausgleicher* and the accompanying object with two holes, tossed away through the explosion, which may also explain why these objects were left behind and found at the site which is discussed here.

Bright yellow camouflage colours have been (spray) painted on these guns, probably the standardized *Dunkelgelb*. No evidence of a camouflage scheme or other colours have been seen, which could makes this battery different from the one in Meinerswijk.

It may be thought that because of the same type of gun and location near Arnhem, that at this *Flak-Stellung* another battery of the *gemischte Flak-Abteilung 591* was located during the same moment. After all, a German map shows that the third battery of that unit (3./591) with five heavy French guns was present there at least around the turn of the year 1944-1945. In that case, it may be possible the was 'inhabited' by young men of the *Reichsarbeitsdienst* too.



Figure 19. The Flak-site on the eve of Market Garden, mid-September 1944. An Allied aerial photo, most probably also edited later by an intelligence unit to highlight certain details in the site. For example, the circular gun pits of the heavy guns have no opening, while on other photographs these clearly are visible (source: The Photographic Section First British Airborne Division, n.d.).



Figure 19. Two parts of a German map which can be dated around 1 January 1945, showing two sites near Arnhem/Deelen being occupied by the second and third battery of the *gemischte Flak-Abteilung 591* (2./ and 3./591) with (French) 7.5 cm guns (source: NARA, T314K, Roll 1667; reconstructed by Author).



Figure 20. Crew of the Meinerswijk gun that was found in 1996, photographed in their positions in the Lent-Oosterhout vicinity, before they left for Arnhem, summer 1944 (source: Museum Deelen).

It is also known from oral history (veterans) that the 1./591 in Meinerswijk was operational during the outbreak of Market Garden on 17 September 1944, so these finds could also shed a light on the used Flak guns during the start of this well-known operation. However, it is premature to speculate on this furthermore and a follow-up research is desirable.

Another benefit by discussing these objects is the fact that more technical details on these guns become available when publishing about them. Up until now, not many data could be found easily (e.g., online), while this remarkable type of *Beutewaffen* was used widely by the German *Wehrmacht* during the occupation of the Netherlands, Market Garden and even during the last months of World War 2. As the results in this article are far from complete, and can maybe even be improved, it can also function as a starting point on collecting more data.

In conclusion, the documentation of and publishing about this kind of finds can be marked important.²⁴ Correct documentation and interpretation of found material can be informative and of significance, even if this only concerns so-called 'hindsight archaeology', e.g., documentation of loose finds afterwards, not primarily through a scientific, archaeological approach. In addition, the collaboration with other experts, giving this research an interdisciplinary character, proves of great added value to reconstruct the stories as complete as possible.

Acknowledgements

I hereby thank H. Timmerman (Erfgoedcentrum Arnhem), V. Evers (Museum Deelen and conservation expert BATCON), M. Koops (Arnhem), R. Markus (Museum Deelen) and Sgt1 Robert-Jan (EOD) for sharing their knowledge, thoughts, sources and spare time.

Notes

- 1 Gander & Chamberlain, 2008, p. 162.
- 2 Müller, 1995, p. 19; Drew, 2022a; 2022b.
- 3 Koch, 1954, pp. 75-76; Piekalkiewicz, 1978, p. 312.
- 4 Der Reichsminister der Luftfahrt und Oberbefehlshaber der Luftwaffe, 1943.
- 5 Müller, 1995, p. 17; Gander & Chamberlain, 2008, p. 162.
- 6 Gander & Chamberlain, 2008, p. 152.
- 7 Der Reichsminister der Luftfahrt und Oberbefehlshaber der Luftwaffe, 1943.
- 8 Stichting Legerplaats Soesterberg, n.d.
- 9 Bibliothek für Zeitgeschichte Stuttgart, Sig. III L 17-3.
- 10 Information provided to author by H. Timmerman.
- 11 NARA, T314K, Roll 1667, Anlageband A.
- 12 E.g., Markus, 1997; Maan, 2015.
- 13 All detail information on the recovery of the Meinerswijk gun is provided by: Markus, 2019.
- 14 Markus, 1997.
- 15 Müller, 1995, p. 17.
- 16 V. Evers, personal communication, 29 August 2023.
- 17 Dörenberg, 2020.
- 18 Reinders, 2023, p. 66.
- 19 ter Wal, 2018, p. 33; complemented with research by Author.
- 20 Der Reichsminister der Luftfahrt und Oberbefehlshaber der Luftwaffe, 1943.
- 21 Bibliothek für Zeitgeschichte Stuttgart, Sig. III L 17-3.
- 22 The Photographic Section First British Airborne Division, n.d.
- 23 Markus, 1997.
- 24 This remark has already been made earlier, e.g., Reinders, 2019.

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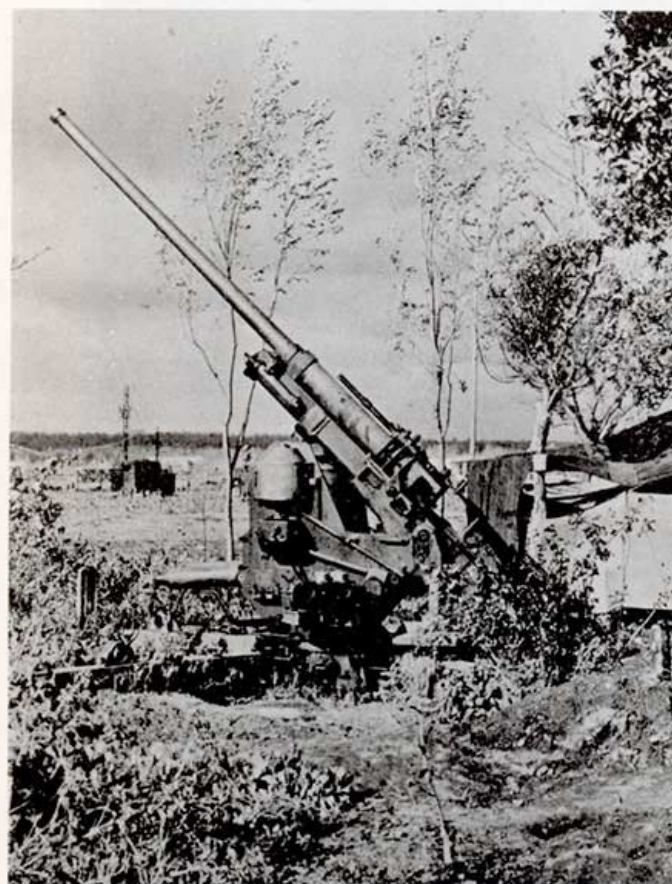


Figure 246. 75-mm anti-aircraft gun, French, used by Italians near Ponticelli, Italy.

Figure 21. A 7.5 cm Flak M 36 (f) gun in Italian use near Naples, photographed after being captured by Americans. At this point of the war, the Italians still fought at the Axis side with the Germans. The *Flüssigkeitsausgleicher* is clearly visible (source: Photo Intelligence Center MIS ETOUSA (n.d.)).