On the trail of Halifax bomber BB378 of 138 Squadron from RAF Tempsford Crash-landed in Denmark on 11.12.1943

Metal detector survey

In connection with a forthcoming exhibition at Holbæk Museum about the RAF Halifax bomber BB378, archaeologist Martin Pavón and local historian Jan Christensen arranged a metal detecting survey to localise the crash site and recover wreckage for the exhibition. Jan Christensen is writing a book about the story behind BB378. Some 25 metal detectorists participated in the survey, including the present author and other members of Kalundborg Archaeology Society, which is affiliated to Kalundborg Museum. Holbæk Museum and Kalundborg Museum are both part of Museum Vestsjælland.

BB378 is known to have crash-landed in a very large field south of Holbæk in December 1943, a field that is still farmed today. There was some information concerning the rough location of the crash-landing site, but no visible signs or debris remain as the field has been intensively farmed for the past 70 years. The first task was therefore to identify the exact crash site by finding debris from the aircraft.

Luckily there was very little metal in the field in general, and virtually nothing other than iron items from farm machinery etc. After a couple of hours of searching throughout the field some of the participants started to find riveted and molten aluminium that presumably derived from BB378. Soon two adjacent debris fields were identified, and a concerted effort was made to retrieve all metal items from them. A large concentration of molten aluminium lumps indicated that the crash-landing site had been identified. GPS coordinates were not recorded for the individual finds as the items are assumed to have been distributed and moved by farming activity. Instead the coordinates were recorded for the two debris fields and the central concentration of molten aluminium.

The finds were washed, sorted and photographed. This document is primarily intended to provide the survey participants with an idea of what has been found and to confirm to them that the debris is from BB378. The discovery of a copper switch from a Halifax instrument board, aluminium plating with part numbers and inspection stamps, a .303 calibre cartridge and fragments of Mill's grenades indicates that the debris is from BB378.

The results of the survey are presented below.

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Brief story:
On 11 December 1943, HAL BB378 from Tempsford was on a SOE mission to Denmark to parachute in the Danish chief of SOE, Flemming Muus, when the plane crash-landed between Ugerløse and Store Merløse northeast of Bonderupgaard:

"Shortly before 02:00 it caught fire when attacked by a German Ju88 over the highest point of Sjælland, Gyldenløveshøj (126 m), where the chief of SOE in Denmark was to be dropped by parachute. The crash landing was perfect, and few minutes later all 9 on board stood unharmed in the fields of Bonderupgaard, watching the burning wreck. The allied airmen were divided in two teams of 3 and 5 airmen, who were to go in directions pointed out to them to seek help from local residents, while Muus himself went on alone towards Copenhagen. The 3 officers quickly got in touch with people with close ties to the resistance movement, and they were sailed to Sweden a few days later. The 5 NCOs did not have the same luck. On Sunday 13 December they went in to a farmer in Ølsted at Frederikssund. The farmer immediately called the Danish police, and the German Wehrmacht was informed. The 5 airmen were fetched during the night and transferred to Høvelte Barracks." (from http://www.airmen.dk/p247.htm)

Read more about the mission, the crash-landing and the escape at http://www.airmen.dk/p247fry.htm, http://www.airmen.dk/p247dfen.htm, and http://www.airmen.dk/p247crash.htm. See also Halifax BB378 on Facebook.

BB378 was one of 15 planes that crashed with the loss of 69 lives + 3 planes lost without loss of lives. About 6,500 containers with about 700 tons of weapons, explosives, and more were dropped to the Danish resistance movement. The RAF had 284 and the USAAF had 168 successful airdrops over Denmark.

The crash-landing
A report on the loss of BB378 has been mentioned in an old discussion forum posting on Internet (see page 4) that included two poor quality images of the text. The report appears to have been written during wartime. Some parts are almost illegible. I have transcribed the sections relating to the crash-landing below:

5. The fighter made a second attack and damaged the aileron and elevator …… and set fire to the starboard wing. The second pilot shouted to the pilot that the wing was on fire and the pilot believes that it was between the two engines and may have originated from No. 1 tank.

6. The pilot at once concluded that it would be necessary to crash land immediately as the aircraft was very nearly uncontrollable, evasive action was impossible and the fighter was still attacking.

7. The second pilot warned the rest of the crew to go to crash stations and these were taken up before the Halifax struck the ground at approx. 01.50 hours between Taastrup and Bonderup, about 15 miles south of Holbæk.

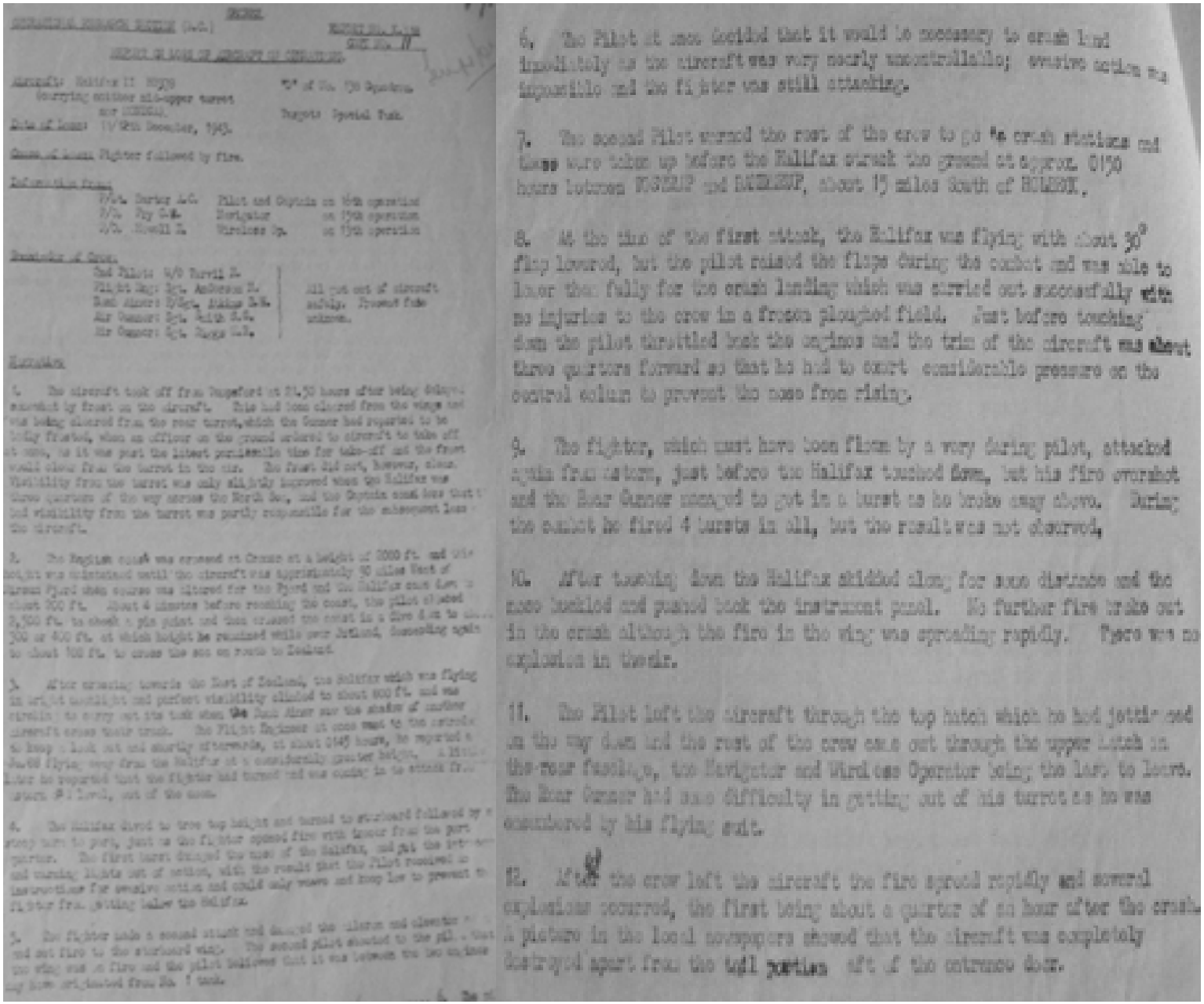
8. At the time of the first attack, the Halifax was flying with about 30º flap lowered, but the pilot raised the flaps during the combat and was able to lower them fully for the crash landing which was carried out successfully with no injuries to the crew in a frozen ploughed field. Just before touching down the pilot throttled back the engines and the trim of the aircraft was about three quarters forward up that he had to exert considerable pressure on the control column to prevent the nose from rising.

9. The fighter, which must have been flown by a very daring pilot, attacked again from astern, just before the Halifax touched down, but his fire overshot and the rear gunner managed to get in a burst as he broke away above. During the combat he fired 4 bursts in all, but the result was not observed.

10. After touching down the Halifax skidded along for some distance and the nose buckled and pushed back the instrument panel. No further fire broke out in the crash although the fire in the wing was spreading rapidly. There was no explosion in the air.

11. The pilot left the aircraft through the top hatch which he had jettisoned on the way down and the rest of the crew came out through the upper hatch in the rear fuselage, the navigator and wireless operator being the last to leave. The rear gunner had some difficulty in getting out of his turret as he was encumbered by his flying suit.

12. After the crew left the aircraft the fire spread rapidly and several explosions occurred, the first being about a quarter of an hour after the crash. A picture in the local newspapers showed that the aircraft was completely destroyed apart from the tail portion aft of the entrance door.



6. The Pilot at once decided that it would be necessary to crash land immediately as the aircraft was very nearly uncontrollable; evasive action was impossible and the fighter was still attacking.

7. The second Pilot warned the rest of the crew to go to crash stations and these were taken up before the Halifax struck the ground at approx. 0130 hours between [illegible] and [illegible], about 15 miles South of [illegible].

8. At the time of the first attack, the Halifax was flying with about 30° flap lowered, but the pilot raised the flaps during the combat and was able to lower them fully for the crash landing which was carried out successfully with no injuries to the crew in a frozen ploughed field. Just before touching down the pilot throttled back the engines and the trim of the aircraft was about three quarters forward so that he had to exert considerable pressure on the control column to prevent the nose from rising.

9. The fighter, which must have been flown by a very daring pilot, attacked again from astern, just before the Halifax touched down, but his fire overshot and the Rear Gunner managed to get in a burst as he broke away above. During the combat he fired 4 bursts in all, but the results are not observed.

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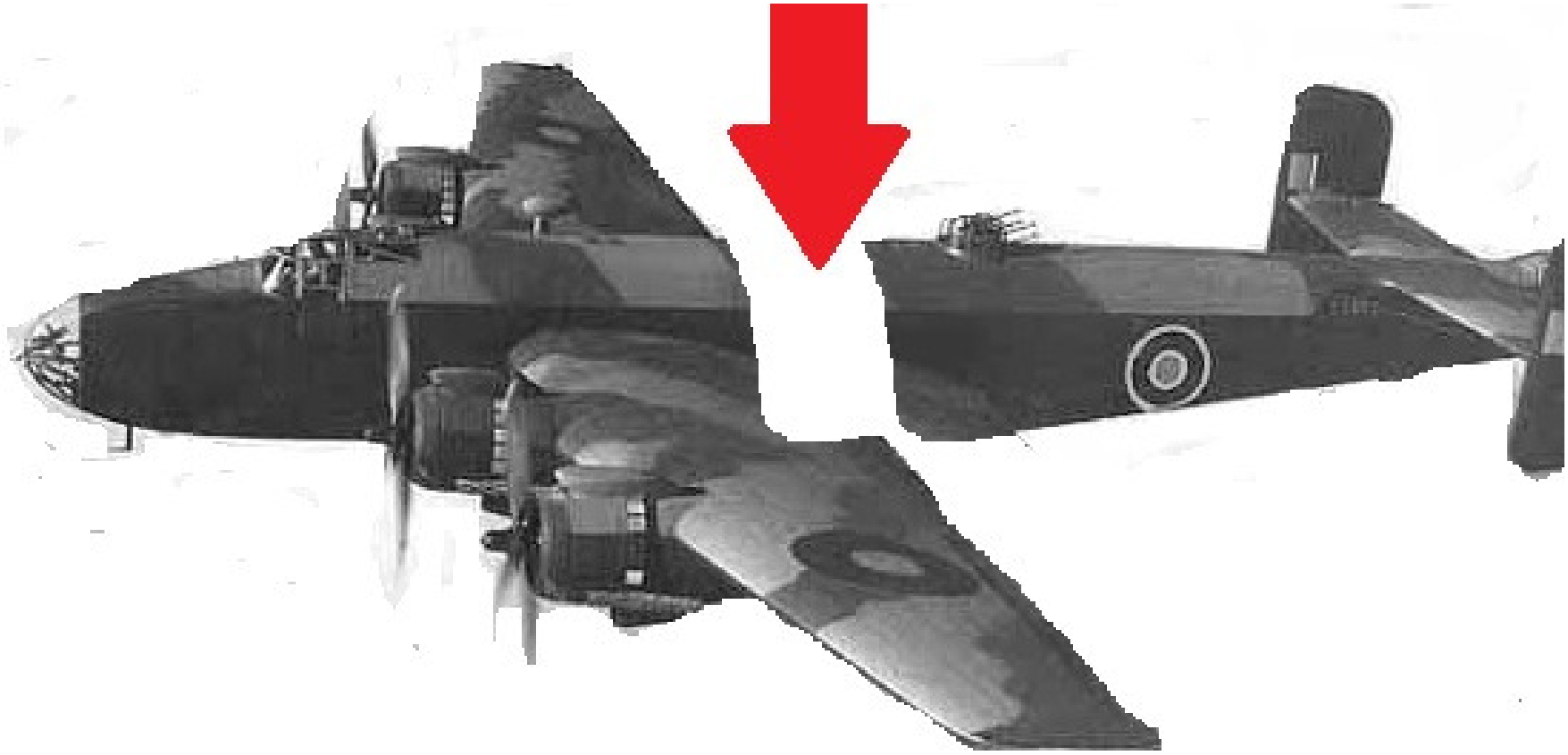
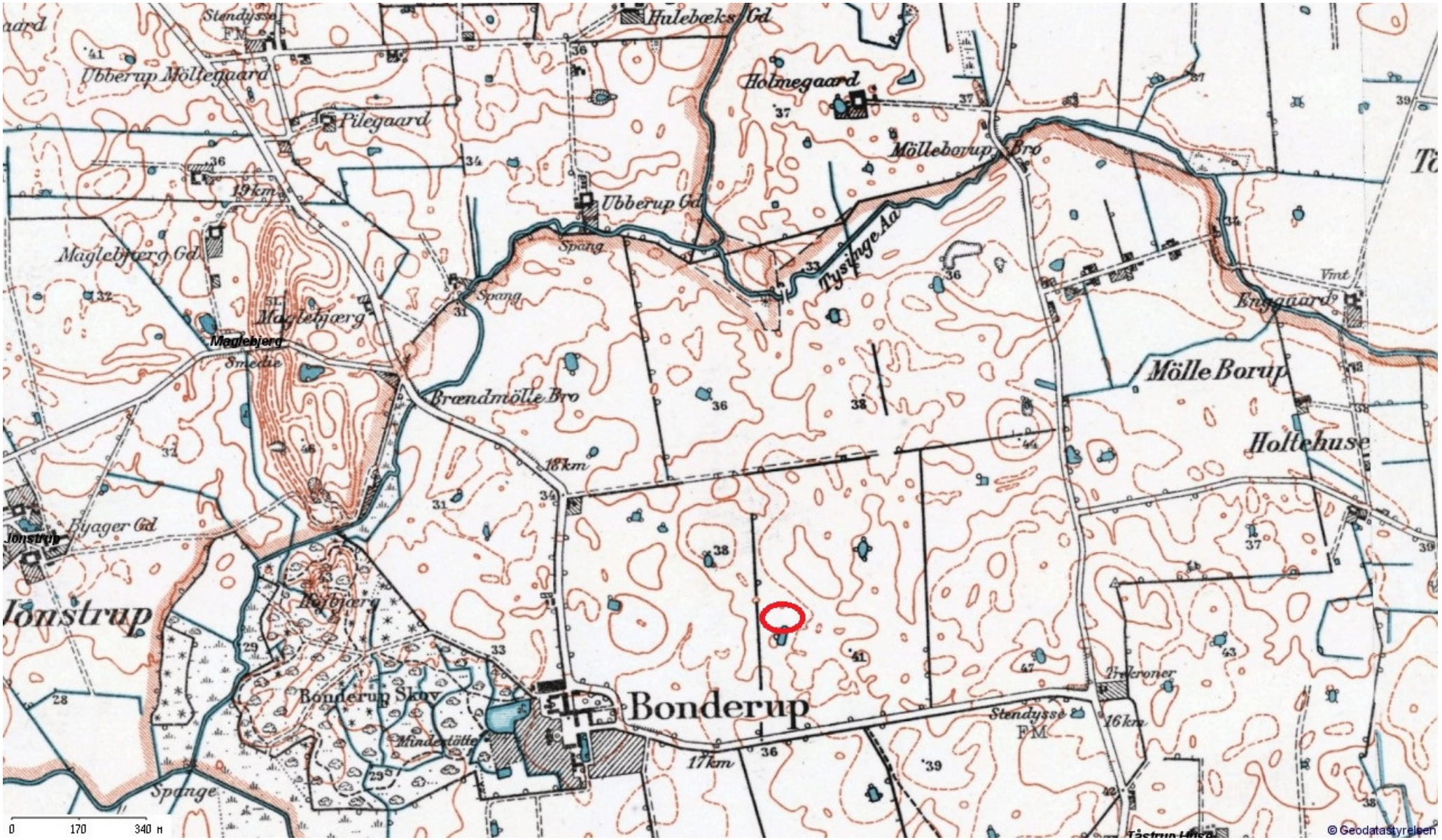
The English report on the loss of BB378 found on an old Internet discussion forum. It appears to be from wartime. The quality of the images is poor. I have transcribed the parts relating to the crash-landing (5-12) as best possible. The remainder is virtually illegible.

HAL BB378 after the crash-landing

As is apparent from the photograph, only the rear end of the fuselage aft of the entrance door remained somewhat intact after the crash-landing and ensuing fire and explosions, even though the aircraft was intact at the time of landing as evidenced by the above report. The front half of the aircraft (forward of the red arrow) was completely destroyed. There should therefore be many small items of wreckage and ammunition remaining in the soil at the crash site. The SOE Halifaxes were modified and did not have upper-mid and nose turrets, unlike on the image below.



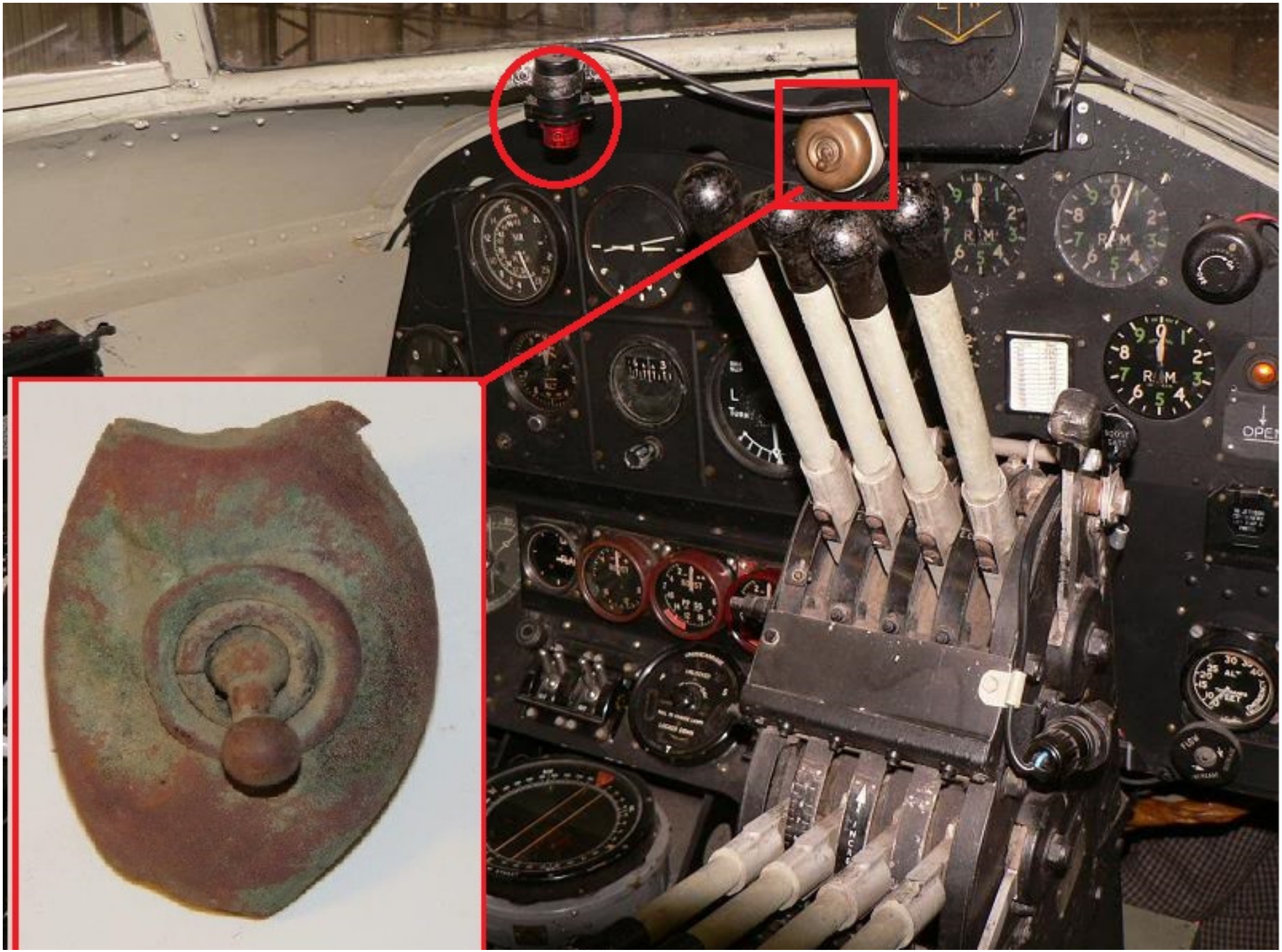


Location of crash-landing site shown on 1945 map. It is about 25 km south of Holbæk on Zealand. According to one of the crew, Flying Officer C.W. Fry, he and the other two officers went north. When they reached a stream (Tysinge Å) they had a drink and cut their flying boots down to walking boots, throwing the tops into the stream. Looking back they could see their burning aircraft.

Location of BB378 crash-landing site. Debris fields 1 and 2 marked based on their GPS coordinates. The blue oval indicates the main concentration of debris within Debris field 1.
GPS coordinates. Debris field 1: Centre WGS84 669961/6161556. Debris field 2: Centre WGS84 669991/6161507.

Metal detecting. Each flag represents one piece of debris from Halifax BB378.

Debris field 1.



Definitive proof that the debris is from Halifax BB378 – here is a cockpit switch. We also found red plexiglas.

The cockpit switch found in Debris field 1.

Debris field 1: Molten aluminium from the aircraft fire (100 pieces, 3 kg).

Debris field 1: Close-up of molten aluminium.

Debris field 1: Sheet aluminium, some with rivets (74 pieces, 540 g).

Debris field 1: Close-up of riveted sheet aluminium.

Debris field 1. Conical aluminium item.

Debris field 1: Aluminium tubing (19 pieces, 150 g).

Debris field 1: Various items, including the cockpit switch, two signal pistol cartridges and a .303 calibre cartridge.

Debris field 1: Cartridge fragment. Identified as a .303 calibre Mk. 7-projectile for a .303 calibre Browning machinegun, of which BB378 was equipped with four. Manufactured by Greenwood and Batley, Leeds, UK in 1941.

Debris field 1: Molten copper.

Debris field 1: Various iron items, including fragments of Mill's hand grenades from BB378.

Debris field 1: Fragments (right) from the Mill's hand grenades (left) that BB378 was to deliver to the Danish resistance.

Debris field 1: Aluminium wreckage with part numbers and inspection stamps. Other examples follow on the next pages.

This item is engraved 5708 B2 ISS D EM LF AF 34328 EMBW 45. According to Jan Christensen, other items of wreckage from Halifax crash sites in the UK contain similar part numbers to "5708 B2 ISS", and many have the stamp "EMBW". See for example:
http://www.yorkshire-aircraft.co.uk/aircraft/jp182.html
http://www.yorkshire-aircraft.co.uk/aircraft/ll505w.jpg
http://www.yorkshire-aircraft.co.uk/aircraft/ll505.html

The similarity of parts numbers and inspection stamps indicates that our debris is from a Halifax and hence from BB378.

Aluminium wreckage with part numbers and inspection stamps.

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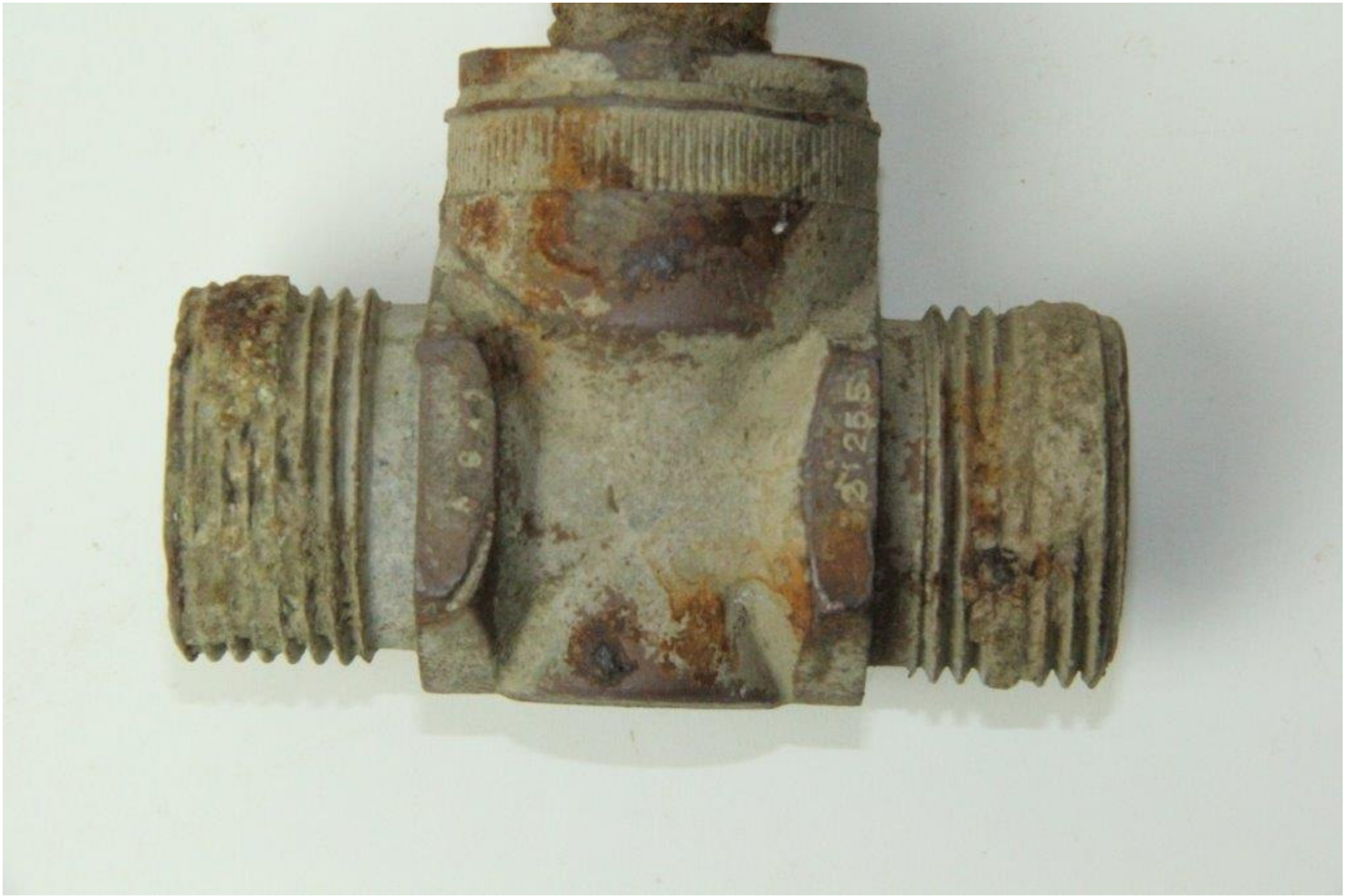
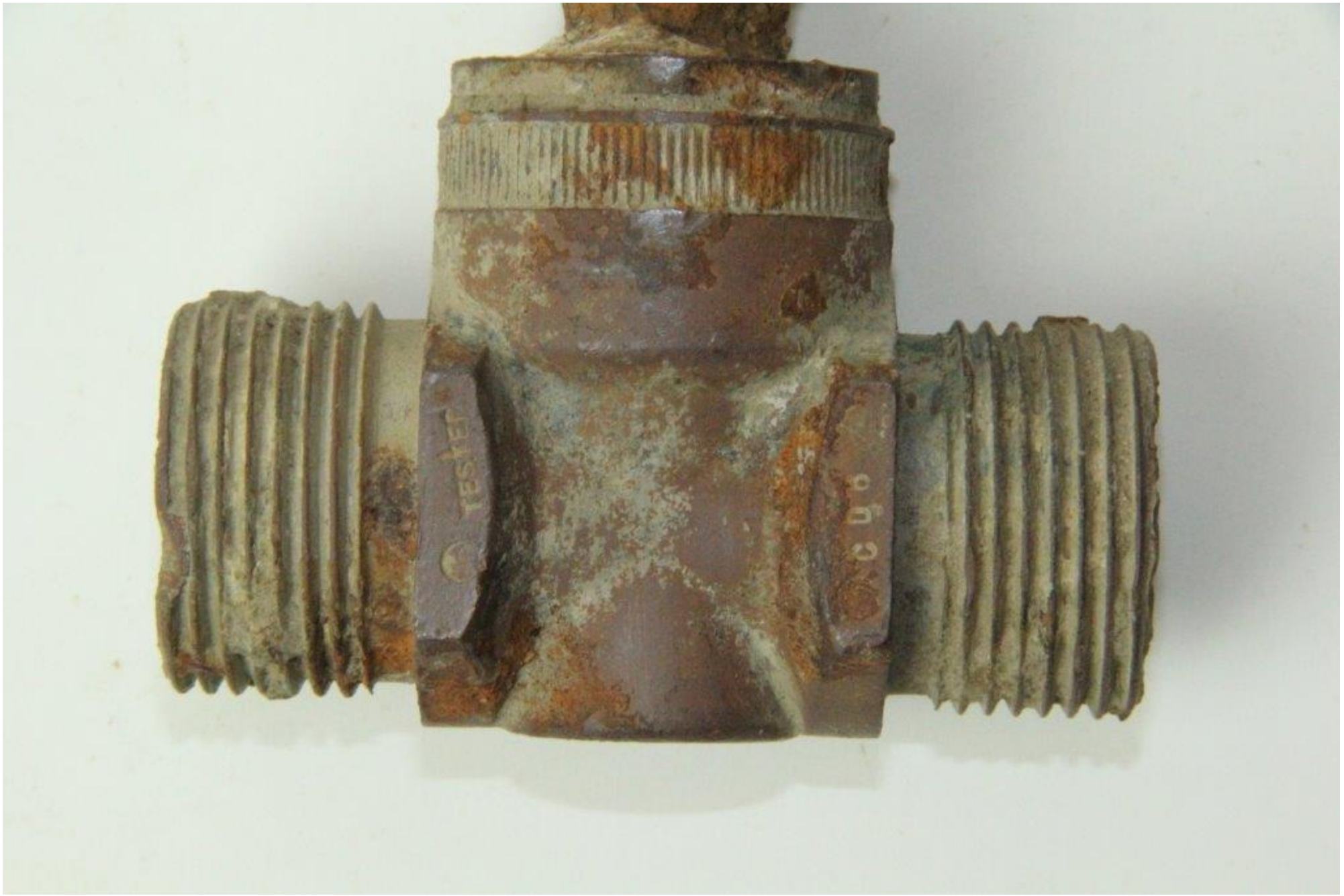
Debris field 1: Plexiglas. Red could be from the cockpit lamp. Red and green could be from the wing lights.

Debris field 1: Various items possibly from BB378.

Debris field 1: Iron and brass engine fitting, perhaps a fuel connector.



Debris field 1. Close-up of engine fitting.



Debris field 1. Close-up of engine fitting.

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Debris field 2: Various items of debris from BB378.

Items from the wood next to debris fields: Large items of sheet aluminium.

Debris scattered across the field between the road and Debris fields 1&2.

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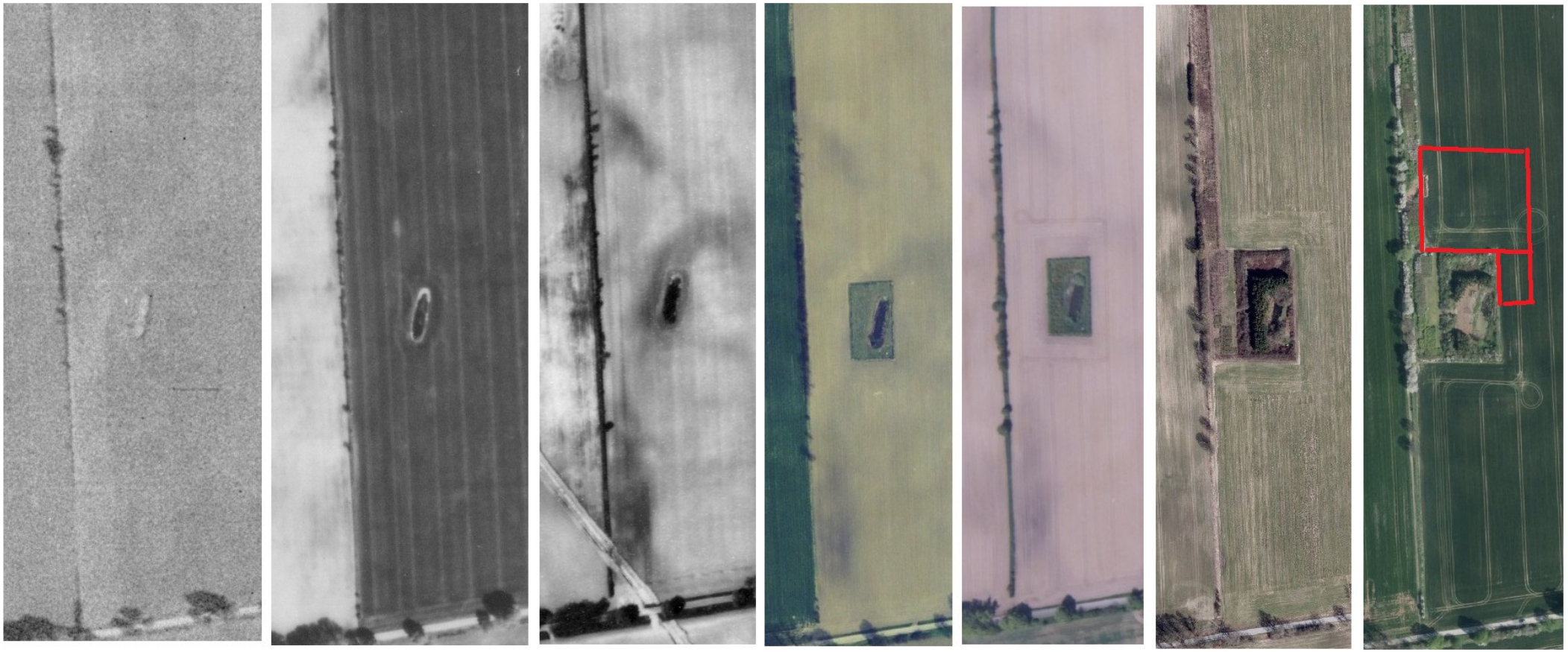
Aluminium name plates, one with the text ”Warrington First Quality”. Unclear if they are from BB378.

Items found on the hill slope north of Debris field 1. Some of the items could be from BB378's electrical system.



Crash-landing site. The two debris fields are indicated for 2013. The wooded area next to debris fields 1 and 2 did not exist in 1945 and was planted after 1999. The whole crash site was ploughed for about 50 years after the crash-landing and most of if for about 60 years. It is likely that there is more debris from BB378 in the wooded area, so further detecting is desirable. Three large pieces of aluminium have already been found there.