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The recovery of a Fairey Barracuda from the Solent off the former RNAS Daedalus

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Abstract: During survey work in 2018, the extant remains of a Fairey Barracuda—subsequently presumed to be Fairey built LS473, recorded as lost during take-off—were discovered submerged off the former Royal Naval Air Station (RNAS) Lee-on-Solent, HMS *Daedalus*. Widely used, the Barracuda was the first all-aluminium high-winged monoplane of the Royal Navy's Fleet Air Arm, but no surviving complete example of this aircraft exist.

This paper outlines the ongoing research into the aircraft and various archives, identifying several inconsistencies leading to questions about the initial identity of the aircraft, the records around its loss and that of other aircraft of the same type lost in close proximity to the crash site. The examination of the aircraft's remains has provided insights into wartime production contingencies across aircraft manufacturers, and the variations in aircraft design as types were altered or upgraded during the production process, with the recovered aircraft showing features from more than one mark. Though the aircraft were produced under licence to the same set of design drawings, with updates to individual drawings, there is evidence of significant variation between manufacturers' methods. There is also evidence of differing interpretations of the construction drawings, along with several ad hoc alterations to correct errors in the construction process.

Introduction

This paper reports on the recovery of a Mk II Fairey Barracuda (Figure 16.1) from the sea close to the end of the runway at the former Royal Navy Air Station (RNAS) Daedalus in Hampshire, England. The discovery of the extant remains of an aircraft in a shallow marine environment, and its subsequent excavation and recovery under the direction of professional marine archaeologists, is considered a rare opportunity within the UK. Research into recorded losses produced two possible candidate aircraft. These were being flown as training flights with just the pilots onboard, neither of which resulted in a fatality, following their ditching into the sea on take-off.

The aircraft was found due to its location in the planned High Voltage AC (HVAC) cable corridor of the IFA2: Interconnexion France-Angleterre 2 (IFA2) cable route between France and England (Figure 16.2, left). The location of the crash site resulted in a significant restriction on the proposed cable corridor and left insufficient space so close to the landfall to reposition the cables around the site. It was therefore decided, once the research showed neither potential aircraft involved fatalities, to obtain permission to remove the wreckage under licence from the UK Ministry of Defence (MOD) as required under the *Protection of Military Remains Act* (1986). The excavation and recovery followed the methodology created by Wessex Archaeology and approved by Historic England, as the heritage regulator for England and advisor to the UK Government's licencing body for the *Marine and Coastal Access Act* (2009), the Marine Management Organisation (MMO). This was also in line with the Service Personnel and Veterans Agency, Joint Casualty and Compassionate Centre guidance (2011) on obtaining a licence for the recovery of military aircraft material. The recovery was carried out with the incorporation of Wessex Archaeology archaeologists into the contractor's operation, under the conditions set out in the MMO Marine and the MOD licences issued.[1] Full details of the methodology are set out in Wessex Archaeology's Written Scheme of Investigation (2017) and Method Statement (2019a). The project aim was therefore to excavate and remove the aircraft, producing a record sufficient to enable analytical reconstruction and/or reinterpretation of the site, its components and its matrix. All the material recovered was to be transferred to the Fleet Air Arm Museum (FAAM) for disassembly to aid with their ongoing reconstruction project.

The aircraft was found approximately 500 m offshore, near the end of the runway of the former RNAS Lee-on-Solent (HMS *Daedalus*) with the nose of the aircraft pointing approximately southeast. The fuselage and engine were upright and slightly canted to port, with the port wing buried within the seabed sediments from approximately 1 m outboard of the fuselage. The starboard wing was partially detached from the wing stub lying flat on the seabed. The upper part of the engine was 0.5 m proud

[1] MMO Marine licence L/2017/00021/2 issued under the *Marine and Coastal Access Act* (2009), and MOD licence number 1878, issued under the *Protection of Military Remains Act* (1986).

Figure 16.1. Fairey Barracuda Mk. II. Copyright TNA.

of the seabed while the visible remains of the fuselage became lower aft of the observer's cockpit until they were flush with the seabed or slightly buried at their furthest extent. The outline of the cockpit aft of the engine firewall was filled with soft sediment, as were both wing stubs. The empennage was completely missing (Figure 16.2, right). The leading edges of both wings consisted of the surviving rounded frames, with much of the wing skin around the upper part of the leading edges missing. The upper skin of the port wing between the two main spars was largely intact, with small corrosion holes through the skin. This was also the case for all of the remaining fuselage skin below the burial line, giving it poor structural integrity.

Results

The recovered material was initially assessed on-board the contractor's vessel along with basic cleaning, photography, written descriptions and measurements undertaken for the finds record. Radiologically contaminated material, comprising the radon painted indicator gauges from the cockpit, and the organic material artefacts were stored wet and separately from the other finds; all of these were wet stored. Larger fragments were wrapped in a protective layer of decorators' cloth and plastic, and then wetted regularly. Material not retained for FAAM was returned to the seabed for reburial within a deposition site located within the licenced cable route corridor out of the zone of impact. This was based on concerns over the radium paints used and the health and safety concerns these posed. Surviving ordnance, including smoke floats and the drum magazines for the cockpit mounted 'K' gun, were disposed of by the contracted UXO disposal company. No personal effects (except for some boot fragments and a jumper fragment), official books, documents or papers were recovered during the excavation.

The diving operations comprised 38 days of operations and 82 dives. The final day of diving, completing the post-recovery UXO survey, occurred on 26 June 2019. The divers tagged a total of 193 items, including one modern dive weight. A total of 284 objects, or groups of objects, were tagged by the archaeologists at the surface, with 11 items, comprising radiologically contaminated dials, redeposited. Items recovered by the divers were individually tagged, whereas smaller unidentified objects comprising aircraft skin and small structural elements recovered from the sieve on deck were bagged together as a single item, according to their location. Overall, 484 finds numbers were issued. Unusual and unexpected elements included surviving fabric and wooden elements from the control surfaces, leather flying boot fragments, a fragment of a possible jumper, a comfort tube and bag and the screen shield from the radar.

Four manufactures, wartime contingencies and identification

When an aircraft crashes, it is often reduced to an unrecognisable assemblage of broken, crushed and

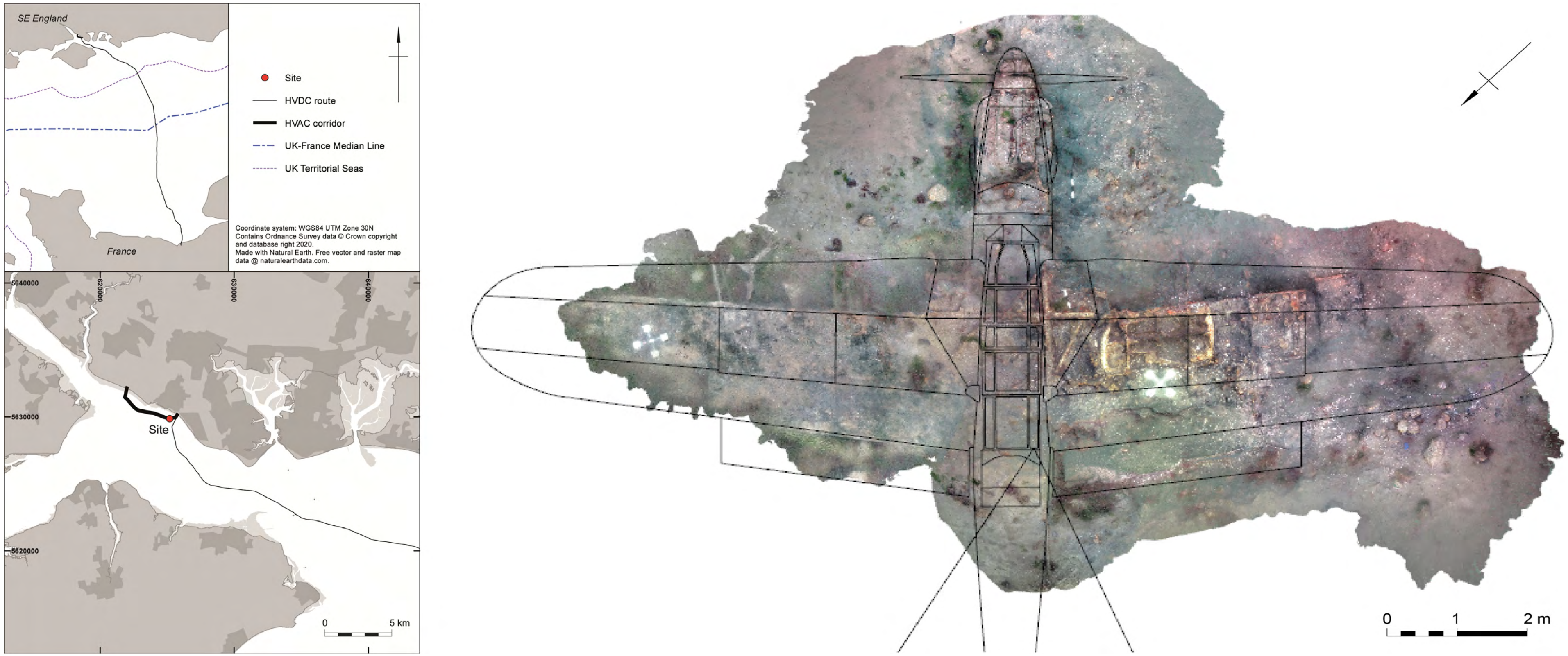

Figure 16.2. (Left) Cable corridor for the HVAC route showing aircraft site. Copyright Wessex Archaeology. (Right) Photogrammetric model of Fairey Barracuda wreck after extents excavation from above with Barracuda outline. Model created by R. Marziani, Wessex Archaeology.

damaged parts, potentially fire damaged, possibly partially recovered at the time of its loss, subject to years of environmental impacts, along with unrecorded human interactions. The latter influence can vary from casual interaction and curiosity, through to the legal or illegal recovery of parts as souvenirs, donor parts for other projects and their clearance as obstructions or hazards in the environment. Whilst some parts may be recognisable at a basic level, their identification to a specific aircraft type—let alone a specific aircraft—may be almost impossible without detailed examination, and suitable reference sources for comparison. These in turn may have been subject to poor archiving, disposal or dispersal over time, leading to further gaps in the surviving resources available to researchers.

In the case of the Solent crash site, the completeness of the aircraft, compared to many sites within the UK (English Heritage 2002), suggested the manufacturer's plate identifying the aircraft, its type, manufacturer and potentially changes to the aircraft led to the hope it might be recovered from the site. Unfortunately, this part of the cockpit, along with the plate, was missing. Furthermore, the effects of 76 years underwater had also removed any evidence of the painted serial numbers which would be expected on the fuselage, internally on bulkheads, on the formers of the main wing sections or tail, though the latter was missing. The tentative identification of the aircraft was therefore based on the surviving material from the crash site cross-referenced with material from both the UK National Archives, local Historic Environment Records and the knowledge and resources of the FAAM staff working on their Barracuda restoration project.

The aircraft has been positively identified as a Mk. II Fairey Barracuda. Two Fairey Barracuda Mk. II's are recorded as lost near to RNAS Lee-on-Solent (HMS *Daedalus*) in 1943 and 1944. At least seven additional Barracudas of various marks have been recorded as lost in the wider surrounding area. It should at this juncture be noted the records for aircraft losses are incomplete due to several factors, and therefore additional aircraft may have been lost in the vicinity (Dave Morris 2019, personal communication). Both of the Mk. II Barracudas were lost within four months of each other due to engine failures on take-off. The first was BV739, a Blackburn built aircraft delivered to 15 Maintenance Unit (MU) on 15 July 1943. On 29 September 1943, it ditched in shallow water whilst being flown by Sub Lieutenant Douglas Williams (Sturtivant and Burrow 1995). The second aircraft was LS473, a Fairey built aircraft, delivered to 15 MU on 24 November 1943 (Sturtivant and Burrow 1995). Initially, the site was thought to be BV739, due to an entry in the logbook of LS473's pilot, Sub Lieutenant MH Sandes RNVR, stating he had a two-mile swim ashore after the crash. Once the recovery of the aircraft started, the evidence of the identification plates on the different parts of the airframe and other makers' stamps and marks on its components indicated an aircraft built by Fairey Aviation at Heaton Chapel, Stockport, though as discussed below, the identification of the aircraft has not been confirmed at the time of writing.

The origins of the Barracuda's design can be traced back to British Air Ministry Specification S.24/37 in 1937, with the requirement to replace the Fairey Swordfish torpedo bomber reconnaissance (TBR) aircraft under Operational Requirement OR.35 (Brown 1975; Harrison 2000; Willis 2016). Fairey Aviation won the tender with the prototype aircraft first flying in December 1940, and the type entering operation service in January 1943 (Brown 1975; Harrison 2000; Willis 2016). The most successful and numerous iteration was the Mark. II with 1,693 aircraft built between Fairey Aviation Ltd., Blackburn Aircraft Ltd., Boulton Paul Aircraft Ltd. and Westland Aircraft Ltd. (Brown 1975; Harrison 2000; Willis 2016). Component parts for the aircraft, such as hydraulic components from Lockheed Precision Products Ltd. (Figure 16.3, top right), were built by a range of companies, with company or Air Ministry (Figure 16.3, top left) part numbers, along with inspection stamps, in this case a Fairey stamp, from the final users (Figure 16.3, centre left). There is at least one example of an unknown manufacturer at this time, with the bomb crutches bearing unrecognised manufacturers' code stamps.

In disassembling and conserving the surviving material from the Solent crash site, it was hoped a definitive identification of the aircraft might be found. Instead, the variety of manufacturers' stamps and marks led to further questions on the how the different manufacturers worked together either cooperatively, or under direction from the Ministry of Aircraft Production, in marshalling the 17,000 plus components in the aircraft (Willis 2016: 18). In the case of the production of the Barracuda, Fairey acted as the 'parent' company with the other manufactures acting as satellite factories. Fairey was therefore responsible for the quality control, and ensuring parts were delivered on time and in the quantities required to maintain production. They also maintained control of the design, production tooling and manufacturing programme for the aircraft. What has not been identified at this time is how much of the tooling was either manufactured to Fairey's specifications or plans, or built and shipped from Fairey, and how much this reduced the amount of sub-assembles or components built or made outside the group.

The different manufacturers also used different forms of subassembly and part identification tags and modification or 'Mod' plates (Figure 16.3, centre left) to identify the different sub-assemblies of the aircraft, and the plans those sections were built off. Plans went through multiple iterations in some cases, with parts receiving corresponding stamps to indicate which plan version they were built to, such as this Boulton Paul stamped, issue one example (Figure 16.3, bottom left). Fairey Aviation used a system of brass hook and eye clips or bands on the airframe tubes (Figure 16.3, centre right); they also stamped the solder sealing these bands. Unfortunately, most have corroded away with their immersion. Boulton

Figure 16.3. (Top left) AM embossed on electrical component. (Top right) Lockheed Precision Parts hydraulic component. (Centre left) Examples of Fairey inspection stamp with drawing and part numbers on front spar frame. (Centre right) Fairey Aviation brass hook and eye band with stamped solder. (Bottom left) Bolton Paul inspection stamp with issue one stamp next to drawing number. (Bottom right) Bolton Paul additional or super nummary numbers. All images copyright Wessex Archaeology.

and Paul used a system of a plain metal band with a folded-over join, and stamped parts with their manufactures code. Boulton and Paul were also known for adding additional or supernumerary part numbers, as well as the standard drawing numbers (Figure 16.3, bottom right). There is also currently one example of a tag which appears to have a month and year stamp on it (Figure 16.4, top left), the visible number being too long to be a drawing number reference. Blackburn initially was thought to have been the only manufacturer of the Barracuda to use ink-stamps in their quality control system (Figure 16.4, top right), though no Blackburn parts have been identified in the Solent Barracuda so far. However, as the parts from the Solent wreck have undergone conservation and cleaning there appears to be a least one example of a Fairey ink stamp, though it is very faint, and also appears to have been smudged, along with another blurred one on an electrical terminal block from the observer's cockpit. It is hoped that by identifying the issue plans identified on the 'Mod' plates, and the date of issue for the related drawing or drawings, the list of potential identifiers for the Solent aircraft can be further refined, based on a production rather than a delivery date for the aircraft. Currently, the gaps in the available plans for the different marks of aircraft means this has not been possible, though this research is ongoing.

The Solent wreck has in part started to answer this question on the basis of its producing, so far, parts with stamps from three of the four manufactures of the aircraft, along with Air Ministry (AM) (Figure 16.3, top left), Aircraft Standard (AS) or Aircraft General Standard (AGS) marks. These latter two were general standardised parts with no relation to a specific aircraft type. The exception here was the Air Ministry Section 26 parts, which were airframe and type-specific, with 26BT being the designated code for the Barracuda (Robertson 1983: 40). However, these were only present on the packaging holding the part, rather the part itself, with the relevant Fairey drawing number being stamped onto the part, along with any inspection stamps (Will Gibbs 2023, personal communication). Currently, no parts bearing this code have been identified.

The parts from the Solent aircraft also show various works inspection stamps comprising, in general, an identifier for the aircraft manufacturer and the works inspectors' number, issued by the UK Ministry of Aviation Aircraft Inspection Directorate (AID), who also inspected aircraft. This includes several from Westland Aircraft Ltd., who only produced 18 aircraft before being moved on to building other aircraft types. There is also evidence of parts being made and inspected by one company, and then re-inspected by another (Figure 16.4, centre left). In some examples the manufacturers have different AS numbers on the identical parts, despite them being the same part; examples of this are present in the fuel drains from the Solent wreck with Boulton Paul and H&B stamps indicating the manufacturers concerned. The latter are another example of an external company producing parts for the four aircraft manufacturers. In addition to this, though only 30 Mark I aircraft were built—five at Westland and 25 by Fairey—there appeared to still be parts from this first iteration of the aircraft being used within the production chain. It is unclear whether the use of the pilot seat base using the Mark I design drawings in a Mark II aircraft was a one-off occurrence in the case of the Solent Barracuda, or systemic within the construction of the aircraft, since pre-constructed subassemblies were used on a 'first in-first out' basis, irrespective of latest changes in the design of parts of the aircraft.

The relationships between the four companies in terms of transfer of parts and subassemblies, the use of part overruns, even when obsolescent due to updated drawings, the deviations between plans and the 'as built' aircraft require significant further research. Another example of the reuse—or perhaps more accurately, the re-purposing—of parts within the aircraft is the use of the throttle linkage from another aircraft design, in this case, the Fairey Fulmar. This part was subsequently redrawn as a Barracuda component, though the example from the Solent wreck still has its Fulmar (DF) rather than the Barracuda (DG) drawing references on it (Figure 16.4, bottom left). As in all systems, there would have also been delays between design changes, retooling and manufacture, whilst ensuring workforces remained employed and were trained and retrained as the aircraft being produced changed. What has not been identified at this time is any part with the aircraft serial number on it, despite this being common practise on many other aircraft from the same period.

What is also apparent from the material recovered from the wreck is the small errors in the applied skills and techniques used in the aircraft's construction. Some reflect working blind whilst assembling parts with examples of double drilling occurring, such as on a leading-edge part; others are examples of widening drilled counter sunk holes through rotating the drill to bore a bigger hole, either due to lack of an appropriately sized drill bit, or possibly due to the rush to maintain throughput on the assembly line. The part in this case still received its Boulton Paul inspection stamp, alongside its drawing reference. As with all the parts so far cleaned, conserved and examined, they all exhibited the various manufacturers' inspection stamps (Figures 16.3 centre left, 3 bottom left, 4 centre right, 4 bottom right, 5 top left and 5 bottom right), with in some cases reinspection stamps from other companies (Figure 16.4, centre left). The team at FAAM have also encountered a number of examples of the same Westland inspection stamp number as they restore DP872, suggesting that either Westland produced a significant number of parts or received them prior to moving onto other aircraft, or less likely, they continued to make and inspect parts after moving onto producing other aircraft.

Though it is not an exact calculation, approximately 60% of the aircraft was recovered, demonstrating the level of loss the aircraft had suffered from corrosion and other damage. The buried portion survived considerably better, although corrosion damage was present, potentially due to changes in burial depth over time. The lower parts of the wreck which had been exposed the least were the least corroded or colonised by barnacles. Significantly, many smaller parts, made from composite plastics and other materials, including Tufnol and Aeroplastic parts (Figure 16.5, top right) and other bonded wood-based products, survived well with no apparent damage or delamination.

Though there is no documentary evidence for any acts of salvage from the aircraft, there is some evidence of activity at the site by divers. This is suggested by the absence of the oil cooling radiators from beneath the front of the engine, evidence of an attempt to remove the top of the crankcases, with sheared off, missing and damaged bolts visible, some of the cockpit gauges and other fixtures missing in parts of the aircraft not impacted by crash damage and a shot weight found during the recovery. However, it is possible the radiators were torn off in the crash, and subsequently moved or recovered by shellfish dredgers. Though oyster and scallop dredging may have removed the significant portion of the upper part of the fuselage, including the canopy and guns, the nature of the

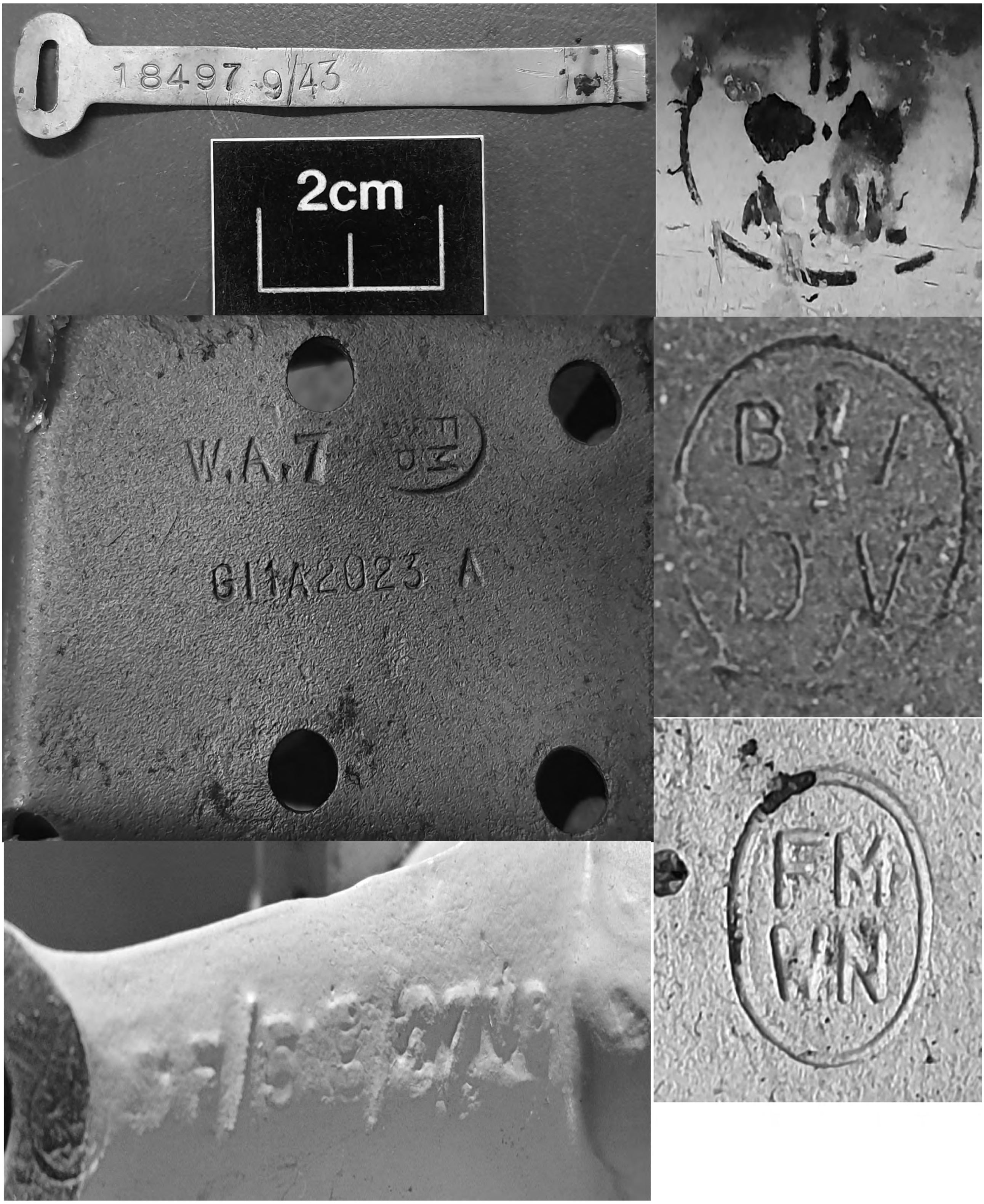

Figure 16.4. (Top left) Tag with possible date. (Top right) Blackburn ink stamp example from another Barracuda wreck. (Centre left) Example of reinspected parts with original Westland stamp, and Fairey reinspection stamp. (Centre right) Blackburn inspection stamp. (Bottom left) Throttle linkage with Fairey Fulmar drawing reference from Solent wreck. (Bottom right) Fairey Aviation inspection stamp. All images copyright Wessex Archaeology.

missing elements suggests items have been deliberately recovered in the past. It may be the gun was recovered at the time of the crash, prior to the aircraft settling onto the seabed, or during a salvage attempt to recover the aircraft shortly after the crash.

Identification of the aircraft

The identification of the aircraft has not yet been definitively confirmed. Based on several indicators, including the surviving internal grey primer paint in

Figure 16.5. (Top left) Boulton and Paul stamped pipe clip. (Top right) Tufnol block for holding hydraulic pipes with ink stamp from the Solent wreck. (Bottom left) Rolls Royce Merlin 32 engine plate. (Bottom right) Westland quality control stamp and part drawing number on cockpit control arm. All images copyright Wessex Archaeology.

places, the torpedo crutch, the identity tags, the mod plates on the tube work, the quality control stamps and most significantly the engine plate, there is a strong suggestion the aircraft is Fairey Barracuda LS473. Work is currently ongoing into the analysis of the primer paints from the different manufacturers, with initial analysis showing there is enough difference between them to definitively identify them.

In assessing the material recovered, the remains of the torpedo crutch with part of its torpedo retaining cable suggest an aircraft which was carrying out torpedo operations. LS473 is recorded as having been carrying a torpedo at the time of its loss, and this is presumed to have been jettisoned prior to the crash. This is because it is considered unlikely the torpedo retaining cable was left on the aircraft when not carrying a torpedo, as the cable was only retained by a bungee cord to prevent damage, and its flailing had been shown to cause significant damage to aircraft before the bungee system was implemented.

Research into the recovered engine plate (Figure 16.5, bottom left) received a response from the Rolls Royce Heritage Centre which also appears to confirm the aircraft as LS473. They report engine 71231 was a Merlin 32 built 8 October 1943 and despatched to Fairey at Stockport on 13 October 1943. It was one of 280 Merlin 32 built under Air Ministry Order C/ENG/426/C.28(a) and delivered between 11 September 1943 and 17 December 1943. The 281259 number is the Air Ministry identification for the engine. LS473 was factory-released on 24 November 1943 and lost on 6 January 1944. As BV739 was built in July 1943 and lost at the end of September 1943 it is highly unlikely to have been fitted with engine number 71231. Also visible on the back of this plate is its Rolls Royce part number. The caveat to this is the possibility the engine fitted to the aircraft was replaced or sent onto a maintenance unit and not accurately recorded. Though this seems unlikely, de la Bédoyère (2001: 42) cites two examples of the convoluted histories of Rolls Royce engines, with engines being built after aircraft were in service or surviving when aircraft were lost, due to the exchanging out of engines for overhauling.

Though the recovery of the Barracuda was planned in order to remove an obstruction for an infrastructure project, it also served as an opportunity to support the ongoing restoration of an aircraft at FAAM. As such, while it no longer exists as an underwater cultural heritage resource, the research into the aircraft and its origins still have a bearing and impact on the wider subject of underwater cultural heritage. In order to attempt to quantify its value, three commonly used methods for wreck sites assessment were used. Though they are generally applied to wrecked ships, the premise of placing a value on a site and the risks it is under are considered to be applicable and valid here. The methods comprised a site characterisation assessment, a site risk assessment and the assessment of the wreck against Historic England's definition of significance and non-statutory site designation criteria for military aircraft crash sites (English Heritage 2002, Historic England 2016).

Historic England's criteria for selection as a site of importance is laid out in their guidance on military aircraft crash sites (English Heritage 2002). To be considered of national importance, a crash site needs to achieve three of the four criteria set out in this advisory document.

The Solent Fairey Barracuda achieves these. Firstly, the aircraft comprised significant surviving elements with few or no examples of type remaining. Though the surviving percentage has not been accurately calculated, it is significantly more than the average 1% for a terrestrial crash site, with 10% survival being considered exceptional (English Heritage 2002). Secondly, the recovered material shows a remarkable degree of preservation, with original features and even pencil marks still visible on some parts. Thirdly, the aircraft was deemed to have the potential for some form of restoration and display, though conservation and display were not considered viable in the long term. Finally, based on the known histories of the candidate aircrafts, there was no evidence that either was involved in any significant events or raids, so neither achieved the requirements for the fourth criteria. Instead, like approximately two-thirds of aircraft losses during the war, they were lost during non-operational incidents (English Heritage 2002).

In order to quantify the archaeological and heritage value of the aircraft, it was assessed against the criteria required for designation under the *Protection of Wrecks Act* 1973 as presented in Historic England's (2017) *Ships and boats: prehistory to present*. Though this is designed for ships principally, within the context of the aircraft being an item of submerged cultural heritage it was again considered an appropriate model for assessing its value and the outcomes of its excavation and recovery. Based on this assessment, the aircraft was considered to be highly valuable overall, with the site risk assessment identifying the aircraft as at high risk, prior to its excavation and recovery.

In general, the inability to recover the Barracuda fully intact (Figure 16.6) demonstrates the vulnerability of submerged aircraft remains, particularly those in locations with strong tides, currents, changes in sediment levels and heightened human activity. The variable survival of parts of the wreck shows that if these artefacts remain buried within stable seabed sediments and are not disturbed, they may survive long term. As reported by Macleod (2016), sheet aluminium does not attract marine growth in the same way iron and steel do. Nevertheless, when exposed to tidal streams, currents, abrasion through sediment movement and highly destructive seabed activity, these wrecks are at high risk and become highly fragile very quickly (North and Macleod 1987; Macleod 2006).

Discussion

The recovery of the Fairey Barracuda from the Solent has contributed in several ways to the field of marine archaeology and our understanding of human life. At its most basic level, it is an example of the technological advances in aircraft design and development in the 1930s and 1940s in the United Kingdom. It shows what

Figure 16.6. (Left) Pilot's cockpit, Observer's cockpit, and wing stubs following recovery with subsea basket. (Right, top) Rolls Royce Merlin 32 engine following separation from airframe and recovery. (Right, bottom) Aircraft during initial lift attempt. All images copyright Wessex Archaeology.

was considered achievable by government procurement offices, and what a specific aircraft manufacturer offered in response to this specification produced at a time of rapid change and development in aircraft design and capabilities. It also shows what were at that point in time the perceived requirements and risks in naval warfare, and how aircraft might contribute to them. It should be noted the original specification for the Barracuda was published in 1937, with British naval orthodoxy of the time looking for multi-role aircraft, rather than role-specific designs. By the time the aircraft was in production, the idea of role-specific aircraft was back in the ascendancy, with the Barracuda expected to carry out an ever-expanding list of roles. Many of these were outside its original specification and design.

In studying the remains of the aircraft in more detail, insight has been gained into not only the technological innovations used in its construction, but also the more human element of its build, the methods used and more significantly, the variations which crept into the process. In considering human factors and the concepts of normalisation of deviancy, teamwork, leadership and risk management, the variations between the planned and designed version of the aircraft and the built version can be put into the contexts of wartime expedience, the rapid expansion of aircraft production with therefore relatively inexperienced workforces utilised in the construction of the aircraft and the under-pressure management and inspection teams. In addition to this, though as yet not fully understood, there is the transfer of components between the different manufacturers of the aircraft, which are suggestive of a system based on what appears to be a 'just in time' style supply chain. This may also relate to not holding large amounts of completed components and subassemblies in any one location in case of attack and their loss. The final element in the context of the Fairey Barracuda is related to the pilot, and how his story brings a connection to past which the aircraft on its own might not. Through the stories of all the individuals who played a part in the construction, services, flights, loss and recovery of the aircraft, a more organic, interactive history of the aircraft can be built. This potentially allows the modern viewer to find common ground with the past, as well as to answer the new questions posed by the archaeological excavation and recovery of the aircraft (de la Bédoyère, 2000: 111). As part of this engagement with the past and exploring the actions of the pilot, FAAM is investigating whether the pitch of the propellor will be able to indicate some of the engine settings at the point of impact, and whether the aircraft was set up to ditch or the pilot was still trying to recover the aircraft at the point of impact (Will Gibbs 2023, personal communication).

The recovery of the Fairey Barracuda from the Solent as part of the development of the IFA2 interconnector project can be considered highly successful in terms of combining archaeologists and commercial divers into a single team to carry out a rescue archaeology project salvaging an aircraft. The project saw archaeological divers integrated within a team of commercial divers, all of whom were experienced surface supply divers. The experience of the commercial dive time in terms of hours of underwater and rapid sediment removal was invaluable to the project progressing as it did, while the presence of archaeological divers with their experience and knowledge of recording processes, aviation archaeology and site formation processes ensured the archaeological significance of the find was retained while additional information on the crash was recovered. The project, within the context of rescue archaeology in a commercial development, was constrained by the need to fit into a fixed timeframe based on the contracted schedule for the cable-laying vessel. Therefore, without the commercial dive team, the recovery may have been slower, less efficient and more costly. Without the archaeological dive team and the advice and guidance of the FAAM staff, potentially large and significant amounts of archaeological data might have been lost, leading to reduced information on the aircraft and its reduced significance as an archaeological resource.

Conclusion

In its recovery, becoming an object of historical significance, rather than just a crashed aeroplane, the Barracuda's value to the wider community changes from that of a lost military aircraft to that of a historic item which can help researchers understand the past, filling in the gaps in our knowledge and linking the documentary record to personal histories of events. The archaeological potential of the aircraft can be viewed in terms of its physical remains and the contribution they can make to the FAAM restoration programme, but also from the personal history of the pilot who survived the crash and his recollection and links to the aircraft. This personal link has generally become more significant in recent years as events pass out of living memory. The journals, logs, photographs and oral histories of events lose context in isolation, and without a sympathetic audience or institution to garner and retain them. This work is already adding to the understanding of the wartime manufacturing process of aircraft, as well as to other research questions the team at FAAM have about FAA aircraft. The full value and potential of the recovered finds will not be realised for several years, both due to the number recovered, but also their conservation and reuse as replacement parts or as a model for the reconstruction where plans and photographs are not available.

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