MILITARY AIRCRAFT CRASH SITES IN NORTH-WEST WALES

Volume I - Project Report

Ymddiriedolaeth Archaeolegol Gwynedd
Gwynedd Archaeological Trust

MILITARY AIRCRAFT CRASH SITES IN NORTH-WEST WALES

Volume I - Project Report

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Written by: Nina Steele

Illustrations by: Nina Steele

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Cyhoeddwyd gan Ymddiriedolaeth Achaeolegol Gwynedd
Ymddiriedolaeth Archaeolegol Gwynedd
Craig Beuno, Ffordd y Garth,
Bangor, Gwynedd, LL57 2RT

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Report Summary

There has long been an interest in aircraft crash sites among aviation enthusiasts. In recent years there has also been an increase in the professional interest in these sites, particularly with regard to their management.

This project was developed with the aims of compiling an accurate record of the available resources, highlighting the relative importance of each site, and facilitating site management through providing this information, together with management recommendations, to heritage management officers at the Welsh Archaeological Trust, Cadw, the MoD and other relevant parties.

The basis for the work undertaken by Gwynedd Archaeological Trust was a database compiled by the RCAHMW. This work was developed and expanded through the course of the project and will hopefully be taken forward across Wales to provide a definitive source of information, dynamically managed through the Regional HERs and the RCAHMW.

Event Summary

Gwynedd Archaeological Trust was grant-aided by Cadw 2011-12 to investigate twentieth-century military aircraft crash sites in north-west Wales. The work included a consideration of the management issues as well as the potential for national designation.

Derbyniodd Ymddiriedolaeth Archaeolegol Gwynedd gymorth grant gan Cadw yn 2011-12 er mwyn ymchwilio safleoedd cwympiadau awyrennau milwrol yr ugeinfed ganrif yng ngogledd orllewin Cymru. Roedd y gwaith yn cynnwys ystyriaeth o'r materion rheolaethol yn ogystal â'r potensial ar gyfer dynodiad cenedlaethol.

Note for the final version of the report (May 2022)

This report was originally written in 2012. Although the content remains largely relevant, the legislative context in Wales has changed with the introduction of the Historic Environment (Wales) Act 2016, and organisations have evolved since the time of writing. Natural Resources Wales (NRW) was formed from an amalgamation of the Countryside Council for Wales, Forestry Commission Wales and Environment Agency Wales in 2013. The Twentieth Century Military Sites Working Group developed into the Welsh Conflict Archaeology Advisory Panel (WelCAAP).

In terms of the records arising from the project, the Ministry of Defence no longer use the same software as the Welsh HERs. Instead, colleagues at the MoD were supplied with a copy of the project table created by GAT. Furthermore, the specifications produced for the Welsh HERs may be altered from those developed here prior to data accessioning, and each WAT may choose to incorporate the data in a slightly different way.

Wales has become the first UK nation to designate an aircraft crash site. Details of the Scheduled Lockheed P-38 Lightning near Harlech (information included in this report) can be found at https://cadwpublic-api.azurewebsites.net/reports/sam/FullReport?lang=&id=4409 (last viewed 17/05/2022).

The 2022 revisions were made by the original author in order to allow the report to be made fully available to the public and reflect comments received in 2012 by the MoD and the RCAHMW. They constitute minor amendments to the text.

1. Introduction

Aircraft crash sites are a tangible yet enigmatic reminder of the massive changes of the 20th century. They embody the futility of modern warfare and the potential for instant destruction while demonstrating the technological leaps seen in aviation during the course of the century and revealing the history of triumph and disaster, providing a memorial to the air crews and the stories behind the final flights of each aircraft. They have long been the subject of enquiry for many different groups of people, and this has often resulted in the depletion of wreckage from the sites.

Each military aircraft crash site is designated as a Protected Place under the Protection of Military Remains Act 1986. Any intervention on a site requires a licence approved by the JCCC Agency of the MoD. Licences will not be granted where human remains or unexploded ordnance are anticipated.

Although popular literature and walkers guides detail information about the locations and identities of crash sites, this information has not been gathered in a single location to inform landscape management processes. Military aircraft crash sites have been more recently brought into the focus of professional archaeologists and heritage managers who wish to understand and protect the fragile remains that survive in Britain.

Various professional studies have been undertaken over the last two decades, including work by English Heritage, in an attempt to define and map the resource. In Wales this work has been limited to the recent creation of a database of downed aircraft compiled by the Royal Commission on the Ancient and Historical Monuments of Wales. This has yet to be completed. The maritime element of the database will be taken forward by the RCAHMW while the terrestrial element will be taken forward through the work of the Welsh Archaeological Trusts.

This project arose from discussions at the Twentieth-Century Military Sites Working Group for Wales in 2009. Concerns had been raised by members of the group as to the dwindling resource and the need to compile coherent, accurate information to a) assist Welsh heritage managers in providing advice; b) to provide the MoD with a full database of crash sites in Wales to aid decision-making with regard to licensing recovery operations and c) to alert Cadw to crash sites that could be scheduled to afford an extra level of protection. It was discussed that by compiling such a dataset there would also be an opportunity to monitor and protect the identified sites, that can be at risk from a number of factors, including unlicensed recovery operations.

1.1 Aims

The project aims are:

- Provide a coherent discussion of the key issues from a Welsh perspective including the definition and extent of threats to military aircraft crash sites
- Compile accurate information relating to military aircraft crash sites in north-west Wales with associated GIS through enhancement of the RCAHMW database and ancillary data collected for the purposes of the Trust. All appropriate data will be incorporated into the Regional Historic Environment Record at Gwynedd Archaeological Trust.
- Provide scheduling recommendations to Cadw
- Outline generic management recommendations appropriate to crash sites
- Establish a recording methodology that can be rolled out across Wales in future years

- Provide recommendations for future work
- Deposit an enhanced database and project archive with the National Monuments Record for Wales

1.2 General Project Methodology

The project methodology initially consisted of a literature review to ensure that the author was able to acquire an understanding of the issues in order to facilitate meaningful data capture. Contacts were made with a wide variety of experts and stakeholders in order to garner relevant opinion and to determine the most appropriate recording standards. The RCAHMW made available a database of downed aircraft which was examined and augmented with new information, including additional data developed for site classification and management purposes. The database fields for this information will be mapped to MIDAS Heritage and the HER and all relevant data will be incorporated into the HER to facilitate on-going management and interpretation of the sites.

This project does not aim to replicate the work of others and as such there are a number of issues that, having been dealt with by others, will not be revisited in detail here. Other works or individuals will be referred to in these instances.

1.3 Limitations

The project has been primarily limited by the available time and resources, and consequently the ability to consult a wider range of sources. As a result the author has been primarily relying on the information in the database provided by the RCAHMW (largely based on secondary sources), information supplied by local experts, and published secondary source material that may be of questionable quality. There has been limited ability to check source material. The range of primary source material has excluded its detailed interrogation due to its size and variety, although many of the 'unknowns' in the database could be clarified through consultation of Operations Records Books, Police Records and other such available sources of information, including oral history.

There has also been very limited time available for field visits and as such the vast majority of the work has been desk-based, which has limited the ability, at this stage, to define clear distributions of crash site material and the total extents of aircraft crash sites. It has also hampered the ability to determine the potential for buried deposits. This inability to define exact locations and extents has limited the ability to accurately reflect any landscape designations (for example the identification of SSSI areas) as National Grid References (NGRs) will not always be correct.

Other factors relating to the logistical recording of information have also limited the work including the lack of time to replace acronyms in the database with full text, which hampers the interpretation of the data by non-specialists. Likewise the classification of some of the aircraft and definition of airframe materials, periods of service etc have only been possible to a higher level due to some aircraft types having not been included in the tables produced by Vince Holyoak (EH), as they fell beyond the scope of his research, or in the English Heritage Thesaurus of Historic Aircraft Types. These would both benefit from some further work but unfortunately formal input into these two sources of information has fallen beyond the funded scope of this work.

As such, the report and database are an accumulation of the best available information. The data will, however, be incorporated into the Regional Historic Environment Record (HER) in due course, and as with all HER data it will be a dynamic resource that will be updated to reflect the most accurate and up-to-date information when this becomes available.

Finally, the application of *category*, *i.e.* the relative indication of importance of military aircraft crash sites, has been a challenge to achieve. This is due to the need to apply a category to each site in a Welsh context (*i.e.* to indicate the relative importance of sites from a Welsh perspective). However, military aircraft and their relative importance need to be understood in an international context and all aircraft should ideally form part of national and international research frameworks rather than being solely considered from a Welsh perspective.

1.4 Acknowledgements

The project has been made possible by the contribution of the following people (in alphabetical order):

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- Deanna Groom, The Royal Commission on the Ancient and Historical Monuments in Wales (RCAHMW), for supplying the work in progress database of downed aircraft
- Vince Holyoak, English Heritage, for providing information regarding the genesis of the EH research and general aircraft crash site background, and for permitting the use and modification of the tables of historic aircraft data created for his work at EH
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- Graham A. Stephen, for allowing the use of images from his blog
- Roger Thomas, English Heritage, for providing information and advice

1.5 Stakeholders

There are a number of different stakeholders involved in this project. Each one will have a slightly different requirement from the project, but it is anticipated that the resultant dataset, management recommendations and designation recommendations will go some way to meeting the needs of most.

The 2008 Wessex report (Scott & McNeil, 2008) addresses a number of the relevant stakeholder issues. Many are mirrored in this project and will be summarised below. Those with a particular interest in the Welsh datasets are included with more detail.

1.5.1 Cadw

Cadw are principally interested in the designation potential for military aircraft crash sites. The presumption is that the sites are eligible for designation based on AMAA 1979 Section 61 (7) (c) which states that any site comprising, or comprising the remains of, any vehicle, vessel, aircraft or other movable structure or part thereof... shall be regarded as part of the monument if it could not be detached without being dismantled. It is the view of Cadw that this category would therefore include aircraft crash sites where the remains are embedded in the ground.

No aircraft crash sites have yet been scheduled individually in the UK, although a crash site on Lundy falls within an existing scheduled area (Holyoak, Pers. Comm., 2011), and two have been identified in Gwynedd during the course of this work.

1.5.2 Gwynedd Archaeological Trust (GAT)

Gwynedd Archaeological Trust is an educational charity, whose principal duty is to inform the public on archaeological matters, to respond to increasing threats to the archaeology of the area, and to educate in the broadest sense. As part of this remit, Gwynedd Archaeological Trust curates and manages the Regional Historic Environment Record (HER) to provide historic environment data for a

variety of uses and makes this available to the public. The HER underpins the work of the Trust by providing an information base on which all other work undertaken in north-west Wales draws.

The Trust undertakes a range of projects including commercial contracts and threat-related assessments of a variety of archaeological sites and landscapes. The Heritage Management team also supply advice to a range of organisations and individuals for the purposes of positive management of the landscape for the benefit of the historic environment. This type of advice includes information for farmers and land managers through agri-environmental schemes, the most recent of which is *Glastir*.

The compilation of a database of military aircraft crash sites, to be included in the Regional HER, will allow the various personnel within the Trusts to also include this information in historic environment responses and commercial contract work and will allow the Trust to be reactive to any issues relating to military aircraft crash sites in north-west Wales. This will ensure that they can be appreciated as a facet of the historic environment as sites of significance in their own right, regardless of the remaining aircraft components, although where these are still present special management considerations are likely to apply.

The Trust also fulfils an outreach function. This type of information has a direct connection to many of the people in north-west Wales and will enable personnel to build on this information should an opportunity to create a new related outreach project arise, or should there be a way to anticipate the need for such a project this can be identified more easily.

1.5.3 Gwynedd Archaeological Planning Service (GAPS)

Gwynedd Archaeological Planning Service provides advice to local planning authorities and other organisations and individuals with regard to planning and development issues. This often includes infra-structure and energy-provision projects, which may impact on the sites of military aircraft crashes due to their frequent siting in marginal areas where the evidence of such crashes is likely to proliferate. By providing the information to GAPS through the Gwynedd HER, they will be able to react and advise accordingly.

1.5.4 The Royal Commission on the Ancient and Historical Monuments in Wales (RCAHMW)

The RCAHMW has kindly supplied a database of crash sites compiled by Deanna Groom, the Maritime Officer. Although there is still more work required on this in order to complete the dataset and provide location information for many of the sites, it presents a large body of work on which to build. The database has been enhanced for north-west Wales and will be returned to the RCAHMW in order to feed into their wider record systems.

1.5.5 National Trust (NT)

The National Trust embarked on a small project in association with the Explorer Scouts in 2010-11 to map the locations of air crash site remains in the uplands belonging to the National Trust. It was borne of a deficiency identified in the records and recognised by the Archaeologist for North Wales, Kathy Laws. The NT has a scoring system for monitoring conservation performance, and for the Carneddau this system had raised a question about the removal of wreckage from aircraft crash sites and the need for management of these (Laws, Pers. Comm., 2011). As of 2011 there are 5 crash site records on the NTSMR, and the need to establish where the crash sites are actually located was identified in order to be able to find out the extent of removal of material from them (*ibid.*, 2011).

1.5.6 Snowdonia National Park Authority (SNPA)

The Snowdonia National Park Authority advises on the management of the entirety of the National Park. As a planning authority, the National Park fulfils the functions of planning and landscape management advice to complement the role of Gwynedd Archaeological Trust and Gwynedd Archaeological Planning Service. In the 1980s there was a practice of clearance of aircraft crash sites within the Park. Unfortunately this practice was not fully documented, consequently the motivations for, and the results of, the clearances are not known with absolute clarity. The current Snowdonia National Park Archaeologist, John G. Roberts, remains committed to supporting the aims of this project and is keen to develop means through which aircraft crash sites within the National Park can be monitored.

1.5.7 Local Planning Authorities

The Local Planning Authorities, including Snowdonia National Park, are responsible for managing development control in their respective areas. The responsibility for archaeological planning matters is discharged through the Welsh Archaeological Trusts (GAPS undertake this service in north-west Wales) with the exception of Snowdonia National Park who employ their own archaeologist. They are also responsible for the creation of, and adherence to, supplementary planning guidance (SPG) that will relate to a variety of aspects including archaeology. These should reflect the need to consider military aircraft crash sites as a material consideration in planning matters.

1.5.8 The Welsh Government and Marine Consents Unit

The Welsh Government is responsible for a variety of aspects of marine and coastal management including Marine Spatial Planning and Integrated Coastal Zone Management (ICZM). These management functions may impact upon military aircraft crash sites in the marine and intertidal zones. Further information on the role of the Welsh Government with regard to these is available at http://wales.gov.uk/topics/environmentcountryside/consmanagement/marinefisheries/?lang=en (last viewed 30/05/2012). The Marine Consents Unit Wales issues licences under part 4 of the Marine and Coastal Access Act 2009 (MCAA). Their role should also consider the presence of military aircraft crash sites in the marine and intertidal zones. Further details are available at http://wales.gov.uk/topics/environmentcountryside/consmanagement/marinefisheries/licencing/?lang=en (last viewed 30/05/2012).

1.5.9 The Countryside Council for Wales (CCW)

CCW is responsible for providing advice to all levels of Government on matters that affect the environment. This includes the maintenance of protected areas, such as Sites of Special Scientific Interest (SSSIs) and Areas of Outstanding Natural Beauty (AONBs). Further details are available at http://www.ccw.gov.uk/about-ccw/who-we-are-and-what-we-do.aspx (last viewed 31/05/2012). Where military aircraft crash sites occur on protected sites they will need to be involved in any consultations related to interventions or management.

1.5.10 Forestry Commission Wales

The Forestry Commission Wales acts as the Welsh Government's Department of Forestry and advise on their behalf in relation to forestry policy and implementation. They manage 38% of the Welsh Government's woodlands and encourage sustainable management within the private sector. They

also administer the licences for felling and replanting in Wales. See http://www.forestry.gov.uk/forestry/INFD-524KVJ (last viewed 31/05/2012) for further details. Military aircraft crash sites may be located within current forestry areas or those areas targeted for forest creation and as such they need to be acknowledged and managed accordingly.

1.5.11 Ministry of Defence (MoD)

The MoD is the body responsible for all crash sites on behalf of the Crown. The JCCC is an agency of the MoD (see below).

1.5.12 The Joint Casualty and Compassionate Centre (JCCC)

The JCCC is the body responsible for granting licences to individuals wishing to recover the remains of aircraft. It is the understanding of the author of this report that they do not have a database of crash sites and therefore it would streamline their processes to have an overview of relevant information to hand in order to inform the requirements for further research prior to granting or refusing licences for recovery. The database arising from this project should be supplied to JCCC for this purpose.

1.5.13 The Welsh Archaeological Trusts (WATs)

There are four Archaeological Trusts in Wales, of which Gwynedd Archaeological Trust is one. The importance and relevance of the information to the other Trusts will mirror that for Gwynedd. It is the assumption that they will undertake similar projects to this based on the outcome of this work.

1.5.14 The British Aviation Archaeology Council (BAAC), Recovery Groups and aviation enthusiasts

Wessex Archaeology noted that aircraft recovery groups may not have research agendas that sit entirely comfortably with current heritage management thinking (Scott & McNeill, 2008, ii) and that there appears to be a difference in approach between recovery groups and archaeological professionals, sometimes leading to a perceived difficult relationship. This can be noted from some postings on online discussion forums such as the Key Publishing Aviation Forum (http://forum.keypublishing.com/). However, the information and experience that these groups can offer is paramount to a project of this nature. It is critical that they are acknowledged as stakeholders in this project and it is vital to engage with them in order to underline the principle that it does not represent an inclination to exclude them from the process. Equally, it is important to liaise with such groups in the longer term, in order to achieve national workable standards.

1.5.15 Aircraft restorers

Wessex note the practice of intrusive recoveries "for parts that can either be reused directly or used to create machine parts for the manufacture of parts for aircraft (usually 'warbird') restoration projects" (Scott & McNeil, 2008, 36). Additionally, and although with an American focus, the Wikipedia website's explanation of so-called *warbird* restoration (http://wikipedia.org.uk/wiki/Vintage_warbird_restoration, last viewed 05/09/2011) refers to the perceived need to ensure the survival of potentially very rare, vintage aircraft in order to secure their place in history. It states that this is a growing hobby and that finding the resources and aircraft needed to restore *warbirds* can prove difficult. It notes that "many enthusiasts and restorers learn that working on a restoration project means trips to junkyards, bargaining and trading for parts and skills, or begging with anyone who has a needed item. Some have even opted to rummage

through old crash sites to find spare parts" (*ibid.*). Although the credibility of Wikipedia entries must be regarded with caution, it highlights that there is potentially a wide-spread practice of looting crash sites for parts by keen restorers. In the UK it would be the hope that any parts removed from crash sites are done so under licence but this identifies another element of stakeholder interest.

1.5.16 UK Museums and Collections

There are official and unofficial museums across the UK which hold a variety of collections relating to military aircraft and military aircraft crash sites. *Wrecks and Relics* lists two museums in north-west Wales (Ellis, 2010, 284-91):

- Caernarfon Airport Airworld Museum - The museum tells the story of aviation with particular reference to north Wales and the mountain rescue service. The displays include elements of two Jindiviks from the former RAF Llanbedr. A92-740 is displayed in dismantled form and parts from ZJ488/A92-080 (although there is some question of the identification) are in the workshop area being incorporated into a 'sit-in' version for children. Metal elements including the undercarriage of the 1936 Flea built by Idwal Jones in Tal y Sarn are included in the composite HM.14 Flea formerly of the University of Wales Air Squadron at St Athan (*ibid.*, 284).
- Pant Glas Aviation and Military Museum - The collection is based on the personal collection of the owner and includes artefacts, images and uniforms (*ibid.*, 287)

Ellis also notes other instances of aircraft within north-west Wales, such as a trolley-mounted ZJ503 Jindivik (possibly ex A92-908) at the No 2445 Squadron Air Cadets HQ opposite the entrance of Llanbedr airfield (*ibid.*, 287), and the four aircraft (or parts thereof) at RAF Valley, including the pole-mounted Hunter WV396 at the gate (*ibid.*, 290).

1.5.17 English Heritage (EH)

English Heritage have produced a number of documents relating to crash sites, including the well-known 2002 Guidance Note (Holyoak & Schofield, 2002) with appendices of tables of aircraft created by Vince Holyoak. These have been referred to throughout this document as the aircraft tables created by Holyoak. The current stated work programme of EH includes enhancement of crash site records and as such they are currently looking to review the state of the recording methodology (English Heritage 2011). Additionally, EH are leading a revision of the Guidance Note during 2012 and a consultation process for this has been undertaken.

EH staff led the creation of *Modern Military Matters*, published in 2004, which set out an agenda for research into 20th century military issues. Although this is now ripe for revision, the document, together with the web-published revised priorities document can form the basis for research.

Wessex Archaeology noted that Vince Holyoak (EH) has identified the need for the tables of extinct aircraft to be revised due to recent discoveries in Russia. Scott and McNeil identify the need for these revisions to form part of a research agenda with *Modern Military Matters*.

1.5.18 The Council for British Archaeology (CBA)

The Council for British Archaeology is the independent body that can provide a sound archaeological basis for the creation of guidance documents and published *Modern Military* Matters in 2004. The CBA has previously collaborated with other organisations to produce the Code of Conduct for

Responsible Metal Detecting. They are currently looking into the potential for producing guidelines for aircraft recovery in association with a number of other bodies (A. Brockman, via email, 2012)

1.5.19 The Institute for Archaeologists (IfA)

The Institute for Archaeologists sets standards in professional archaeology. This body should be involved in defining a standard for aviation archaeology and facilitating its application.

1.5.20 Twentieth-Century Military Sites Working Group for Wales

The foundation of the working party arose from recommendations of the Ancient Monuments Board in 2003 (Anon., 2003, 6). The group comprises representatives from the four Welsh Archaeological Trusts, RCAHMW, Cadw, EH and other interested individuals with specific interest in military aircraft crash sites. The work of the group, who meet twice annually, has so far focussed on sharing information in order to facilitate the management and potential designation of C20th military sites, and to raise awareness of the subject area. The group has contributed to two Cadw publications, the leaflet *Introducing C20th Military Sites* and the booklet *Caring For… C20th Military Sites*. The publications are designed for consumption by the general public and are intended to provide information and advice to farmers and landowners/managers, on whose land these sites may occur. The *Caring For* publication is available to download from http://cadw.wales.gov.uk/docs/cadw/publications/Caring_for_Military_Sites_EN.pdf

The future direction of the group is likely to include the organisation of a conference relating to C20th military issues with a view to feeding into a research agenda document, possibly a collaborative revision of *Modern Military Matters*.

1.5.21 UK Police

The Police are legally obliged to take action with regard to human remains and unexploded ordnance and may be involved in criminal investigations where certain breaches of the PMRA are concerned (Scott & McNeil, 2008, 51).

1.5.22 Landowners

Wessex note the influence of landowners on the process of licencing recoveries in the UK (Scott & McNeil, 2008, 45-6). The JCCC guidance states that applicants must secure landowners' permission for excavations to take place on their land, including Crown land (Service Personnel & Veterans Agency/Ministry of Defence, 2009). However, according to a letter sent to Wessex, the JCCC noted that a landowner's desire to see a recovery take place reversed an initial refusal to grant a licence based on the presence of human remains (Scott & McNeil, 2008, 46).

1.5.23 General public and interested individuals

The sense of place inherent in aircraft crash sites is noted by various members of the public. Schofield, Klausmeier and Purbrick note the importance of narratives and alternative histories with regard to interpretation and the social significance of places, *i.e.* the notion of what a place is now, and what it was like before (2006, 6). Evocative photographs of wreckage are posted on the internet by those who find a spiritual connection to these places and perceive the remains as a "fitting memorial to the young men who died", considering the removal of wreckage as desecration (http://www.flickr.com/photos/62445171@N00/5298080083). Brockman reports that the site of

the 1948 crash of Boeing RB29A "Overexposed" has taken on a local and wider significance as a place of commemoration to the 13 American crewmembers despite having no formal designation (Brockman, 2012, 10-11).

1.5.24 Non-UK interests

The German Government and the United States Government both take an interest in the crashed military aircraft of German and American Origin respectively. Their interests are detailed in the Wessex report (Scott & McNeill 2008, 52).

1.5.25 Next of Kin

The next-of-kin from victims of crashed military aircraft form a stakeholder group, although there does not appear to be a typical response from them. The impact of loss on an entire community was described by the niece of one of the victims of the Craig Cwm Llwyd Boeing B-17G crash in 1945. She noted that her father, the victim's brother, was never the same again, and reported that 200 people filled the memorial service for her uncle (information relayed to the author via M. Rimmer, 2012).

Authors such as Sarkar (1998) argue passionately in favour of recovery of crashed aircraft in order to recover their missing airmen and satisfy the needs of the relatives to recover and commemorate their lost loved ones. But the MoD's preferred option of preservation *in situ* is an attitude apparently borne out of the lack of provision for the wishes of relatives in the 1986 Protection of Military Remains Act, and a continuation of the tradition of an honourable 'battlefield grave' (Holyoak, 2004, 13). Conversely, a letter sent to *British Archaeology* Magazine in 2004 from a Second World War air gunner emphasises that had he been killed in action, he would not want to be disturbed (*British Archaeology* 76, 2004, 35).

1.6 Legislative and policy background

1.6.1 The Protection of Military Remains Act 1986 (PMRA)

All military aircraft crash sites are designated as Protected Places under the Protection of Military Remains Act 1986.

The genesis of the act has been discussed elsewhere (Wessex, 2008, Holyoak & Schofield, 2002, Holyoak, 2002) and as such will not be detailed at length here. The Act should be read in conjunction with the Guidance Note for Recovery Groups (Service Personnel & Veterans Agency/Ministry of Defence, 2009) in order to fully understand its application.

The general principles of the Act and the accompanying Guidance issued by the MoD are that:

- The remains of all aircraft which crashed in military service (on land or sea) are protected. This includes hovercrafts, gliders and balloons
- It is an offence to tamper with, move or unearth any remains which come within the scope of the act unless a licence has been granted to do so
- Crashed UK military aircraft and their equipment remain the property of the Crown until the MoD decides to dispose of them

- Crashed enemy aircraft are regarded as captured enemy property surrendered to the Crown
- Crashed US aircraft remain US Government property but MoD acts on behalf of the US authorities
- Licences are unlikely to be granted where there is a suspicion that human remains or unexploded ordnance will be found on-site. Should these be found during the course of excavation, on-site activity must cease and the discoveries must be reported
- Where licences are granted, the licence will only be given to a single individual and it will expire after one year. Pre-excavation, landowner permission must be gained and post-excavation, returns forms detailing recovered material are required by the MoD
- Applicants must abide by council by-laws and adhere to any conditions required by local councils and their archaeological officers
- The applicant is responsible for adequate health and safety practice on site
- Title of certain categories of recovered wreckage will not be transferred (*e.g.* personal belongings, weapons, official documents) although the majority of the material will be considered to be the property of the licence holder following excavation, subject to the MoD's discretion. Such items will remain the property of the Crown until title is transferred.

1.6.2 1979 Ancient Monuments and Archaeological Areas Act (AMAA)

The key principles of the Ancient Monuments and Archaeological Areas Act 1979 that apply to this project are:

- The need for the Secretary of State to create and maintain a Schedule of nationally important monuments (AMAA 1979, Section 1).
- Any works to monuments inscribed on the Schedule are prohibited unless they are authorised under the terms of the Act. Such *works* include any activity resulting in the demolition, destruction or damage to a scheduled monument; any activity to remove or repair a scheduled monument or any part of it, or making any alterations or additions; and any flooding or tipping operations on designated land (AMAA 1979, Section 2).
- Scheduled Monument Consent may be granted for works to a monument but such consent will be subject to strict controls (AMAA, Sections 3 & 4).
- Monuments, and land in their vicinity, can be placed under Guardianship for a variety of reasons and the effect of this is that they will be managed and maintained under the terms of the Act by the Secretary of State or any local authority (AMAA, Sections 10 – 16). There is a right to public access for such monuments (AMAA, Section 19).
- Monuments may be subject to management agreements between the owners and the Secretary of State (AMAA, Section 17).
- Any person unlawfully damaging or destroying a protected monument is guilty of an offence (AMAA, Section 28) and without written consent from the Secretary of State, metal detecting on protected monuments also constitutes an offence (AMAA, Section 42).
- Monuments located on, in or under the seabed within the territorial waters of the United Kingdom adjacent to the coats of Great Britain may also be included in the Schedule, and in this case all other provisions of the Act will apply to such sites (AMAA, Section 53).

In terms of the application of the AMAA 1979 to military aircraft crash sites in Wales, Cadw's view is that the sites are eligible for designation based on AMAA 1979 Section 61 (7) (c). This section states that any site comprising, or comprising the remains of, any vehicle, vessel, aircraft or other movable structure or part thereof... shall be regarded as part of the monument if it could not be detached

without being dismantled, and therefore this category would therefore include aircraft crash sites where the remains are embedded in the ground (Berry, Pers. Comm., 2011).

1.6.2.1 Aircraft Crash Sites located within existing Scheduled Ancient Monuments

Only two crash sites have been identified as falling within the boundaries of an existing scheduled ancient monument. Both (PRNs 33677 and 33696) have general locations identified as Carn Fadryn (SAM Cn 011). However, it is not known whether there is any trace of either crash site remaining on the site, and the locations are not exactly defined.

1.6.3 Planning Policy Wales

Planning Policy Wales defines the need to ensure that the historic environment is protected through the planning process. Of the historic environment objectives identified in the Planning Policy Wales document, two are of specific relevance to military air craft crash sites. The Welsh Government aims to:

preserve or enhance the historic environment, recognising its contribution to economic vitality and culture, civic pride and the quality of life, and its importance as a resource for future generations; and specifically to

protect archaeological remains, which are a finite and non-renewable resource, part of the historical and cultural identity of Wales, and valuable both for their own sake and for their role in education, leisure and the economy, particularly tourism (Welsh Government 2011, 87)

Through these objectives the archaeological planning officers in Wales are able to protect sites of archaeological importance, or mitigate the adverse impacts of development. By including military aircraft crash sites on the Regional Historic Environment Records, they will be considered when providing advice to local authorities, developers, or anyone engaged in development.

Nationally-important sites and their settings, whether scheduled or unscheduled, are a material consideration within the planning process. There should be a presumption in favour of preservation *in situ*. For sites considered to be of lesser importance, it is important to decide whether the preservation of the site outweighs the needs of the proposed development and any factors associated with it (Welsh Government 2011, 90). When granting planning consent, the local planning authority must be satisfied that there is adequate provision for archaeological investigation and recording, and publication of the results (*ibid.*)

However, permitted development is part of planning that allows certain developments to take place without requiring planning permission. Some major infrastructure or telecommunications projects also fall beyond the remit of archaeological planning officers. In the absence of planning controls the best management strategy for military aircraft crash sites, as for other archaeological sites, is to encourage consultation and best practice, and to raise the profile of the historic environment more generally.

The impact of permitted development on the historic environment would benefit from further study, particularly with regard to small-scale projects such as the micro-generation of electricity (for example ground source heat pumps, solar arrays and smaller wind turbines) as these often fall beyond the scope of the Welsh Archaeological Trusts and could impact significantly on unscheduled archaeological features such as military aircraft crash sites. For example, a number of sites are located (albeit not exactly) on Anglesey, which strives to promote itself as an "energy island", and these may be subject to the impact of such small-scale development.

With reference to renewable energy, the Welsh Government identified in its document *A Low Carbon Revolution, The Welsh Assembly Government Energy Policy Statement March 2010*, (http://wales.gov.uk/docs/desh/policy/100331energystatementen.pdf last viewed 15/09/2011) that it would aim to have 4.5 kWh/d/p of installed onshore wind generation capacity by 2015/2017 (*ibid.* 14). The result of this has been that Planning Policy Wales has been revised (February 2011) in order to meet the aspirations outlined in the document and aims to facilitate renewable energy production (http://wales.gov.uk/docs/desh/publications/110228ppwedition4en.pdf last viewed 18/04/2012). In light of this there is a possibility that upland wind farms especially could impact on the sites of crashed military aircraft. Where these projects are monitored by archaeological planning officers there is scope to ensure that they are preserved *in situ* or preserved by record as per national planning policy (Welsh Government, 2011, 90) as long as the sites are recorded on the Regional HERs.

It is apparent that military aircraft crash sites should be dealt with in the same way as any other archaeological site, *i.e.* they should only be disturbed when the needs of the proposal for modification (analogous to a development) outweigh the needs to preserve *in situ*, and an adequate programme of archaeological recording is in place, with a commitment to publish the results of work. As this is enshrined in national Welsh policy it should be extended to aircraft crash sites and as a minimum the results of licensed recoveries should be made public in order to address the need to publish results of archaeological work.

The issue of preservation *in situ*, however, is a matter deliberated upon by experts in the field of military aircraft crash sites. The need to identify best practice with regard to the conservation needs of the components is discussed below.

1.6.4 Glastir

Glastir is a land management scheme for farmers and land managers in Wales. All applicants enter the All Wales Element (AWE) (with the exception of Common Land and Woodland Creation Entrants) and must abide by the Whole Farm Code (WFC) detailed in the August 2011 *Glastir* publication (Welsh Government 2011)

The WFC stipulates that entrants must not damage the scheduled or unscheduled monuments identified in the AWE agreement (*ibid.*). More detailed management options that form a second layer of the AWE include the conversion of arable to permanent grassland for the benefit of archaeological sites (pt 11) and the management of scrub, saplings and intrusive vegetation from such sites (pt 39).

In order to be included in the scheme, sites must have a definable and digitised extent. By creating polygons for the known aircraft crash sites this would facilitate the inclusion of the data in Glastir

AWE agreements and would therefore increase the potential for positive management of them. The potential may however be limited by the lack of spatial definition for the sites, which would likely preclude them from inclusion in the geographical data provided for the purposes of Glastir.

Additionally, information flows from the Welsh Archaeological Trusts through Cadw and the Welsh Government to the landowners and managers, and very little flows in the other direction. This has the definite benefit of streamlining the process of providing landowners with useful and relevant information for their land, but it means that unless they require more information from the Trusts, they have no contact with archaeological staff, and the Trusts do not currently receive information relating to the land holdings falling within the scheme (Flook, R. 2011, Pers. Comm.). As a result the WATs cannot be sure where military aircraft crash sites may be impacted on by Glastir, and this cannot be easily recorded in the database of crash sites arising from this project.

In 2012, the Targeted Element of Glastir will be introduced. This part-farm scheme aims to deliver significant environmental benefit and includes management options that include archaeological and historical features (Welsh Government 2012, 40-44). This will allow greater input from the Welsh Archaeological Trusts to specify the management requirements of archaeological sites located within the targeted areas, but with regard to military aircraft crash sites this potential for positive management will again be hampered by the inability to exactly spatially define the majority of the sites.

1.6.5 Forestry

Some military aircraft crash sites have been identified as lying partly or wholly within areas of forestry. The Forestry Commission recently published a revised edition of its UK Guidelines for historic environment features within forestry, and in this document they underline their commitment to adhering to the legal requirements of protecting Scheduled Monuments (Forestry Commission 2011, 12). They also emphasise their commitment to protect undesignated historic features from the potential adverse effects of forestry, taking advice from local historic environment services; to positively manage sites through forest management plans and operational plans; and to maximise any management opportunities to improve existing forests in this respect (*ibid.*, 13). This highlights the criticality of recording crash sites on the Regional HERs in order to ensure that they are acknowledged by forest managers and that their management requirements can be addressed.

Figure 1 The remains of North American P51D Mustang 44-72340 lie within forestry and require positive management in association with the Forestry Commission Wales. Image copyright Matthew Rowe, source: http://www.flickr.com/photos/28731066@N03/5059627490/sizes/m/in/photostream/

2. Understanding the Resource

2.1 Previous Research

The vast majority of existing research into military aircraft crash sites has been undertaken by aviation enthusiasts. A plethora of literature has been written detailing various aspects of aviation and aviation accidents and a substantial quantity of private research exists. As such, much of the information gathered by the heritage sector is reliant on the considerable body of literature already available. However, the information gathered has not been compiled for the specific purposes of the historic environment and with site management in mind, and there is no central body of data upon which the heritage sector can draw. As a result a number of projects have been devised over the last 20 years in an attempt to understand and assess the resource from an historic environment perspective. Several are detailed here, principally using statistics gathered from online sources, largely during September 2011. Information retrieval was hampered by inconsistencies in the way crash site information is recorded (*e.g.* in differing approaches to the way in which indexing terms such as site type were recorded), where this was noted it is highlighted below.

2.1.1 English projects

English Heritage have worked to collate national data for England, arising out of the Monuments Protection Programme of the 1990s. This information is on Pastscape and is identified as the subject of a future enhancement exercise as part of the National Heritage Programme announced in 2011 (English Heritage, 2011, 24).

Some English Historic Environment Records have entered into projects to collect crash site information. North Yorkshire HER is one example, where a work placement student scoured online resources to compile an excel spreadsheet. This information is now online and searchable via the Heritage Gateway (information supplied to the author by Louisa Matthews, North Yorkshire County Council, and Nick Boldrini, Durham County HER, 2011).

Heritage Gateway was searched using the term “aircraft crash site”. In total, 1335 records were found from 46 resources, including 6 records from the NMR excavation index, 272 recorded on pastscape (the EH NMR), 921 recorded on the North Yorkshire HER and 92 on the Norfolk HER. The other HERs either do not have records of this nature, they are not recorded as crash sites, or they number 11 or fewer. Whilst it is feasible that recording practice across England means that a number will be recorded as “aircraft” rather than “aircraft crash sites”, this returns 8008 records, including anti-aircraft batteries and other similar sites so could not be considered as part of this study without more in-depth research.

2.1.2 Scottish Projects

The RCAHMS online resource CANMORE includes details of Scottish crash sites. There are 725 “aircraft” records, which comprise 712 maritime crash sites, 12 terrestrial crash sites (2 of which only provide details of the aircraft in the associated event records), and 1 poultry house (site of) that made use of a scrapped Handley Page Halifax fuselage and which has since been used to restore an exhibit at Yorkshire Air Museum (http://www.yorkshireairmuseum.org/exhibits/aircraft-

exhibits/world-war-two-aircraft/handley-page-halifax-iii). The RCAHMS records are largely taken from an individual published work (Whittaker, I G (1998) *Off Scotland: a comprehensive record of maritime and aviation losses in Scottish waters*, Edinburgh) and relate primarily to maritime wrecks. 7 of the terrestrial sites refer to wrecks in inland waters taken from this work, 2 records arose from RCAHMW field recording work, 2 records are from local society and individual research but are published in Discovery and Excavation in Scotland (2003, 40 and 2007, 202 respectively). What is clear from a scan of the RCAHMS records is that there is no standardised way to record the aircraft site name, although mainly the place name is chosen. This is inconsistent with the standardised approach to recording each wreck as site type "aircraft".

The online Scottish HERs were not easy to search and as such could not be comprehensively scanned for aircraft crash site records. Of the few readily available, The WoSAS database (archaeology service covering Argyll and Bute, East Ayrshire, East Renfrewshire, Glasgow City, Inverclyde, North Ayrshire, North Lanarkshire, Renfrewshire, South Ayrshire, South Lanarkshire, West Dunbartonshire, West Lothian, Loch Lomond and the Trossachs National Park) records 12 crashed aircraft. Most records are brief and do not mention the PMRA. One (WoSAS Site ID 65592) includes a report submitted as part of a licenced recovery.

One HER (Perth and Kinross) returned no results when the term "aircraft" was typed into the quick search.

Another HER (Western Isles Sites and Monuments Record) has 3 records of crash sites, including one with more detail regarding the choices made at the recording stage. It is recorded as a findspot, and as monument type aircraft simultaneously.

The Highland Council HER records 65 aircraft crash sites, including maritime records (based on a search of "aircraft crash site" as the site type). A number of the records appear to identify that locations are not exact, nor are full details of the crash known. Some of the sites are noted as having been supplied by aviation enthusiasts and some also include dated photographs. One record refers to a proposal to excavate by Terence Christian (of The University of Glasgow Centre for Battlefield Studies) and another includes a pdf copy of the Highland Maritime record data for the site.

Aberdeenshire SMR contains 17 records where site type 1 matches "aircraft", the Angus SMR contains 1 record and Moray SMR 1 record. They use a shared platform but retain separate identities. Further information such as "information sources" and "site management" tabs are either not generally populated or not available to the public. Although the site type is "aircraft", the descriptions refer to the crash site.

2.1.3 Welsh projects

To date, Gwynedd Archaeological Trust has no HER records relating to aircraft crash sites. This is one of the motivating factors for this project as they remain an enigma to the majority of archaeologists and heritage managers. Unless they appear within GAT records, they are unlikely to be considered during any programme of archaeological work or the recommendations arising from it. Furthermore, there is a defined need to provide some management recommendations in order to inform archaeological advice.

The remaining Welsh Archaeological Trusts were approached through formal HER enquiries and these yielded the following results:

- Dyfed Archaeological Trust does not currently have any records for aircraft crash sites.
- Glamorgan-Gwent Archaeological Trust has 10 HER records relating to aircraft crash sites, many of which have been compiled from the same source detailing crash sites in the Brecon Beacons. Of these, 9 are recorded as sitetype "air crash site", and 1 as site type "aircraft".
- Clwyd-Powys Archaeological Trust has 23 relevant records. 19 records have been made with site type "air crash site", the remaining 4, which relate to glider wreck sites are recorded as site type "aircraft". Other elements of the records (such as period, broadclass) could benefit from standardisation in order to facilitate information retrieval but in the context of the information currently available through the Welsh Archaeological Trusts the CPAT dataset represents a commendable effort. The records have been created from a variety of sources, including personal comments, published works, and archaeological assessments or site visits.

The scarcity of records held by the Welsh Archaeological Trusts highlights the urgent need to undertake an HER enhancement exercise in this field and to provide management recommendations to facilitate the provision of meaningful archaeological advice to landowners and managers.

The Maritime Officer at the Royal Commission on the Ancient and Historical Monuments in Wales (RCAHMW), Deanna Groom, developed a programme of work concerning aircraft crash sites, as identified in her forward plan of 2007 (Groom, D. 2011, Pers. Comm.). She compiled a database of downed aircraft for Wales based on the format of the maritime dataset she manages and systematically collated 802 records from available published sources including standard works such as the volumes of Bomber Command Losses and Fighter Command Losses. As her remit is primarily maritime, however, Groom has been unable to devote much attention to the locational details for terrestrial sites. At the inception of this project providing location data for crash sites was a principal aim in order to facilitate the management of the sites and to provide definition in order to allow the sites to be considered for designation, as per discussions with Cadw.

Initial analysis of the RCAHMW database demonstrated that the database in its original form did not deliver any management-related detail and lacked proof-reading and attention to detail. As such it required a significant amount of work in order to provide a sound base for augmenting the data and allowing the project to be rolled out across Wales.

The majority of the information that has so far been collated by Groom has not yet been properly included in the NMR, in the form distributed to the Welsh Archaeological Trusts through the Extended National Database (END) Partnership. Information which has been incorporated formally into the NMR is uploaded to Coflein, the NMR public delivery service and can be accessed by the public for non-commercial purposes from this location. Records are only uploaded when they are considered to be sufficient quality and as such the relative lack of records are a reflection of the on-going work being undertaken by Groom and the identified need to ensure data quality prior to uploading. In the END data and on Coflein are 63 "aircraft" records resulting from Deanna's database. Also on both datasets, however, are 22 "air crash site" records compiled by others and primarily the result of an Upland Survey of Berwyn North.

2.1.4 Academic Projects

Terence Christian is a PhD candidate at the Centre for Battlefield Studies, University of Glasgow. His doctoral research remit was detailed in an email to the author (11/05/2011) and his five stated objectives are:

1. Construct a database of all Second World War crash sites in Scotland for use in the management of sites as endangered cultural resources.
2. Create a standardised methodology for the investigation of aircraft wreck sites (from initial survey to curation and data dissemination) that yields data useful to professional archaeologists, organisations and government while still being easily deployable by non-professional organisations and individuals (the amateur aircraft 'recovery' organisations).
3. Assess the ongoing environmental impact of historic aircraft crashes.
4. Assess the level of impact government policy and the public has had on aircraft wreck sites and we can redress the failings of both.
5. Assess the level of war grave anonymity (i.e. how many sites have unmarked human remains) and current government/legal positions on the aforementioned sites.

As such, much of the body of this research will complement the work undertaken here, and will provide an authoritative discussion of these issues. The research abstract is detailed on the Centre for Battlefield Studies website at http://www.gla.ac.uk/schools/humanities/research/archaeologyresearch/battlefieldarchaeology/currentresearch/doctoralresearch/terencechristian/ (last viewed 19/04/2012)

2.1.5 Commercial Projects

In 2008, Wessex Archaeology prepared a scoping report for English Heritage relating to aircraft crash sites at sea (Scott & McNeill, 2008). This report also looked at some of the broader issues of crash sites applicable to the current study, and sought opinions from a number of stakeholders which have been used in this report. Wessex Archaeology identified the lacuna between the known and potential resource relating to aircraft crash sites (Scott & McNeill, 2008, ii). They also recognised that this can be addressed through research of primary and secondary sources (*ibid.*).

2.2 Known Issues

2.2.1 Range and Potential of aircraft crash sites

Wessex Archaeology detailed the range and potential of both terrestrial and maritime crash sites, including the site formation processes, survival of remains and the importance of factors such as the burial environment and the materials of the aircraft (Scott & McNeil, 2008, 31-37) and as such this will not be detailed at length here.

The authors of the Wessex report conclude that the following are important factors:

- Forced landings are unlikely to have penetrated the ground and the subsequent salvage operations are likely to have removed the wreckage unless the accident occurred in an upland or inaccessible area (*ibid.*, 31)
- Aircraft impacting with the ground are likely to have had sections breaking away on impact but various elements would determine the extent of the potential for the aircraft to penetrate the ground, including and angle of impact, weight and construction materials, and the type of ground surface which the aircraft struck. The site clean-up operation may leave only a small surface debris field although this may differ in upland or inaccessible areas (*ibid.*, 31)
- Terrestrial and intertidal (surface) sites are likely to have been impacted upon by human activity, for example through agricultural practices or deliberate recovery (*ibid.*, 31-2)
- Maritime crash sites need to be understood through the cause of loss and the manner of impact, *e.g.* the extent of control exerted over the aircraft when impacting with the surface of the water determines the condition of the seabed wreck (*ibid.*, 32)
- The aluminium and aluminium alloys frequently used in airframe construction are subject to differing degrees of decay that depend on the burial environment, and the potential for survival is reliant upon both the burial context and the quality of manufacture (*ibid.*, 35)
- Other materials used in the airframe may be either organic and therefore physically/chemically fragile, or polymers such as rubber, paint and plastic, which do not have well understood long term properties (*ibid.*, 35)
- As per Holyoak's 2002 article, they draw attention to the different levels of preservation likely from First World War and earlier inter-War accidents (lower-powered flight; more fragile materials) and later inter-War and Second World War accidents (higher-powered flight and more robust construction materials and methods (*ibid.*, 35)
- Many known terrestrial sites have been subject to intrusive investigation and recovery, acknowledged partly as a means to supply parts for aircraft restoration projects. Standards of recording have been mixed for these investigations (*ibid.*, 36)
- The site formation processes and preservation environments of inland freshwater contexts can result in outstanding levels of preservation that can be used to compare with maritime environments (*ibid.*, 37)

2.2.2 Survival of aircraft crash sites

As highlighted above, the survival of aircraft remains is dependent on a number of factors including the circumstances of the crash (the speed and angle of impact, the airframe materials, the ground surface of the crash site and its environs); the subsequent site context/burial environment; the extent of contemporary recovery; the extent of later recovery or investigation; and landscape management processes on site. Many of these factors are also reliant on the nature of the landscape of the crash and how accessible it is.

Figure 2 Armstrong Whitworth Whitley BD232, photographed prior to a 2005 licensed recovery. Now only small fragments remain of the aircraft. Image copyright Rob Lockhart

The remains of the aircraft should not be seen in isolation as the sum total of the crash site. The surrounding landscape will bear the scars of the impact; there may be evidence of the aircraft sliding across the ground surface; and often there is a burnt area, still evident after decades. These should be understood as part of the total site and can reveal much about the circumstances of the crash that may not be easily understood from wreckage alone.

Figure 3 The burn site of Boeing B-17G Flying Fortress 44-8639 is clearly visible from the road below. Image copyright Matthew Rimmer

Figure 4 Parallel marks in the scree show how Martin B-26G Marauder 44-68072 slid along the ground on impact. Image copyright Seán Moran, source: http://www.flickr.com/photos/8607835@N03/3481938353/sizes/m/in/photostream/

Figure 5 Other components of the Marauder such as undercarriage sections are scattered down the adjacent valley and demonstrate the potential for widely dispersed crash site evidence in upland landscapes. Image copyright Mark Sheldon, source: http://www.peakdistrictaircrashes.co.uk/pages/wales/wales44-68072.htm

The distribution of material from the aircraft is also an important factor to consider, and the spread of wreckage can reveal more about the impact. By understanding the spatial extent of the site we can learn more about the crash and begin to identify aspects for comparison with other sites.

Crash sites have often been subject to recovery or souveniring. Whilst this can be seen to detract from the integrity of the site, this should also be understood as a site formation process in itself. The evidence of human activity on site demonstrates how the site became what we perceive today and in this respect could be compared to an historic building modified over a number of years. However, this cannot be seen as a positive element and it is enshrined in the 1986 PMRA that no material should be moved or removed from any military aircraft crash site in recognition of this fact.

Figure 6 A shelter constructed from components of Avro Lincoln RF511, containing some earlier memorials to the crew. The wreckage should not have been tampered with but it shows that human intervention does render crash sites a victim of their own inherent interest and potentially makes them more complex entities. Image copyright Alan Clark, source: http://www.peakdistrictaircrashes.co.uk/pages/wales/walesrf511.htm

2.2.3 Threats

Threats to military aircraft crash sites include erosion, land management and development, but the principal threats are those of recovery and souveniring. The term souveniring is used to reflect the fact that this is taken to be unintentional transgression, and indeed highlights the need to address this issue. However, this practice should perhaps be better understood as theft.

While there are controls over a licenced recovery in order to minimise the potential for disturbing human remains or unexploded ordnance, and various measures are in place to encourage best practice, illegal activities do still occur and it is evident from a number of sources that remains are tampered with, and even removed in some cases, despite the existence of the PMRA 1986. Where this is the case, it is important to maintain a record of changes on-site.

Figure 7 Image taken in May 2010 of the supercharger exhaust and other elements of Republic P-47 Thunderbolt 41-6246 on Aran Fawddwy. Image copyright Matthew Rimmer.

Figure 8 Image taken by Gwynedd Archaeological Trust of the same components in October 2011. The wreckage gives the impression of having been manipulated to make a more evocative photograph.

2.2.3.1 Heritage Crime

English Heritage have pioneered the recognition and investigation of heritage crime. A report published in March 2012 (Bradley *et al*, 2012) defines heritage crime as "any offence which harms the value of … heritage assets and their settings to this and future generations". (*ibid.*, 7). EH employ a Police Officer, Chief Inspector Mark Harrison, to deliver a project tackling different types of heritage crime. As part of this a Memorandum of Understanding has been created between English Heritage, the Crown Prosecution Service, The Association of Chief Police Officers of England, Wales and Northern Ireland and participating local authorities (Anon., undated A), and a controlled vocabulary is being developed to enable HERs to record instances of heritage crime. The draft version includes disturbance or unlicensed excavation of military remains (Anon., undated B, theme A6).

At a recent Heritage Crime symposium, CI Harrison was keen to stress that some crimes, although they appear to be 'victimless' to the perpetrators, they are not – we are all victims when an important part of our collective heritage is stolen or vandalised (Kerr, Chitty & Wright, 2012, 4). The March 2012 report highlights the need to report heritage crime to the appropriate authorities in order to ensure that robust statistics can be gathered and analysed (Bradley *et al*, 5-6) but drew attention to the problems of certain types of heritage crime as unseen and therefore unreported. This was considered especially relevant to marine sites and also in the case of illegal metal detecting (*ibid.*, 8-9) and this problem is likely to apply to remote aircraft crash sites, of the type often found in north west Wales.

Although the Heritage Crime project has primarily been focussed within England, it is hoped that there may be potential for Wales to adopt the principles developed and attempt to understand and record heritage crime here. Through developing records for military aircraft crash sites the regional HERs will be better able to participate in recording heritage crime for these sites.

2.2.4 Aircraft recovery and crash site investigation methodology

The issue of recovering or excavating aircraft is one fraught with long-standing differences of opinion. Aviation enthusiasts began to seek the remains of crashed aircraft, especially those associated with the Battle of Britain, from the 1960s, and largely pursued their own agenda in recovering aircraft or aircraft components that met their interests and requirements (Holyoak and Schofield, 2002, 2). Much emphasis was placed on gathering eye witness accounts and establishing the context of crashes prior to field investigation (Grant, Pers. Comm., 2011) which can yield informative and fascinating information. Sarkar (1998) takes the stance that the identities of missing aircrew are the principal motivator for aircraft recoveries. He also notes that even after the publication of MoD guidelines in 1975 the activities of fiercely competitive recovery groups continued and the research and excavation standards employed were not especially thorough (Sarkar 1998, 56). His book includes a number of photographs illustrating excavation methodologies employed in the late 1970s and early 1980s.

As a result of further recoveries of aircraft and missing aircrew, new MoD guidelines were published in 1979 emphasising that a report or returns form was required by the MoD following a recovery (Sarkar 1998, 59-61). Sarkar notes, however, that as the guidance was not underpinned by legislation "the activities of those involved in the recovery of missing pilots remained arguably unaffected by this latest paper chase" (Sarkar 1998, 62).

The Protection of Military Remains Act 1986 rectified this situation and rendered moving, tampering with, or excavating aircraft or any aircraft components an offence unless a licence was granted. Sarkar asserts that the legislation was developed in response to flagrant contravention of MoD guidelines (1998, 82). He claims however that public opinion supported the recovery of aircrew remains and that the MoD remained "unmoved" by this, implementing the legislation regardless (*ibid*.). Sarkar reiterates his view that the need to recover the *Missing Few* is paramount throughout his 1998 work and appears to remain critical of the MoD in their determination to provide regulation for the recovery of crashed military aircraft.

Against this backdrop a growing realisation of the importance of the remains of the crashed aircraft and the significance inherent in the place of the crash developed among the archaeological profession. In 2002 English Heritage produced a Guidance Note relating to Military Aircraft Crash Sites (Holyoak and Schofield 2002) that aimed to emphasise the importance of the aircraft as a tangible historic artefact as well as the need to adhere to established legislation, standards and guidance when seeking to recover the remains of crashed aircraft. The publication of *Modern Military Matters* in 2004 sought to place military aircraft crash sites in a research context and identified the need to liaise widely in order to agree principles for management of aircraft crash sites (Schofield, 2004, 29-30). The document identifies that largely uncontrolled excavations lead to a loss of resultant records and therefore a loss of information and asserts that this must be addressed (*ibid.*, 47).

One of the problems inherent the recent increase in interest from archaeologists in the area of crashed military aircraft has been that any archaeological requirements placed on excavations through the JCCC licensing process have not been welcomed by recovery groups and there is a general lack of understanding and liaison as to the motivations and recording requirements of the archaeological community. The intervention of archaeologists appears to be perceived by some of those involved in recovery as unwelcome, and archaeologists are sometimes the subject of derision on online discussion forums (this is visible on some threads featured in the key publishing aviation forum http://forum.keypublishing.co.uk/forumdisplay.php?s=8fc1f13baffb8a2acf335effe5efb607&f=4 (last viewed 26/04/2012).

The British Aviation Archaeological Council (BAAC) represent a large proportion of recovery groups, and have developed a voluntary Code of Conduct which sets out a standard that can be adopted by affiliated groups. The Code of Conduct refers, in 3.1, to the compilation of a BAAC database (items recovered should be submitted to this within 1 year of recovery); the need to add the work to the (English) National Monuments Record within 1 year (section 3.4); and it highlights the need to produce a site report within 3 years of completion of site work (section 4.1). These measures are welcomed but it would be useful for any such information to be made widely available. Opportunities for liaison between the BAAC, the CBA, the IfA, ALGAO and national heritage bodies such as Cadw, English Heritage and Historic Scotland should be encouraged to ensure archaeological standards are maintained.

Recent work is seeking to address the lacuna between the approach of professional archaeology and aviation archaeology. Terence Christian at the Centre for Battlefield Studies, University of Glasgow, is seeking to define a methodology for excavation of crashed military aircraft and their environs (see *Academic Projects*, above, for his principal research themes) while Andy Brockman, a community archaeologist based in London, has been working towards greater liaison with aircraft recovery groups and advocates an inclusive approach and a more sophisticated view of aviation archaeology from both existing practitioners and professional or academic archaeologists (Brockman, 2012, 1).

He identifies the lack of regard for the theme of aviation archaeology in the heritage sector and questions the currency of this view, outlining the problems created by the lack of archaeological practice in aircraft recoveries (*ibid.*, 2). Brockman identifies that employing an archaeological methodology and reporting process can make great information gains, even when no aircraft remains are discovered and the project is regarded as a failure by the aircraft recovery groups (*ibid.*, 6). A report can still be produced and the information gathered during the pre-excavation phase can be placed "in context and added to the corpus of information available on a particular region or subject" (*ibid.*, 6). This information should be added to regional HERs.

Brockman cogently argues for greater regulation on aircraft recoveries and places the emphasis on the gathering of information rather than solely recovering the physical remains of the aircraft. He advocates that archaeological curators can and should require archaeological conditions imposed on recoveries and applies general archaeological principles to the recovery methodology including the need to: record finds from other periods; develop a standardised agreement for landowner permission; and to examine the wider crash site landscape through geophysics and spatial (topographical) analysis. He argues that there should be nominated professional archaeologists to mentor and train recovery groups and observe excavations, and also recommends that desk-based work including oral history and primary/secondary source research is undertaken prior to any fieldwork and submitted with a licence application to the JCCC. This would seek to retain any information for the future even where no excavation/recovery was to take place (*ibid.*, 14-24). Again, this information should be supplied to HERs and heritage bodies including the RCAHMW and Cadw.

In order to assist recovery groups in meeting the requirements of regional archaeological curators, the MoD Archaeologists have developed a project design proforma (see appendix 4). It includes much of the information that development control/curatorial archaeologists would require and should be commended as a positive contribution to the process. However, this form would benefit from the incorporation of a requirement for the applicant to check for any existing status on-site (for example if the site falls within a scheduled monument), the addition of a section to show the wider research context of the recovery, and from reference to the standards to which the methodology will adhere (Emmett, J., Pers. Comm. 2012).

When licence applications are received, MoD archaeologists do work with the JCCC to undertake screening to establish any natural or historic designations, and any undesignated historic assets in the vicinity of the proposed recovery. They work together to consider the likelihood of the presence of ordnance and human remains, working with the Commonwealth War Graves Commission to establish the latter (Osgood, R., Pers Comm. 2012). Placing the onus on the MoD archaeologists to undertake checks does reduce the burden on the JCCC although it could be argued that the applicant should be responsible for ensuring the methodology meets curatorial requirements.

Even where much of the aircraft has been removed or where it may have been obliterated on impact, there is still much to learn from mapping the remaining fragments of wreckage. The author visited two crash sites on Aran Fawddwy and rudimentary recording work was undertaken in the form of scaled photographs and the location of fragments using a GPS. Despite the unfinished nature of the task due to inclement weather, limited daylight hours, and the time-consuming nature of the work, this method has allowed for some appreciation of the spread of material relating to the two crash sites and can be useful in defining their spatial extents. This method is particularly relevant with regard to upland crash sites where a surface scatter is the principal form of the archaeological site and represents an entirely non-intrusive recording method that could be employed by a variety of individuals equipped only with a camera, a ranging pole and a GPS. It also

forms the basis for a potential monitoring mechanism in order to track the changes at crash sites and improves the ability of heritage managers to recommend particular management regimes for the sites. It could also be of use to equip the MoD with information allowing them to identify sites most at risk and perhaps address this.

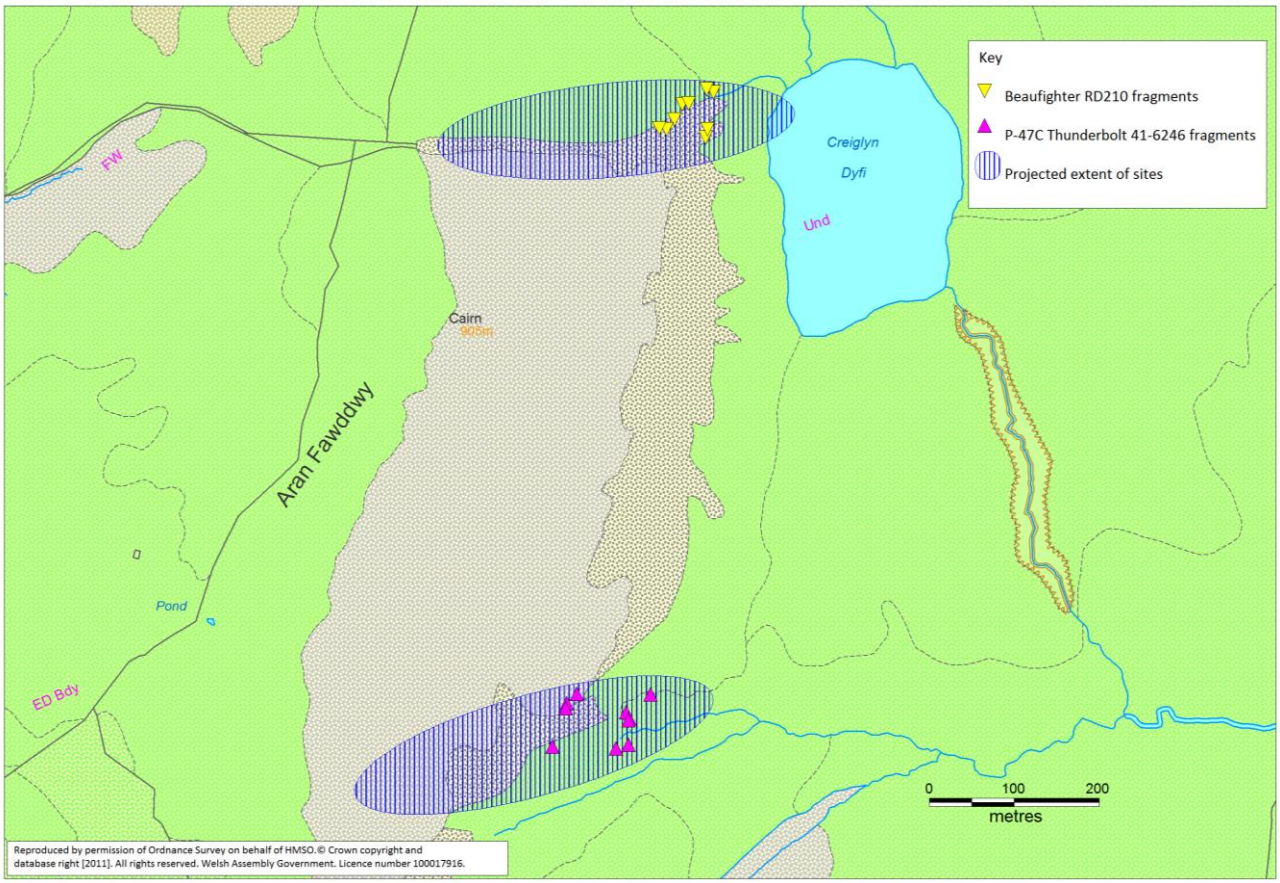

Figure 9 The mapped fragments of the Beaufighter and Thunderbolt crashes at Aran Fawddwy created using data gathered during simple field recording. The ellipses take into account the accepted impact point and the recorded extent of wreckage.

2.2.5 Conservation

One of the arguments put forward for recovering crashed military aircraft is the need to prevent further decay of the vehicle. The aluminium alloys from which earlier (up to WWII) aircraft are made were at the time often thin and experimental, and deteriorate rapidly (Grant, M. 2011, Pers. Comm.). The results of the decay will often leave the thin and fragile aluminium-based materials as little more than a dust or gel – preventing even recovery of the items (*ibid.*). However, it is essential that provision is made for conservation requirements before and after recovery or excavation of the remains of crashed aircraft.

Post-recovery, aircraft remains present a further conservation dilemma. Those from maritime contexts are especially prone to rapid deterioration. Research undertaken primarily in Australia (Macleod 1983, Bailey 2004) to address two corroded maritime wrecks has demonstrated that through long and thorough processes, the corrosive agents of decay can be removed and the

remains stabilised for display and longer term. Bailey (2004) details the process of stabilising composite sections of aircraft comprising aluminium and ferrous components using an electrochemical process and later applying protective coatings. This method is now being applied to a range of different sizes of composite aircraft and ship fittings (Bailey 2004, 454), although it is still considered to be in development. Each treatment carried out will help to refine the process, which is based on the need to release chlorides and other harmful corrosive agents through the formation of an electrolytic cell and the application of a 1.15 volt potential (Bailey 2004, 453) using biodegradable solutions (*ibid.* 463).

Bailey notes, however, that some of the key considerations in developing and applying the technique to the Japanese Nakajima Ki-43 Hayabusa, No 5465 (a type known as "Oscar" to the Allied Forces of WWII) recovered from Papua New Guinea (Bailey 2004, 454) were related to the way in which the aircraft could be recovered and the treatment applied. The identified problems were largely mitigated by thorough planning, which emphasises the need to identify a pre- and post-recovery strategy for any proposed recovery operation.

"Oscar" was dismantled into three major sections to facilitate recovery and transport (Bailey 2004, 454). Preparatory work undertaken prior to treating the aircraft included a consideration of the time required to adequately treat the remains; the cost of treating the remains; acquisition of materials such as a tank to hold the sections of the aircraft of appropriate dimensions with a resistance to chemicals, and the steel mesh needed to act as an anode to the aircraft's cathode; the composition and disposal of chemicals involved in the electrolytic solutions; the mechanical ways in which Oscar was cleaned (by hand and using a limited pressure spray); the ways in which the sections could be electronically linked, and the need to monitor the conditions of the electrolytic solution and the aircraft, as well as the logistics of actually lifting and balancing the sections. (Bailey 2004, 456-8). These were successfully addressed and the problems encountered, as detailed by Bailey, were acknowledged and resolved in order to regard the treatment of Oscar as a success.

The recovery and treatment of Oscar was largely driven by a curatorial requirement for a stable and displayable aircraft in relic condition at the National Museum of Australia (Bailey 2004, 459). In a British context, the need to recover items for display is also central to the work of some groups representing museums. However, some groups such as the Wartime Aircraft Recovery Group (WARG) will only recover aircraft under licence from the MoD and only when they are able to display the recovered material. The need for a place of deposit is central to their *modus operandi* and they have a museum at the former RAF airfield at Sleap where they display both items they have recovered, and items donated by other recovery groups (Grant, M. 2011, Pers. Comm.). This is important to consider when assessing the impact of recovery groups on the resource. It is a reflection of the improvement of aims and standards of such groups in Britain and attempts to address the archaeological concerns that publicly-available information is the most important outcome of any investigative work.

The research undertaken as part of this project with regard to conservation issues has been focussed on aircraft from aqueous saline environments due to the bias in the available material. Although the levels of decay may be more aggressive in maritime contexts, similar principles will apply in other contexts and these should be researched in more depth. The agents of decay in other environments need to be recognised and the treatments required to halt them identified in order to both provide for meaningful management of *in situ* remains (including the consideration of whether they should, in all cases, remain *in situ*) and provide support and guidance for museums, especially the smaller and potentially unofficial museums who may otherwise be making very well-intentioned but poorly-informed conservation decisions.

An example of the well-intentioned but negative effects of restoration was noted by Procter, McGeehan and Hallam in 2000. They were researching surface coatings of German WWI aircraft in an attempt to identify original paint on two unique examples, a Pfalx D.XII and an Albatros D.Va, in the possession of the Australian War Memorial (AWM). They found there to be an absence of reliable or authentic technical information, but were able to be guided by Lewin's 1975 article detailing the WWI British specifications. They describe that "information regarding the history of these aircraft is limited. The aircraft were repainted on numerous occasions during restoration by enthusiasts on the 1960s and 1970s. The original fabric was removed from both aircraft and replaced with modern fabric. The original surfaces on the aircraft were over-painted in areas and other restoration techniques that may have removed original paint were applied on other parts of the aircraft" (Procter, McGeehan and Hallam 2000, 8). This example illustrates the need to promote standards for conservation and preservation of aircraft remains and highlight that any excavation of material should take place within a structured research framework that identifies a well-informed post-recovery plan as well as a recovery plan or project design. There is also a need to monitor this process.

Terrestrial contexts such as acidic soils are also known to effect the degradation of aircraft remains and as such recovery groups followed a policy of targeting those aircraft on sites without acid soils in order to ensure they would find the best-preserved remains (Grant, M. 2011, Pers. Comm.). This leaves the remains in acidic soils with a lower potential for recoveries having taken place, but a higher potential for decay. In theory, where conditions are water-logged there may also be a higher potential for the better preservation of organic remains that may not react to the acidic soils on site in the same way and may result in a different range of artefacts remaining on sites with acid soils.

The remains of aircraft from freshwater contexts are noted as being well-preserved by Scott & McNeill (2008, 37-8). Additionally the RAF Museum London (Hendon) has on display Halifax W1048 recovered from Lake Hoklingen, Norway. It has been displayed in the condition it was found and provides an excellent example of the preservation context offered by freshwater environments (see Figure 10). This adds another dimension to the debate about the preservation *in situ* theory and questions the reasoning behind the argument that remains should always be excavated rather than preserved due to the potential levels of decay.

Figure 10 Halifax W1048 on display at RAFM London. Elements of the aircraft have been rebuilt, including the front gun turret. Image taken by the author.

It has recently been documented in the media and on websites such as http://www.usaaf.co.uk/forum/viewtopic.php?f=47&t=739&st=0&sk=t&sd=a (last viewed 26/04/2012) (also noted by Brockman 2012, 3) that dumps of aircraft on airfields are a rich source of aircraft components. However the excavations of these are reliant simply on landowner permissions. They do not require a licence and as such are now becoming a common target for those who wish to find wartime aircraft parts. Sadly these do not appear to be handled archaeologically, and lack project designs, records of excavated material and even a basic catalogue of finds. More frustratingly, it is understood that the volunteers on these digs appear to pay a fee to get involved and are then permitted to remove whatever they wish, for whatever reason they wish. The parts that remain uncollected are likely to then be scrapped.

These dumps, or middens as they could be described, present a real opportunity to investigate the conservation issues inherent in the debate and examine the preservation levels in different environmental contexts around the UK. This would inform the preservation *in situ* debate massively in addition to providing a great deal of social commentary about the values placed on scrapped material and other items also included in these and other airfield middens.

2.3 Management

The management requirements of military aircraft crash sites depend on the nature and location of the crash; the extent of the site; and the threats to the site, either through land management, erosion or recovery (see *Threats*, above). The appropriate management regime is also likely to be determined by the perceived significance of each site.

2.4 Significance

Cadw published *Conservation Principles* in 2011. This document places the historic environment at the centre of the cultural heritage and identity of Wales, and attempts to set out a logical approach to decision-making on all aspects of the historic environment (Cadw, 2011, 5). One of the principal tenets of the publication is that understanding and articulating the significance of historic assets is critical to their management (*ibid.*, 10).

Cadw identify that the significance of an historic asset encompasses all cultural and heritage values that people might associate with it, or which elicit a response from them. These values will change over time as understanding and perceptions of the asset evolve (*ibid.*, 10).

The four heritage values that must be considered to define significance are:

- *Evidential value*. This is derived from the way an asset can provide primary evidence about past human activity, including physical remains and historic fabric. Additional evidential values can be gained from the assessment of systematically gathered documentary sources
- *Historical Value.* An historic asset might illustrate a particular aspect of past life or bear association with a notable family, person, event or movement. The historical values are likely to change over time, and may depend upon an understanding of the evidential values
- *Aesthetic value.* This is determined from the way people derive sensory and intellectual stimulation from an asset. This could be from the form and appearance of the asset or the

way it lies within its setting. The form of the site may change over time and this should be understood through documentary evidence and complemented by an appreciation of the setting

- *Communal value.* This comes from the meanings ascribed to an asset by those who relate to it, or for whom it figures in their collective experience or memory, and may be symbolic or commemorative. Historic assets can also have a social value by acting as a source of social interaction, distinctiveness or coherence; an economic value by providing income or employment; or a spiritual value derived from religious beliefs or modern perceptions of place (*ibid.*, 16).

The assessment of an historic asset based on these values should lead to the production of a full, referenced statement of significance (*ibid.*).

In applying the Conservation Principles, Cadw identify that balanced and justifiable decisions about change to the historic environment depend on an understanding of its significance, which is a product of understanding the values placed on it. They emphasise that every effort should be made to eliminate or minimise adverse impacts of change to historic assets, and highlight that significant parts of the historic environment are a finite resource that have potential to give distinctiveness, meaning and quality to places (*ibid.*, 15).

In applying these principles to military aircraft crash sites, it can be seen that many of the sites embody these values, which take into account the different stakeholder perspectives and set the sites in context as historic landscape components. Ideally each site that can be well-understood should have a statement of significance written specifically for it to facilitate good management, but this falls beyond the scope of this project. However, the values have proven useful in determining the significance of each site and an understanding of them has facilitated the application of *category* through the recording of meaningful data in the database.

Figure 11 The engine of Blackburn Botha L6202 wedged in the rocks of Llwytmor has become an iconic image for photographers of aircraft crash sites and demonstrates the aesthetic value that can be inherent in military aircraft crash sites. Image copyright Graham A. Stephen, source: http://geotopoi.wordpress.com/2009/09/26/llwytmor-blackburn-botha-mk-1-l6202-no-11-radio-school-28-aug-1943-1/

The significance of each site ideally needs to be considered in an international, national, regional and local context in order to ensure that it can be fully understood.

- The nature of aircraft as vehicles that may be found in any global location, regardless of their point of origin, means that they need to be considered as constituent parts of a global resource and should form part of wider international research frameworks. It also emphasises the need to consider the international dimension to the next-of-kin interests and the connections that may be created between geographically separate locations and communities through the location of a crash site in a particular place.
- The location of crashed aircraft as part of a theatre of war is demonstrative of the national element to crash sites in respect of them forming part of national strategies to defend Britain, and specific battles or campaigns will increase the national significance of many sites. Equally certain aircraft are iconic to certain countries and this will also have a bearing on their national significance. In this case national research frameworks should be considered when applying value to crash sites. It is also important to consider the geographic dislocation between the crash site and the airfield at which the aircraft was based, and the home communities of the crew.
- Where aircraft crashed in a particular location for a reason unrelated to strategic battles or campaigns (for example, having lost bearings and crashed in the mountains of Snowdonia while undertaking training), this lends a regional perspective and identifies the need to appreciate the historical factors behind the genesis of each crash site. It is again important here to consider the geographic dislocation between the crash site and the airfield at which the aircraft was based, and the home communities of the crew.
- The local aspect of the importance of individual crash sites is related to the impacts upon the immediate community: the airfield (if local) to which the aircraft was attached; the mountain rescue, recovery and salvage teams that may have been based locally; witnesses to the crash and those who were the first on-site. It also includes the physical impact of a crash on the local landscape: impacts on land use and landscape composition; modern impacts of visitors to the site and the effect of moving material from, or across, the landscape.
- From a modern management perspective, the nature, extent and survival of the site and its constituent parts is also critical.

In each case the significance of a military aircraft crash site is a product of a number of elements and as such it has been challenging to apply a *category* as an indication of the relative importance of each site. This is principally for the reasons outlined above and that lack of available guidance in order to clearly define the way that significance should be understood.

2.4.1 Application of category

To indicate the relative importance of each crash site, it has been necessary to apply a *category*, A-U, to each site. This needs to reflect the criteria identified by the 1979 AMAA and Cadw's *Conservation Principles* (2011) as well as the different aspects of significance identified above.

The *categories* applied to each site should be regarded as provisional. Further research, even on those sites considered to be well-researched, may change the significance and therefore the *category*.

This is especially relevant in light of the lack of pan-Wales data currently available and the difficulty of understanding the Welsh resource as a whole. To consider the rarity of aircraft fully in a Welsh context, and to properly address the question of the relevance of the individual crash site to the Welsh experience of war requires pan-Wales research in order to a) produce accurate information and b) define what the Welsh experience of war really is/was.

The *categories* used in this project mirror those used by the Welsh Archaeological Trusts and map to the terms listed in the Design Manual for Roads and Bridges (DMRB) (Anon., 2007, 51). The terms adhere to a standard devised for use in the Welsh HERs and agreed by the END Technical Working Group for Wales, who define data standards used by the Welsh Archaeological Trusts, the RCAHMW, the National Museum Wales and Cadw.

Category	Meaning	DMRB Equivalent
AA	International Importance	Very High
A	National Importance	High
B	Regional Importance	Medium
C	Local Importance	Low
D	Minor or damaged site	Negligible
U	Site requiring further investigation	Unknown
NR	Not Recorded	(No DMRB equiv.)

Category AA has not been used. This would be suitable to apply to World Heritage Sites.

Key factors considered by this study are:

- The rarity of aircraft in an international context (informed by the aircraft tables created by Vince Holyoak, EH, see appendix 3)
- The rarity of aircraft in a Welsh context
- The condition of the crash site as a whole
- The level of preservation of aircraft remains
- The significance of the aircraft from a Welsh perspective, and whether it is tied into activities that typify the Welsh experience of war
- The amount of disturbance to, and removals from, the site by a) initial rescue teams, b) aviation groups, c) other individuals
- The presence (or potential presence) of human remains
- Connections to significant personnel/sites/battles
- Topography of the crash site landscape (to determine the potential for buried elements and landscape evidence)
- Circumstances of the crash (*i.e.* angle, speed, impact, aircraft type, construction materials etc)
- Whether the site now forms the focus for a memorial

Those sites with more key elements present will score higher and therefore have a higher category, but this has to also been considered in the light of the significance aspects and conservation principles discussed above. For example, Category A sites are those that are more likely to have:

a. rare aircraft present (internationally and/or in Welsh context)
b. well-preserved aircraft components
c. buried wreckage
d. a more intact crash landscape
e. higher potential for the presence of human remains
f. more limited site disturbance, whether contemporary or modern
g. connections to important personnel/sites/battles
h. other historical significance/interest
i. relevance to Welsh experience of war
j. memorialisation at the site

The extent of site destruction is almost impossible to quantify, and as such the condition of the site, which contributes to the application of category, cannot be easily recorded. In the majority of cases the aircraft has been destroyed on impact. So whether this should be recorded as the site having been destroyed, or whether the landscape formed by the destruction of the aircraft is the more important element and could be regarded as (potentially) in good condition, requires further consideration.

Figure 12 In the case of Gloster Meteor WA794, there no longer appears to be any trace of the aircraft, but a scar is evident on the granite face of the quarry. Image copyright Seán Moran, source: http://www.flickr.com/photos/8607835@N03/3250442182/sizes/m/in/photostream/

3. Detailed Project methodology

This project has consisted of a number of separate elements in order to produce the resultant database and management information.

- Initially, project work included information gathering to determine the recording methodology and inform the capture of data. GAT staff met or made contact with various stakeholders and reviewed the available source information in order to provide an overview of the current state of the resource.
- The information available through online heritage websites was reviewed and the Welsh Archaeological Trusts directly contacted to provide up-to-date information as to the recording of crash site data in Wales.
- A key resource for the project was the Database of Downed Aircraft compiled by Deanna Groom of the RCAHMW. When this was received by GAT in July 2011, it was analysed and some basic statistics identified (see below).
- The results of the initial research to inform data capture were realised through the creation of an additional data table to hold information for the Welsh HERs.
- The entire dataset was rapidly assessed to identify the number of records that were in a maritime context, and those which are regarded as terrestrial or intertidal. For each record, the appropriate Welsh Archaeological Trust area was identified in order to inform pan-Wales project planning.
- In order to augment the information provided in the RCAHMW database, and populate the new fields created for this project, desk-based research was undertaken in order to enhance each record. This consisted of limited archival research at the Royal Air Force Museum London, looking at the Air Ministry Accident Record Cards and viewing of the copies of selected United States Army Air Force Aircraft Accident Reports which are held in the digital collections of the RCAHMW; a review of secondary source material relevant to each record in the GAT data; and a trawl of websites to gain further information. Where these data sources have been used in the database they are referred to there.
- Limited fieldwork was undertaken to inform the understanding of site morphology and taphonomy; to provide an understanding of potential fieldwork methodology; and to facilitate an appreciation of the importance of the setting and context of upland crash sites.
- Terminology was defined to facilitate data entry.
- The new tables created through the project have been mapped to the existing HER data and meet standards identified in MIDAS Heritage (Forum for Information Standards in Heritage (FISH), 2007). See Appendix 1.
- The new tables will be incorporated into the HER but the principal aircraft table created will also be able to stand alone as a dataset provided to other bodies to inform decision-making with regard to military aircraft crash sites in Wales. This table will also be supplied to the MoD who use the same platform as the Welsh HERs.

3.1 Initial Analysis of the RCAHMW Database of Downed Aircraft

This work was undertaken on 11th July 2011, prior to any enhancement work by GAT. The database was supplied with 802 records on 8th July 2011.

When it was opened as a mapinfo table, there were:

- 682 unlocated crash sites across Wales
- 120 located crash sites across Wales
- 77 sites located in the GAT area and its surrounding waters. Of these, 42 have been recorded as maritime wrecks, although some others *appear* to be recorded as in the sea due to the way in which the NGR has been taken at the bottom of the grid square. Equally, some intertidal records have been recorded as maritime
- 34 apparently terrestrial crash sites in GAT area located by RCAHMW
- No apparent terrestrial sites on Ynys Môn

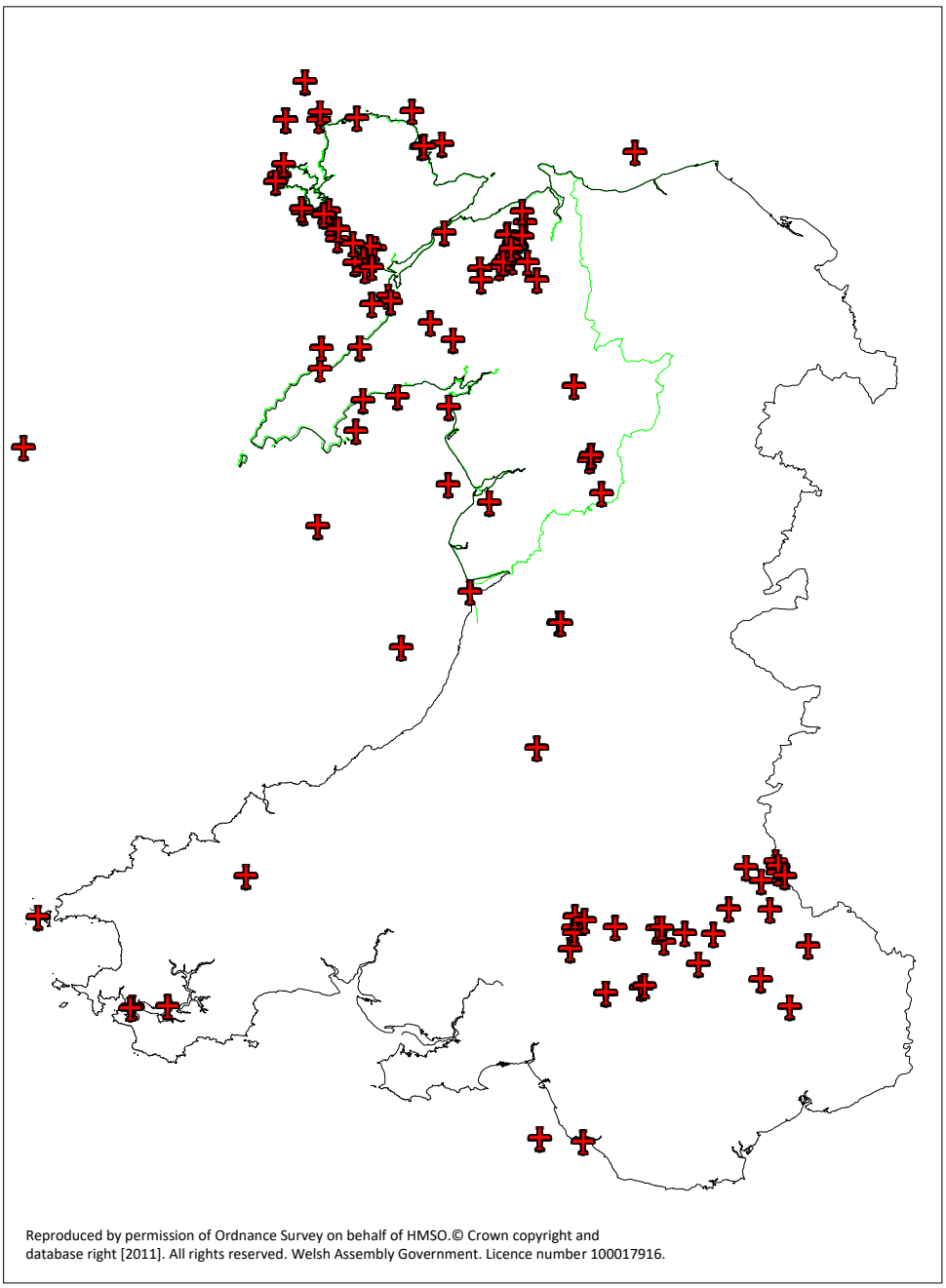

Figure 13 Distribution of located Welsh crash sites in the RCAHMW Database of Downed Aircraft, when supplied on 8th July 2011. Gwynedd Archaeological Trust's area is outlined in green.

There were data inaccuracies and terminology inconsistencies in the RCAHMW database, which caused some problems when analysing the data. Some information lacked clarity and the protocols for populating fields were not distinct (for example, when hyphens or dots should be used, or whether Mk1, MK 1 or MK1 should be used. Due to unfamiliarity with the specific aircraft sub-types and marks, the initial analysis may misinterpret these on occasion.

Following limited high level corrections to the aircraft sitename, the numbers of different types of downed aircraft in Wales and Welsh waters in the RCAHMW data supplied on 08/07/11 was as follows:

Aircraft name	Number recorded
AIRSPEED OXFORD	5
AIRSPEED OXFORD I	7
AIRSPEED OXFORD II	2
ARMSTRONG WHITWORTH SISKIN IIIDC	1
ARMSTRONG WHITWORTH WHITLEY	3
ARMSTRONG WHITWORTH WHITLEY II	2
ARMSTRONG WHITWORTH WHITLEY V	4
AVENGER AIRCRAFT	1
AVRO 504N	1
AVRO ANSON	27
AVRO ANSON I	60
AVRO LANCASTER	4
AVRO LANCASTER I	3
AVRO LINCOLN	1
AVRO MANCHESTER I	2
BAC LIGHTNING F.3	1
BELLANCA	1
BLACKBURN BOTHA	2
BLACKBURN BOTHA I	8
BLACKBURN SKUA	2
BOEING B-17 FORTRESS	2
BOEING B-17F FORTRESS	4
BOEING B-17G FORTRESS	1
BOEING WASHINGTON B1	1
BOULTON PAUL DEFIANT	2
BOULTON PAUL DEFIANT I	6
BRISTOL BEAUFIGHER VIF	1
BRISTOL BEAUFIGHTER	5
BRISTOL BEAUFIGHTER IF	2
BRISTOL BEAUFIGHTER IIF	5
BRISTOL BEAUFIGHTER VI	6
BRISTOL BEAUFIGHTER VIF	3
BRISTOL BEAUFORT I	1
BRISTOL BLENHEIM	2
BRISTOL BLENHEIM I	3
BRISTOL BLENHEIM IV	12
BRISTOL FIGHTER F.2B	1
CESSNA 310	1
CONSOLIDATED B-24 LIBERATOR	2
CONSOLIDATED B-24 LIBERATOR V	1
CONSOLIDATED B-24D LIBERATOR	4

Aircraft name	Number recorded
CONSOLIDATED B-24H LIBERATOR	2
CONSOLIDATED B-24J LIBERATOR	1
CONSOLIDATED CATALINA	1
CONSOLIDATED CATALINA I	1
CONSOLIDATED CATALINA IB	1
CONSOLIDATED CATALINA MK1	1
CONSOLIDATED VULTEE LIBERATOR PB4	2
CURTISS TOMAHAWK I	1
DE HAVILLAND CHIPMUNK T10	1
DE HAVILLAND HORNET	1
DE HAVILLAND MOSQUITO	4
DE HAVILLAND MOSQUITO FB6	1
DE HAVILLAND MOSQUITO II	4
DE HAVILLAND MOSQUITO IV	2
DE HAVILLAND MOSQUITO NF30	1
DE HAVILLAND MOSQUITO VI	3
DE HAVILLAND MOSQUITO XVII	1
DE HAVILLAND MOSQUITO XX	2
DE HAVILLAND MOSUITO VI	1
DE HAVILLAND QUEEN BEE	88
DE HAVILLAND SEA VAMPIRE	1
DE HAVILLAND SEA VAMPIRE FB9	1
DE HAVILLAND SEA VENOM	2
DE HAVILLAND TIGER MOTH	4
DE HAVILLAND TIGER MOTH II	4
DE HAVILLAND VAMPIRE	6
DE HAVILLAND VAMPIRE F1	1
DE HAVILLAND VAMPIRE FB5	23
DORNIER DO17Z	2
DORNIER DO215	1
DORNIER DO217	1
DOUGLAS BOSTON	1
DOUGLAS C-47 SKYTRAIN	1
DOUGLAS C-47A	1
DOUGLAS C-47A SKYTRAIN	2
DOUGLAS C-47B SKYTRAIN	1
DOUGLAS DAKOTA	2
DOUGLAS DC-3 DAKOTA	1
ENGLISH ELECTRIC CANBERRA	1
ENGLISH ELECTRIC CANBERRA B2	1
FAIRCHILD A10 THUNDERBOLT	1

Aircraft name	Number recorded
FAIREY BATTLE	4
FAIREY BATTLE I	9
FAIREY FIREFLY	1
FOKKER T-VIIIW	2
FOLLAND GNAT T1	7
GANNET T5	2
GENERAL AIRCRAFT HOTSPUR II	1
GLOSTER JAVELIN FAW.1	1
GLOSTER METEOR	1
GLOSTER METEOR F8	3
HANDLEY PAGE 0-400	1
HANDLEY PAGE HALIFAX	13
HANDLEY PAGE HALIFAX II	5
HANDLEY PAGE HALIFAX III	1
HANDLEY PAGE HAMPDEN I	4
HANDLEY PAGE HEREFORD I	1
HAWKER AUDAX	3
HAWKER HART	1
HAWKER HENLEY	2
HAWKER HENLEY I	6
HAWKER HENLEY III	11
HAWKER HIND TRAINER	2
HAWKER HUNTER F.4	1
HAWKER HUNTER F.6	7
HAWKER HUNTER GA11	2
HAWKER HUNTER T.7	5
HAWKER HUNTER T8	1
HAWKER HUNTER T8C	2
HAWKER HURRICANE	7
HAWKER HURRICANE I	11
HAWKER HURRICANE II	4
HAWKER HURRICANE IIC	1
HAWKER HURRICANE V	1
HAWKER HURRICANE X	1
HAWKER SEA HAWK FGA6	1
HAWKER SIDDELEY GNAT T.1	13
HAWKER TYPHON IB	3
HEINKEL	1
HEINKEL HE111	1
HEINKEL HE111H-5	1
HEINKEL HE111H-6	1
HEINKEL HE111P	1
HUNTING JET PROVOST T.4	1
JODEL	1
JUNKERS JU88	6
LOCKHEED	1
LOCKHEED HUDSON	3
LOCKHEED HUDSON I	2
LOCKHEED HUDSON MK5	1
LOCKHEED P-38F LIGHTNING	1
LOCKHEED P-38J LIGHTNING	1
LOCKHEED VENTURA	1

Aircraft name	Number recorded
MARTIN B-26 MARAUDER	2
MARTIN B-26B MARAUDER	1
MARTIN B-26G MARAUDER	1
MILES MAGISTER I	2
MILES MARTINET	2
MILES MARTINET I	15
MILES MASTER	3
MILES MASTER I	8
MILES MASTER II	3
MILES MASTER III	4
NORH AMERICAN P-51 1 MUSTANG	1
NORTH AMERICAN HARVARD I	3
NORTH AMERICAN MUSTANG MK1	3
NORTH AMERICAN P51 MUSTANG	2
NORTH AMERICAN P51D MUSTANG	1
NORTH AMERICAN P51K MUSTANG	1
NORTHROP F-5E	1
P-38F LIGHTNING	1
PERCIVAL PROCTOR	4
PERCIVAL PROCTOR II	1
PERCIVAL PROVOST T1	1
REPUBLIC P47 THUNDERBOLT	2
REPUBLIC P47C THUNDERBOLT	4
REPUBLIC P47D THUNDERBOLT	3
SARO LERWICK I	1
SARO LONDON II	1
SHORT SHIRL N11 SHAMROCK	1
SHORT STIRLING I	1
SHORT SUNDERLAND GR V	1
SHORT SUNDERLAND I	7
SHORT SUNDERLAND II	1
SHORT SUNDERLAND III	5
SHORT SUNDERLAND V	2
SOPWITH BABY SEAPLANE	1
SUPEMARINE SPITFIRE I	1
SUPERMARINE SEAFIRE	1
SUPERMARINE SPITEFIRE I	1
SUPERMARINE SPITEFIRE IIB	1
SUPERMARINE SPITFIRE	15
SUPERMARINE SPITFIRE F22	2
SUPERMARINE SPITFIRE I	31
SUPERMARINE SPITFIRE IIA	12
SUPERMARINE SPITFIRE IIB	3
SUPERMARINE SPITFIRE IX	1
SUPERMARINE SPITFIRE V	3
SUPERMARINE SPITFIRE VB	8
SUPERMARINE SPITFIRE XVI	6
SUPERMARINE WALRUS I	1
TAYLORCRAFT AUSTER	1
TAYLORCRAFT AUSTER VI	1
UNNAMED AIRCRAFT	16
VICKERS WARWICK I	1

Aircraft name	Number recorded
VICKERS WARWICK MKV	1
VICKERS WELLINGTON	18
VICKERS WELLINGTON IA	1
VICKERS WELLINGTON IC	10
VICKERS WELLINGTON II	1
VICKERS WELLINGTON III	2
VICKERS WELLINGTON MKVIII	1
VICKERS WELLINGTON VIII	4
VICKERS WELLINGTON X	8
VICKERS WELLINGTON XII	1
VICKERS WELLINGTON XIII	1

Aircraft name	Number recorded
VULCAN	1
VULTEE VENGEANCE IV	1
WESTLAND LYSANDER	2
WESTLAND LYSANDER II	1
WESTLAND LYSANDER III	1
WESTLAND LYSANDER IIIA	6
WESTLAND WALLACE	1
WESTLAND WHIRLBIRD	1
WESTLAND WHIRLWIND HAR.10	1
WESTLAND WHIRLWIND HAS 7	1

Following consolidation of the data into Aircraft types (regardless of Mark), the table appeared as follows (the data may still include basic errors):

Aircraft type	Number recorded
AIRSPEED OXFORD	14
ARMSTRONG WHITWORTH SISKIN IIIDC	1
ARMSTRONG WHITWORTH WHITLEY	9
AVENGER AIRCRAFT	1
AVRO 504N	1
AVRO ANSON	87
AVRO LANCASTER	7
AVRO LINCOLN	1
AVRO MANCHESTER I	2
BAC LIGHTNING F.3	1
BELLANCA	1
BLACKBURN BOTHA	10
BLACKBURN SKUA	2
BOEING B-17 FORTRESS	7
BOEING WASHINGTON B1	1
BOULTON PAUL DEFIANT	8
BRISTOL BEAUFIGHTER	29
BRISTOL BEAUFORT I	1
BRISTOL BLENHEIM	17
BRISTOL FIGHTER F.2B	1
CESSNA 310	1
CONSOLIDATED B-24 LIBERATOR	10
CONSOLIDATED CATALINA	4
CONSOLIDATED VULTEE LIBERATOR PB4	2
CURTISS TOMAHAWK I	1
DE HAVILLAND CHIPMUNK T10	1
DE HAVILLAND HORNET	1
DE HAVILLAND MOSQUITO	19
DE HAVILLAND QUEEN BEE	88
DE HAVILLAND SEA VAMPIRE	2
DE HAVILLAND SEA VENOM	2
DE HAVILLAND TIGER MOTH	8
DE HAVILLAND VAMPIRE	30
DORNIER DO17Z	2

Aircraft type	Number recorded
DORNIER DO215	1
DORNIER DO217	1
DOUGLAS BOSTON	1
DOUGLAS C-47 SKYTRAIN	5
DOUGLAS DAKOTA	3
ENGLISH ELECTRIC CANBERRA	2
FAIRCHILD A10 THUNDERBOLT	1
FAIREY BATTLE	13
FAIREY FIREFLY	1
FOKKER T-VIIIW	2
FOLLAND GNAT T1	7
GANNET T5	2
GENERAL AIRCRAFT HOTSPUR II	1
GLOSTER JAVELIN FAW.1	1
GLOSTER METEOR	4
HANDLEY PAGE 0-400	1
HANDLEY PAGE HALIFAX	19
HANDLEY PAGE HAMPDEN I	4
HANDLEY PAGE HEREFORD I	1
HAWKER AUDAX	3
HAWKER HART	1
HAWKER HENLEY	19
HAWKER HIND TRAINER	2
HAWKER HUNTER	18
HAWKER HURRICANE	25
HAWKER SEA HAWK FGA6	1
HAWKER SIDDELEY GNAT T.1	13
HAWKER TYPHOON IB	3
HEINKEL	1
HEINKEL HE111	4
HUNTING JET PROVOST T.4	1
JODEL	1
JUNKERS JU88	6
LOCKHEED	1

Aircraft type	Number recorded
LOCKHEED HUDSON	6
LOCKHEED P-38 LIGHTNING	3
LOCKHEED VENTURA	1
MARTIN B-26 MARAUDER	4
MILES MAGISTER I	2
MILES MARTINET	17
MILES MASTER	18
NORTH AMERICAN HARVARD I	3
NORTH AMERICAN P51 MUSTANG	8
NORTHROP F-5E	1
PERCIVAL PROCTOR	5
PERCIVAL PROVOST T1	1
REPUBLIC P47 THUNDERBOLT	9
SARO LERWICK I	1
SARO LONDON II	1
SHORT SHIRL N11 SHAMROCK	1
SHORT STIRLING I	1

Aircraft type	Number recorded
SHORT SUNDERLAND	16
SOPWITH BABY SEAPLANE	1
SUPERMARINE SEAFIRE	1
SUPERMARINE SPITFIRE	84
SUPERMARINE WALRUS I	1
TAYLORCRAFT AUSTER	2
UNNAMED AIRCRAFT	16
VICKERS WARWICK I	2
VICKERS WELLINGTON	47
VULCAN	1
VULTEE VENGEANCE IV	1
WESTLAND LYSANDER	10
WESTLAND WALLACE	1
WESTLAND WHIRLBIRD	1
WESTLAND WHIRLWIND	2
WESTLAND WHIRLWIND	1

To summarise, the most commonly recorded crash sites in Wales are:

- De Havilland Queen Bee (88 records)
- Avro Anson (87 records)
- Supermarine Spitfire (84 records)
- Vickers Wellington (47 records)
- De Havilland Vampire (30 records)
- Bristol Beaufighter (29 records)
- Hawker Hurricane (25 records)

There is only a single crash site recorded in Wales for each of the following aircraft types:

- Armstrong Whitworth Siskin IIIDC
- Avenger Aircraft
- Avro 504N
- Avro Lincoln
- BAC Lightning F.3
- Bellanca
- Boeing Washington B1
- Bristol Beaufort I
- Bristol Fighter F.2B
- Cessna 310
- Curtiss Tomahawk I
- De Havilland Chipmunk T10
- De Havilland Hornet
- Dornier DO215
- Dornier DO217
- Douglas Boston
- Fairchild A10 Thunderbolt
- Fairey Firefly
- General Aircraft Hotspur II
- Gloster Javelin FAW.1
- Handley Page 0-400
- Handley Page Hereford I
- Hawker Hart
- Hawker Sea Hawk FGA6
- Heinkel
- Hunting Jet Provost T.4
- Jodel
- Lockheed
- Lockheed Ventura
- Northrop F-5E
- Percival Provost T1
- Saro Lerwick I
- Saro London II
- Short Shirl N11 Shamrock
- Short Stirling I
- Sopwith Baby Seaplane
- Supermarine Seafire
- Supermarine Walrus I

- Vulcan
- Vultee Vengeance IV
- Westland Wallace
- Westland Whirlbird
- Westland Whirlwind

These lists do however include potential errors inherent in the data as supplied.

Initial observations made regarding the methodology used to populate the RCAHMW database include the need to standardise the means of recording the aircraft name, type and subtype. It was also noted that a data manual to facilitate data entry, and ensure consistency would be advantageous. The new tables created by GAT for the purposes of this project will include guidance to aid data collection.

3.2 Desk-based Research

3.2.1 Archival Research

The author visited the Royal Air Force Museum London to consult a number of Air Ministry Accident Record Cards (Form 1180). Prior research aimed to identify a priority list of crash site records to consult based on the information available in the RCAHMW database. This focussed primarily on those crash sites that were of less common aircraft types, and where there was less clarity of the crash circumstances or location available in the database.

In total, 36 Accident Records were consulted, although 2 of these related to the same crash. Additionally, 2 record cards recorded collisions and therefore each records details of two aircraft.

The RCAHMW acquired digital copies of United States Army Air Force Accident Reports. A number of these were consulted in order to augment the project data.

3.2.2 Secondary Sources

A wealth of popular publications records the majority of known aircraft crash sites in north-west Wales. These were consulted where they were referenced in the RCAHMW database and where further detail was required. Additionally, selected new publications were added to the database and referenced throughout. There are further publications that could be consulted to enhance the records further, but there was not sufficient resourcing available during the project to go through these additional sources.

3.2.3 Websites

A number of websites were consulted throughout the project. These included sites with detailed information relating to each crash site and also those with images that were able to inform data capture.

Notable websites used during the course of the project are:

- http://peakwreckhunters.blogspot.co.uk/ Widely regarded as including accurate locational information and includes informative images

- http://wrecksiteuk.blogspot.co.uk/ Provides useful detail regarding a number of crash sites, and a number of informative images
- http://www.peakdistrictaircrashes.co.uk/ Provides additional information and informative images
- http://geotopoi.wordpress.com/aircraft-crash-sites/index/ Blog providing informative images

It is inherent in the nature of web-based information that inaccuracies may be present and as a reflection of this, where any information has been derived from web-based sources, a reference to the web page has been provided.

3.3 Fieldwork

As discussed above, limited fieldwork was undertaken for this project. Ideally further site work should take place in order to fully understand the crash sites' landscapes and distribution of wreckage but this has not been possible during the course of this project. It should be acknowledged that crash sites are often in remote and difficult to access areas, and often difficult to locate and identify. As such it should be borne in mind that field visits are likely to be limited to a maximum of one site per day in remote upland areas.

A limited methodology has been proposed for high-level data collection by taking located, scaled photographs of wreckage fragments in order to understand site distribution. However, each site would benefit from more detailed non-intrusive archaeological analysis including potentially topographic survey, geophysical survey, or even metal detecting to locate buried fragments.

All fieldwork must be non-intrusive in order to meet the requirements of the PMRA 1986 unless a licence has been granted.

3.4 Interrogating and augmenting the RCAHMW database – discussion

With regard to information collated by the RCAHMW generally, excluding the *database of downed aircraft*, there is a lack of standardisation within NMR records. As noted above (see *Welsh Projects*, p17) the available crash site data from the RCAHMW has been recorded in different ways by different people. Those records generated by upland survey projects are recorded in a different way to those recorded by Groom.

The database of downed aircraft records the site type as "aircraft" as is consistent with the recording practice of English Heritage (Page, 2006, 2), however, there are also 22 records in the NMR that record the "air crash site" rather than the vehicle. It is the view of the four Welsh Historic Environment Record Officers/Managers that the latter approach is the most appropriate for the records generated from this project and any other projects across Wales (C. Jones, J. Spencer, M. Page, 2011, Pers. Comm.). The result of this will be that the site (the geographical location) will be the primary HER record, with the aircraft as a subsidiary component, effectively an archaeological object. The HER data structure will be modified to facilitate the incorporation of detailed aircraft/ crash site information.

English Heritage recording protocol states that no crew member should be recorded as a matter of course during the compilation of data for aircraft crash sites, unless they have entered the 'historical record' for other reasons *e.g.* Douglas Bader is a celebrated pilot (Page, 2006, 4). However, this information is critical in order to recognise the contribution made by all aircrew to the historical and archaeological record of the 20th century. This view is echoed by the MoD (M. Brown, 2011, Pers. Comm.) and supported by the discussion of narratives and alternative histories in Schofield, Klausmeier and Purbrick (2006, 6) where the desire to explore the social significance and the need to include the experiences of people are considered.

With regard to the publication of full NGRs online, it is apparent from searching other resources that accurate grid references can be found in a variety of different locations. Neither the MoD (M. Brown, 2011, Pers. Comm.) or English Heritage (R. Page, 2011, via email) believe that the resource has been detrimentally impacted by the currently available information. Additionally, it is worth nothing that there seems to have been a recent move towards a non-intrusive approach of photographing aircraft crash sites but not removing material from them and as such it could be argued that publication of full NGRs will not pose such a serious threat. This is reflected in the online blog of *Peak Wreck Hunters* (http://peakwreckhunters.blogspot.com/ last viewed 02/05/2012) and in the pages of the Flickr group *Military Airplane Crash Sites* (http://www.flickr.com/groups/aircrashwrecks/ last viewed 08/09/2011). It is possible that websites such as this could provide a basis for some sort of monitoring of crash sites, in addition to private individuals in contact with GAT who are willing to share photographs from visits they make to crash sites.

Figure 14 Image taken by an individual keen to document crash sites in a non-intrusive manner. This site, De Havilland Mosquito HX862, was photographed in 2004 and disturbance to the site noted. If it can be successfully harnessed, this approach can allow the MoD and heritage managers to track changes at military aircraft crash sites and provide a form of monitoring, also informing site management processes. Image copyright Rob Lockhart

Figure 15 Another view of the wreckage from De Havilland Mosquito HX862 showing recent disturbance of the fragments. Image copyright Rob Lockhart.

The management information deemed necessary for the purposes of this project, and the information required to determine the eligibility of sites for designation has been added to the database provided by RCAHMW. The NMR and its maritime dataset were not designed for use in this way and as such they cannot be expected to deliver the wide range of fields required for recording this type of information. The database supplied by RCAHMW has been given additional tables in order to incorporate this new information, as discussed elsewhere.

The issue of intertidal sites is important to the development of the database and the future management of the sites detailed within it. Traditionally the Welsh Archaeological Trusts have been discouraged from incorporating maritime records in the HERs based on the principle that this is beyond their remit and this information is handled by the RCAHMW. However the inter-tidal zone has remained a veritable no-man's land in which neither body appears to the responsible organisation. Although designation can be applied to intertidal or terrestrial sites regardless, the need to identify sites as either maritime, terrestrial or intertidal is important and perhaps raises wider issues within the structure of Welsh archaeological records.

Wessex Archaeology note that according to *England's Coastal Heritage: a statement on the management of coastal archaeology* (EH/RCHME 1996) one of the principles for managing coastal archaeology is that "although archaeological remains within inter-tidal and sub-tidal areas may be less visible and accessible than remains on dry land, this does not affect their relative importance and they should be managed in accordance with the principles which apply to terrestrial archaeological remains" (Scott & McNeill 2008, 49). The implications of this are that the crash sites erroneously included in the database as "maritime", but which in fact fall within the inter-tidal zone, should be recorded as such and included within the HERs to allow them to be managed as terrestrial

sites by the relevant development control or heritage management personnel within the Welsh Archaeological Trusts.

Recording the rarity of sites is a factor that requires a multi-layered approach for this project. It is important to establish both the rarity of the aircraft from a national, *i.e.* Welsh, perspective and also in an international context, based on the tables supplied drawn up by Holyoak (EH). Although Holyoak considers that tables require revision, it is recognised here that the existing tables should form the basis of the current analysis, pending revision at a later date in light of any revisions made to the tables. For the purposes of this project the original tables were slightly modified, with the permission of Vince Holyoak, and a copy is included in Appendix 3. However, in order to fully understand the rarity from a Welsh perspective, similar projects such as this will need to be undertaken across Wales. This is noted above with regard to applying a *category* to each site.

In order to be able to use the information in the HERs, it is essential to reproduce some of the fields in the RCAHMW database. Fields from the attributes table will be added to the main GAT table as this information is not repeated elsewhere in the HER and so it will need to form part of the table developed for the WAT HERs.

3.4.1 Terminology

In order to populate the database effectively, various controlled word lists were used to speed up data entry and to ensure consistency of information. Examples of this are the employment of the END-approved list of Threat Types, Significance and Timescales, and the use of the terms in the English Heritage Thesaurus of Historic Aircraft Types. Additionally new word lists were created for the purposes of this project such as Aircraft rarity, Aircraft weight and Distribution of Wreckage. Details are in Appendix 2.

3.5 New tables created for the Regional HERs

New tables were created in order to allow the data to be augmented and enhanced through this project, and to facilitate the inclusion of a dedicated aircraft table and a classification table in the Regional HERs, who all use the same software platform.

The new tables created and added to the original RCAHMW database for the duration of this project are:

- *GAT table* – to be a standalone table in the HERs, which does not duplicate detail in the RCAHMW *Core* table (this can be imported into the HERs), with the exception of *Principal NGR*, but includes management detail specific to military aircraft crash sites. It includes information from the RCAHMW *Attributes* table that has no long-term destination in the HERs and duplicates SSSI/National Park/National Trust information that will be held elsewhere in the HERs but will allow the table to stand alone for use by the MoD
- *Classification* – to be a new table in the HERs facilitating the inclusion of other indexing terms and identifying which classification schema has been used for each term. Currently there is only scope in the regional HERs to index the site type, but this project highlighted the need to include multiple indexing terms from multiple thesauri, *e.g.*, for the purposes of

the HER, the site type will be AIR CRASH SITE, as demanded by the Welsh Thesaurus of Monument Types, but allowing for the inclusion of varying levels of indexing from the English Heritage Thesaurus of Historic Aircraft Types, and including the nature of the evidence in this table will also be of great advantage

- *Threats* – this is a temporary table, the information within it can be migrated to the *Threats* table in the HER. Not all sites have entries in this table
- *Audit data* – this table was produced to log edits to the RCAHMW data so that changes can be identified when their database is returned to them and they re-incorporate it within their systems.

The data structure of the two new tables is detailed in Appendix 2.

3.6 Methodology employed for interrogating and augmenting the RCAHMW database

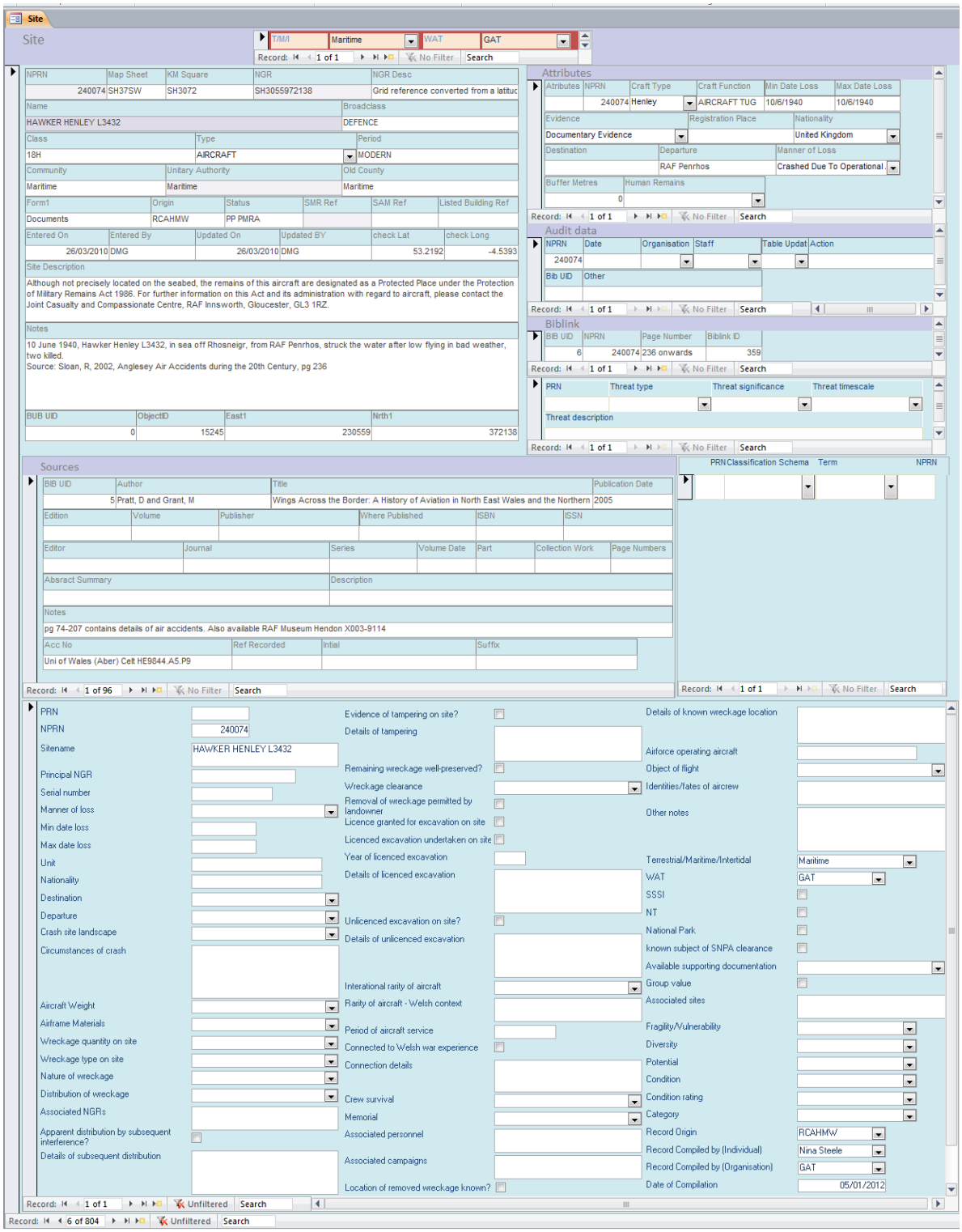

Figure 16 Composite screenshot of the database used by GAT during the project, amalgamating the RCAHMW database with the new GAT tables. Those tables with black/grey type are of RCAHMW origin, those with blue are of GAT origin. The table in red at the top of the screen was simply a quick reference when only the upper part of the data entry form was visible in order to identify the WAT and whether the site was maritime, intertidal or terrestrial.

The RCAHMW database of Downed Aircraft was originally compiled by Deanna Groom as an extension to the RCAHMW Maritime Database and as such the structure marries core NMR fields (table "site") with maritime-type data ("attributes"), supported by "sources" and "biblink". The range of available fields do not allow for the identification of important crash sites or their relative importance and inherent management requirements. The main additional table created for this project – the "GAT table" is shown at the bottom of Figure 16 and appears as unnamed.

As noted above, some fields have been duplicated in the GAT table in order to allow the incorporation of data from the RCAHMW table that will otherwise not be transferred to the HERs.

Three additional tables can also be seen in the database, and are referred to above. One records threats and mimics the detail in the WATs' HERs, the second includes details of changes made to the RCAHMW data, and the other is the new Classification table proposed for inclusion into the HER to record indexing terms in more depth. This is similar to the solution espoused by EH in order to record such information in their AMIE database (the English NMR) (Anon., 2007B, 17-18). The employment of the EH Thesaurus of Historic Aircraft Types has yet to be discussed fully with EH but a flat list containing the terms has been included in the database and it can be used to record multiple indexing terms whilst allowing acknowledgement of the appropriate schema being used (the creation of multiple child records in this table has been anticipated).

There were two stages of work for enhancing the database following the considered creation of the "GAT table". The first was a rapid trawl through the database to identify whether a site was maritime, terrestrial or intertidal, and to identify which WAT area each site belonged to. This allowed the quantification of the number of sites each Welsh Archaeological Trust will be required to assess.

3.6.1 Methodology for enhancing the database content – Stage One: initial identification of WAT and context

1. Open record
2. Check RCAHMW data and correct any immediately-noticeable spelling/typing errors. Detail any changes in the "Audit data" table.
3. Check the location of the record where possible and assign the relevant WAT to the field in the GAT table in order to facilitate the division of the dataset into 4 parts. Add this information regardless of whether the record relates to a maritime, terrestrial or intertidal site
4. Where records are maritime, populate only the following fields (NPRN will automatically populate):
    a. Sitename (cut and paste from RCAHMW to provide signpost to further information for WATS/MoD/others)
    b. Terrestrial/Maritime/Intertidal
    c. WAT
    d. Record Origin (in order to acknowledge which records have been created from the RCAHMW dataset and to provide WATS/MoD/others with this information)
    e. Record Compiled by (Individual)
    f. Record Compiled by (Organisation)
    g. Record Compiled on

5. Where records are terrestrial or intertidal, populate only the following fields (NPRN will automatically populate):
    a. Terrestrial/Maritime/Intertidal
    b. WAT
    c. Record Origin (in order to acknowledge which records have been created from the RCAHMW dataset and to provide WATS/MoD/others with this information)
    d. Record Compiled by (Individual)
    e. Record Compiled by (Organisation)
    f. Record Compiled on
6. Take no further action as these records will be dealt with by the WATs in due course

This has been done by GAT for the existing RCAHMW database and as such no further action will be required from other WATs in this respect.

3.6.2 Methodology for enhancing the database content – Stage Two: Detailed enhancement of WAT records

1. Where records are terrestrial or intertidal, assign a Primary Reference Number and read the information already entered by RCAHMW
2. Establish locational details for the site. RCAHMW NGRs may require revision if derived from secondary sources that do not include a high level of detail. For sites where no NGR is apparent after research, use descriptive information to work out the best possible NGR in order to facilitate more accurate locating of sites in the future
3. Add the community council, unitary authority and old county to the RCAHMW table and add further descriptive information and sources to the RCAHMW Notes field, sources and biblink tables. Detail changes in the "Audit data" table. This information will be copied over into the HER in due course
4. Add any additional relevant information to the RCAHMW "Attributes" table and detail changes in the "Audit data" table
5. Use relevant information from the RCAHMW "Core" and "Attributes" tables to inform population of fields in the "GAT table" and copy other information over. Where RCAHMW and HER fields match (with the exception of sitename in terrestrial cases) these will be incorporated into the HERs, with acknowledgement of the source of the information. For the fields which do not appear in the HERs, there will be a field in the GAT table which will require population
6. Use the aircraft tables created by Vince Holyoak (EH) to augment the GAT table with aircraft weight, airframe construction materials and use to inform the international rarity field
7. Add relevant classification details to the "Classification table". There will be multiple instances of classifications in the EH Historic Aircraft Thesaurus to detail the aircraft form, type and manufacturer. You must also enter "AIR CRASH SITE" from the Welsh Thesaurus of Monument Types and a term to demonstrate the "Evidence" used to create the record (likely to be DOCUMENTARY EVIDENCE and/or WRECKAGE)
8. Populate the "Threats" table where this can be established
9. During the course of the work, correct any other apparent errors/augment any other data as appropriate in the RCAHMW table and note changes in the "Audit data" table
10. Create separate GIS areas to depict the extent of sites where possible

3.7 Creation of GIS tables

Critical to managing the sites is having an idea of the extent/dispersal of wreckage. Where possible during the course of this project, GIS data has been created in order to achieve this. Areas are initially based on point data from the database, combined with other known locations of wreckage or site extents described in the sources, where a field visit has not been possible.

An ellipse has been chosen as the most appropriate means of depicting the extent of crash sites, in the absence of detailed fieldwork. This allows an area to be defined, based on the best available information to incorporate noted elements of the crash site (the impact site, burn site, skid marks etc) as well as the main elements of wreckage and scattered debris from the aircraft.

3.8 Future Management of the records through the HERs

A key issue in curating this information is the appropriate management of it through the HERs. The dynamic nature of Historic Environment Records means that they are constantly updated and improved to reflect the most recently-available information.

Curation through the HERs will ensure that the data can be dynamically managed in the longer term and updates can be made. The resultant database should not be static and unable to take into account new information when it arises. For example it would be beneficial for the crash sites in north-west Wales to be monitored, perhaps by the wardens of the Snowdonia National Park or National Trust, and in these scenarios it would be envisaged that they could feed data back to the Welsh HER officers in order to update the records. As such it is critical that as much information as possible can be stored within the HER to facilitate this.

4. Results

4.1 Secondary analysis of the RCAHMW database

Following the initial exercise to divide the RCAHMW Database of Downed Aircraft into contexts of Maritime, Terrestrial and Intertidal, and to locate the records within the WAT areas, the database can be understood in more detail. The figures included here represent the most up-to-date interpretation of sites, some of which were re-allocated during the detailed database work.

The rapid analysis aimed to characterise the resource accurately, but despite some re-allocation of sites, there may still be occasional errors. This is due to some inconsistencies in initial data entry; indistinct or unavailable location information; and the potential for mis-assigning sites located along some Trust boundaries.

Following completion of database work by GAT in March 2012, the RCAHMW Database of Downed Aircraft breaks down as follows:

- Total no of records: 804
- Terrestrial records: 458 (1 not locatable)
- Maritime records: 315 (35 in “Irish Sea” rather than assigned to an individual WAT)
- Intertidal records: 31

This includes records that have been deleted due to duplication (retained in the database as deleted records), and those which have been discounted as beyond the scope of the project as they are from civilian crashes.

Detailed breakdown:

WAT	Terrestrial	Maritime	Intertidal	Total
GAT	169	126	22	316
CPAT	116	15	4	134
DAT	82	103	2	187
GGAT	90	36	3	129

One terrestrial record could not be located and has “Unknown” in the WAT field. Thirty-five maritime records cannot be more precisely located than recorded as in the “Irish Sea”.

The rapid first stage database work undertaken by GAT has allowed the records identified as Maritime to be taken forward as they are – to provide a signpost to further information for the MoD but to avoid a potential for a duplication of funding for the WATs. No further action is required on the above identified maritime records from the Welsh Trusts at this stage.

Two records were added to the dataset using NPRNs supplied by the RCAHMW. The first was added as a result of additional research undertaken by GAT. The other was created for a second aircraft referred to in the description of another.

A number of records were identified as duplicates. These have been deleted, but they are retained in the system in order to provide an audit trail.

4.2 Detailed Gwynedd Data

The GAT records assessed in detail for this project total 191. Of these, 175 records have been given a PRN. Two of these are new additions to the database and one is an incorrect record retained with a GAT PRN as it is an error inherent in much of the available literature.

The remainder comprise:

- 3 civilian aircraft crashes which fall outside the scope this this project
- 13 deleted records (duplicates of records elsewhere in the database. The correct record has been referred to in each case)

NGRs have been assigned based on the available information to varying degrees of accuracy. It has not been possible to provide accurate data for many of the sites, but it was considered more useful to provide an indicative NGR than no location at all in order to facilitate future research and/or management.

It is likely that a great many more crash sites are as yet undiscovered across the whole of Wales due to the propensity of enthusiasts to focus on the upland areas and the need to undertake more research and build relationships with those undertaking private research.

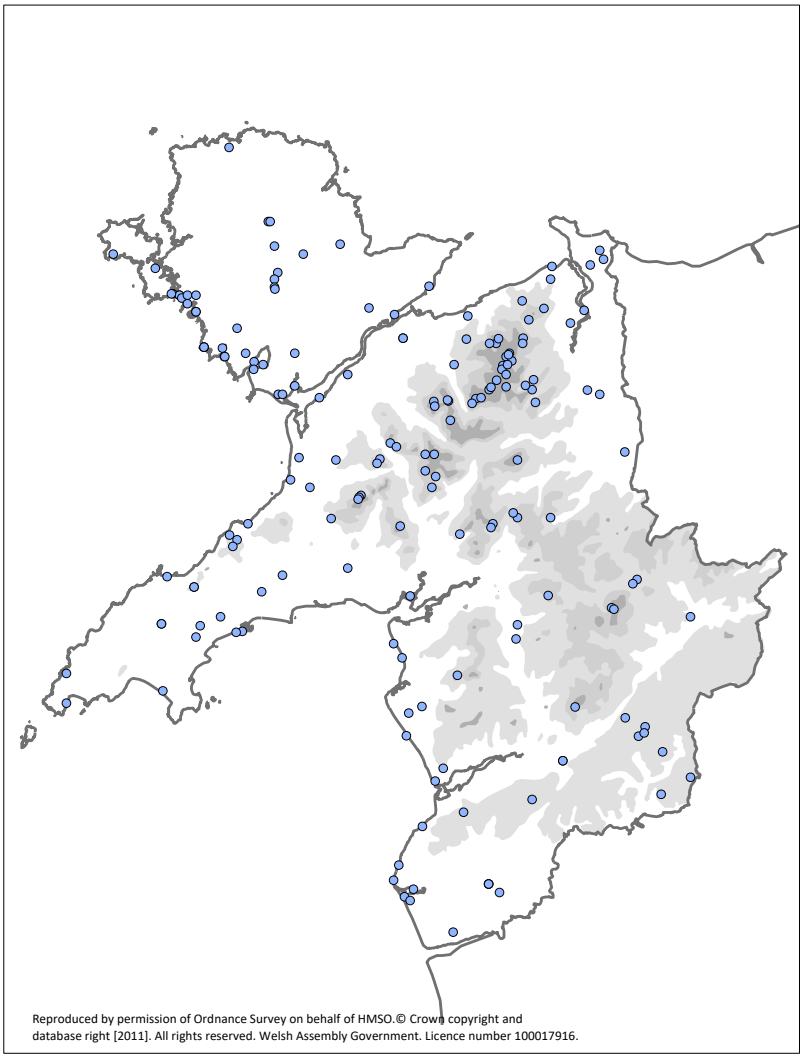

Figure 17 Distribution of military aircraft crash sites in the area covered by Gwynedd Archaeological Trust following database enhancement

4.2.1 Aircraft Types

Inclusive of aircraft marks that have been recorded in the data, the different types of aircraft crash sites located within Gwynedd are as follows:

Aircraft Type/Mark	Number recorded
Fairey Battle	1
Hawker Hunter T.7	1
De Havilland Tiger Moth MKII	1
De Havilland Vampire FB9	1
Dornier DO215	1
Douglas Boston	1
Douglas Dakota C-47A Skytrain	1
De Havilland Mosquito MKVI	1
English Electric Canberra	1
Consolidated Catalina	1
Fairey Firefly	1
Gloster Meteor	1
Handley Page Halifax MKII	1
Westland Wallace	1
Hawker Henley MKI	1
Hawker Hunter F.4	1
Hawker Hunter F.6	1
Douglas Dakota C-47B Skytrain	1
Bristol Beaufighter MKVI	1
Airspeed Oxford MKI	1
Armstrong Whitworth Whitley	1
Avro Lancaster	1
Avro Lincoln	1
Blackburn Botha MKI	1
Blackburn Skua	1
De Havilland Tiger Moth	1
Bristol Beaufighter MKIF	1
Hawker Hart	1
Bristol Beaufighter MKVIF	1
Bristol Blenheim MKIV	1
Bristol Blenheim MKVI	1
Civilian Cessna	1
Civilian Douglas DC-3 Dakota	1
Civilian Jodel	1
Consolidated B24 Liberator	1
Boulton Paul Defiant	1
Supermarine Spitfire MKI	1
Martin B-26 Marauder	1
Miles Master	1
Miles Master MKI	1
North American P51D Mustang	1
Vickers Wellington MKVIII	1
Lockheed Ventura	1
Republic P-47C Thunderbolt	1
North American Harvard MKI	1
Supermarine Spitfire MKIIB	1

Aircraft Type/Mark	Number recorded
Taylorcraft Auster AOP 6	1
Taylorcraft Auster MKVI	1
Vickers Wellington MKIA	1
Vickers Wellington MKII	1
Vickers Wellington MKIII	1
Republic P-47 Thunderbolt	1
Heinkel HE111 H-5	1
Lockheed Hudson	1
Hawker Hurricane MKI	1
Hawker Hurricane MKII	1
Junkers JU88	1
Incorrect Record (NOT Aircraft Crash Site)	1
Heinkel HE111	1
Lockheed P38F Lightning	1
Heinkel HE111 H-6	1
Blackburn Botha	2
Vickers Wellington MKX	2
Boeing B-17 Flying Fortress	2
Supermarine Spitfire V	2
Hawker Henley	2
De Havilland Mosquito	2
Fairey Battle MKI	2
De Havilland Vampire	2
De Havilland Mosquito MKII	2
Airspeed Oxford	2
Hawker Henley MKIII	3
Miles Martinet MKI	3
Vickers Wellington	3
Handley Page Halifax	3
Supermarine Spitfire MKXVI	3
Supermarine Spitfire MKVB	3
Hawker Audax	3
Hawker Hurricane	4
Bristol Beaufighter	4
Supermarine Spitfire	5
Vickers Wellington MKIC	5
De Havilland Vampire FB5	5
Avro Anson	9
De Havilland Queen Bee	11
Hawker Siddeley Gnat T.1	12
RECORD DELETED	13
Avro Anson MKI	21

Excluding the aircraft mark, the generic types of aircraft recorded in Gwynedd are:

Aircraft Type only	Number recorded
Consolidated Catalina	1
Hawker Hunter F.6	1
Hawker Hunter F.4	1
Hawker Hart	1
Westland Wallace	1
Fairey Firefly	1
English Electric Canberra	1
Douglas Boston	1
Hawker Hunter T.7	1
De Havilland Vampire FB9	1
Gloster Meteor	1
Consolidated B24 Liberator	1
Boulton Paul Defiant	1
Blackburn Skua	1
Avro Lincoln	1
Avro Lancaster	1
Armstrong Whitworth Whitley	1
Airspeed Oxford MKI	1
Dornier DO215	1
Incorrect Record (NOT Aircraft Crash Site)	1
North American P51 Mustang	1
Junkers JU88	1
Lockheed Hudson	1
North American Harvard	1
Lockheed P38F Lightning	1
Lockheed Ventura	1
Martin B-26 Marauder	1
De Havilland Vampire	2

Aircraft Type only	Number recorded
Taylorcraft Auster	2
Republic P-47 Thunderbolt	2
Boeing B-17 Flying Fortress	2
Bristol Blenheim	2
Miles Master	2
De Havilland Tiger Moth	2
Douglas Dakota C-47 Skytrain	2
Airspeed Oxford	2
Hawker Audax	3
Heinkel HE111	3
Miles Martinet	3
Fairey Battle	3
Civilian aircraft	3
Blackburn Botha	3
Handley Page Halifax	4
De Havilland Mosquito	5
De Havilland Vampire FB5	5
Hawker Henley	6
Hawker Hurricane	6
Bristol Beaufighter	7
De Havilland Queen Bee	11
Hawker Siddeley Gnat T.1	12
RECORD DELETED	13
Vickers Wellington	14
Supermarine Spitfire	15
Avro Anson	30

4.2.2 Categories of Site

Following the detailed database work and assignment of a *category* to each crash site, to indicate their relative importance (see p33 above for discussion on the difficulty of applying a category to each site), it can be seen that the majority of sites have been recorded as category U (Unknown). This is an indication of the number of sites that would directly benefit from further research, both desk-based and site-based, in order to learn more about each of them. In contrast, only a handful of sites have been allocated categories A (Nationally Important), B (Regionally Important) and C (Local Importance). The sites allocated category D (Minor or Damaged Site) represent those that would appear to have very low potential due to recorded clearance of the site; those that have a published comment that there is no evidence of the crashed aircraft; or those instances, perhaps forced landings, where the aircraft was removed and repaired.

- Category A – 12 sites
- Category B – 13 sites
- Category C – 15 sites
- Category D – 35 sites
- Category U – 99 sites

- Category NR (Not Recorded) – 1 site. This record relates to that retained with a GAT PRN despite there it not actually relating to a Welsh crash site.

4.2.3 Other information

The compilation of the database has allowed a number of other factors to be easily compiled. In each case, an empty record relating to the non-crash site retained with a GAT PRN has been deleted and as such the total of each table should be 174, not 175, records.

4.2.3.1 Crash site Landscape

The information was recorded using the Ordnance Survey Mastermap data, supplied under licence to Gwynedd Archaeological Trust in 2011 (licence number 100017916, Crown Copyright). This was undertaken in order to attempt a standardised way of recording the landscape of the crash. Although this method worked well, it is important to understand that:

- where NGRs are not accurate, this information may not be accurate
- where land use has changed over time, for example some areas are now forested, the record has attempted to record both the current and former land use
- where the information was not sufficiently descriptive, some attempts have been made to enhance the information (*e.g.* the term "General Surface" is used by the OS, which has been augmented)
- multiple descriptive terms are separated by semi-colons

Crash site landscape	Number of recorded sites
Boulders	1
Boulders; Rock	2
Buildings	1
Foreshore	16
Foreshore; Boulders	1
Foreshore; General surface	2
Foreshore; Heath; Scrub; Rough Grassland	1
Foreshore; Rough grassland	2
General surface - airfield	5
General surface - grass/dunes	1
General surface - grass?	46
General surface; Foreshore; Marsh Reeds Or Saltmarsh	1
General surface; Heath; Scrub; Rough Grassland	1
General surface; Rough Grassland; Boulders (Scattered)	1
General surface; Scrub; Rough Grassland	1
Heath; Boulders	3
Heath; Rock	4
Heath; Rock (Scattered)	2
Heath; Rough Grassland	10
Heath; Rough Grassland; Boulders	2
Heath; Rough Grassland; Boulders (Scattered)	2
Heath; Rough Grassland; Boulders; Rock (Scattered)	2

Crash site landscape	Number of recorded sites
Heath; Rough Grassland; Rock	1
Heath; Rough Grassland; Rock (Scattered)	3
Heath; Scrub; Rock (Scattered)	1
Inland water	1
Nonconiferous Trees; Coniferous Trees; Scrub	1
Not known	1
Rock	1
Rock (Scattered)	1
Rock; General surface	1
Rough Grassland	19
Rough Grassland; Boulders	6
Rough Grassland; Boulders (Scattered)	2
Rough Grassland; Boulders; Rock	2
Rough Grassland; Boulders; Rock (Scattered)	1
Rough Grassland; Coniferous plantation	1
Rough Grassland; Marsh Reeds Or Saltmarsh	1
Rough Grassland; Rock	7
Rough Grassland; Rock (Scattered)	7
Sand dunes	1
Scree	3
Scree; General surface	1
Scrub; Rough Grassland	1
Scrub; Rough Grassland; Boulders (Scattered)	1
Scrub; Rough Grassland; Marsh Reeds Or Saltmarsh	1
Scrub; Rough Grassland; Rock (Scattered)	1
Tidal water	1

4.2.3.2 Historical details

In order to provide more context for the crashed aircraft recorded in the database, and to help provide information relating to the nature of the site, other factors such as the object of the flight and the survival of the crew were recorded. The object of each flight is recorded as accurately as possible, but in some instances elements may have been misunderstood.

Object of flight	Number of recorded sites
Aerobatic and Instrument mission (non-operational)	1
Aerobatics	1
Aerobatics practice	2
Air to air firing practice	1
Anti-aircraft Co-operation	1
Bombing	5
Bombing practice	1
Consumption test	1
Cross country flight	3
Cross country flight (formation)	1
Cross-country training flight	2
Cross-country training/fuel consumption	1

Object of flight	Number of recorded sites
testing	
Direction-finding homing Exercise	1
Exercise flight	1
Ferry flight	5
Flying formation practice	3
Flying formation practice (cross-country)	1
Formation flight	7
General transportation flight	3
Gunnery practice	2
Gunnery practice - target towing	1
Navigational training - cross country	6
Navigational training - daytime	1

Object of flight	Number of recorded sites
Navigational training - night time	11
Navigational training - night time cross country	7
Navigational training (General)	4
Night circuits & roller landings	1
Night Flying Test	1
Not known	62
Practice night intruder sortie	1
Radar trails	1
Reconnaissance	2

Object of flight	Number of recorded sites
Reconnaissance Exercise	1
Scramble	1
Test flight	3
Test/training flight	1
Training - Intercept and attack	1
Training - mock bullseye attacks	2
Training (General)	21
Training (General) - transporting staff	1
Transporting equipment	1
Transporting mail and freight	1

Crew survival	Number of recorded sites
Entire crew died in crash	86
Entire crew survived crash	31
Not known	26
Some crew survived crash	21
Unmanned	10

4.2.3.3 Significance of the aircraft

The tables produced by Vince Holyoak (EH) were used to create an indicator of the international rarity of each aircraft. The tables were amended by GAT to show the remaining global percentages of aircraft based on the total number produced. The most useful way in which to quantify the international rarity in the database was to record the surviving percentages of aircraft in simple terms, and it can be clearly seen (below) as a result that the majority of aircraft crash sites in north-west Wales comprise the remains of less-frequently surviving types.

International rarity of aircraft	Number of recorded sites
<1% of total produced survive globally	110
1-5% of total produced survive globally	26
No known surviving examples globally	11
Not known	27

4.2.3.4 Management- related data: Wreckage recorded at the crash site

This information is largely drawn from recent secondary sources and websites although ideally this would be based on the results of systematic fieldwork and as such, there may be errors inherent in the data. The below tables show that the information for many sites remains unknown.

Wreckage quantity on site	Number of recorded sites
Large percentage of aircraft remains on site	2
No wreckage apparent on site	10
Not known	108
Some wreckage remains on site	54

Nature of wreckage	Number of recorded sites
Buried wreckage	2
Buried wreckage with surface scatter	3
Not known	126
Surface wreckage scatter	43

Wreckage type on site	Number of recorded sites
Large aircraft components	8
Medium-sized fragments	26
Not known	121
Small fragments only	19

Distribution of wreckage	Number of recorded sites
Multiple sites of wreckage identified	10
Not known	135
Wreckage confined to small area	2
Wreckage widely dispersed	27

4.2.3.5 Management- related data: Interventions on site

In order to understand the remains on site, it was perceived as important to record instances of clearance and other interventions. Again, much of the information was unclear, but the table below represents the best available data.

Wreckage clearance	Number of recorded sites
Aircraft taken for repair	1
No "clearance" reported	1
Not known	131
Partial clearance (not official) apparently undertaken	5
Partial clearance immediately after crash	2
Wreckage cleared immediately after crash	30
Wreckage cleared many years later	4

16 sites were recorded in the database as having been tampered with. And while 7 licences have been granted in north-west Wales, only 3 recoveries have been confirmed as having taken place. This is partly due to the way in which the JCCC are able to provide information for enquiries (they are able to provide a list of licences granted, but do not provide as standard a list of excavations undertaken and returns forms received). 8 sites are recorded as having had unlicensed excavations take place on site. Some of these relate to the period prior to licensing and as such are only technically unlicensed. This has been highlighted in the data.

4.2.3.6 Management- related data: Landscape designations and ownership

13 sites are recorded on National Trust land, 83 are recorded as falling within the Snowdonia National Park, and 71 are recorded as falling within a Site of Special Scientific Interest. It should again be borne in mind that the accuracy of the NGR will impact on the accuracy of this information and it may be subject to change should more detailed research be undertaken. Sites that fall partially within these areas have been recorded as within their boundaries in order to ensure that these factors will be taken into consideration.

4.3 Impact of fieldwork on data collection and utility

A systematic programme of non-intrusive fieldwork would significantly enhance the dataset included here. In the majority of cases, it would:

- confirm the location of sites
- establish the nature and extent of crash sites
- provide a benchmark against which the sites can be monitored in the future
- determine potential for below-ground evidence

Non-intrusive fieldwork (including locating/photographing the spread of wreckage, topographic survey, geophysical survey and metal detecting) would vastly improve the data quality and accuracy. This information also needs to be established in order to manage the sites more effectively.

A more detailed excavation methodology must be introduced to inform proposed interventions to military aircraft crash sites. As noted above, Brockman (2012) and PhD candidate Terence Christian at Glasgow University's Centre for Battlefield Studies, have respectively worked to define principles for fieldwork and a detailed excavation methodology.

An example that may be of use when considering potential excavation methodologies is that of the 2006 Transit van excavation carried out by the University of Bristol and Atkins Heritage (Bailey *et al*, 2009). This adopted, where possible, standard and accepted archaeological techniques. The project recorded the manufacturing details of, and subsequent alterations to, the fabric of the van, and conducted stratigraphic analysis of the artefacts to create a narrative of the use history of the van that was not available through the documentary evidence.

This approach could be employed to reveal such information relating to the crashed aircraft itself (where sufficient evidence remains) and significantly add to the available documentary evidence through the identification of personal effects and providing information relating to the way in which the aircraft itself was utilised by those who flew and serviced it, rather than simply relying on the documentary evidence for this type of information. This approach would complement wider analysis of the crash site landscape, and would create a unique archive that could then be used to enhance the available existing records.

5. Recommendations

A key output from this project is a list of recommendations to include future work required to enhance and make more useful the records created by the RCAHMW and this project; ways to manage and protect military sites, including principles of site management; and a suggestion of mutually beneficial working practices.

5.1 Future work

Various strands of future work have been identified during the course of this project. A key issue is the apparent need for well-resourced further research into the theme of military aircraft crash sites and their conservation, preservation and management and can be seen to be relevant to each of the recommendations outlined below.

- All Welsh Archaeological Trusts must undertake a similar exercise to that carried out at Gwynedd Archaeological Trust in order to identify and understand the resource in their respective areas. This will not only allow for appropriate management regimes to be applied across Wales, but it will also allow national trends to be established and facilitate the understanding of the rarity of sites and their importance in a Welsh context. This has proved difficult to undertake for the GAT dataset as it only represents a proportion of the military aircraft crash sites in Wales.
- The work undertaken by GAT cannot be seen to be the final product of research into this theme of the archaeology of north-west Wales. Further secondary and primary source material has been identified as being in need of interrogation and this must be adequately funded to build a fuller picture of the resource.
- Work is needed to draw together information and resources gathered by private individuals, disparate groups and personnel from a variety of organisations. By collating the known data formally the resource implication for publicly-funded bodies will be substantially lessened and the ability to consider the needs of military aircraft crash sites through the provision of advice will be increased. The HERs should collate this information, to build on the data created by the RCAHMW and GAT and to ensure that updates can be supplied to the MoD to inform decision-making.
- Detailed non-intrusive fieldwork must be undertaken to clarify the nature and extent of sites. Topographical survey, geophysical survey and metal-detecting could be employed in addition to a simple process to locate and record visible fragments of wreckage. This would vastly improve the quality of the dataset, the potential for designation of important sites, and the ability of heritage managers and the MoD to provide advice.
- In the absence of fieldwork opportunities to clarify the location, spatial extent, and nature of each site, detailed desk-based spatial analysis could be achieved through the interrogation of high resolution aerial photographic and LiDAR data. Equally, the acquisition of copies of all relevant accident forms would provide more information relating to the circumstances of the crashes could be used to enhance the records. Cross-referencing this information with the available data on aircraft type can provide a more detailed picture of the likely survival of elements of crashed aircraft.
- Research is required into the durability of materials and the best way to preserve sections of aircraft that have been subjected to a variety of deposition contexts (this will inform arguments relating to the decay of materials in varied contexts versus the need to preserve sites *in situ*). A British context for research would be useful, and the need to take into account deposition contexts (other than maritime environments) and their impact on a

variety of alloys would be essential as part of this. Simplistically, the perpetuation of materials in their deposition context (as opposed to recovering remains) would allow future study in this respect to be undertaken, and might provide time to find more appropriate ways to conserve recovered material. Archaeological techniques could be applied to airfield dumps of aircraft in order to test some of the available material and provide useful comparative data.

- There is a need to establish conservation guidance for crashed military aircraft components, based on the materials research identified above and standard conservation practice. Additionally, in order to support smaller museums with limited funding there should be a means of providing advice without requiring enormous commercial costs and modern aircraft materials conservation should be taken into consideration in conservation courses.
- Oral history projects should record memories of crash sites where information is still available. Many local people remember aircraft crashes and will have a valuable contribution to make to any crash site record, being able to provide potentially otherwise unrecorded information as well as a local perspective.
- The publication of best practice guidelines for survey and excavation of military aircraft crash sites is required. It is understood from Andy Brockman (via email, 2012) that some guidelines are currently in discussion with a number of bodies. This move is welcomed and it is hoped that the archaeological and aviation recovery communities will be widely consulted in order to produce workable guidance that is mutually acceptable.
- On site monitoring should be considered as a useful mechanism to track changes at sites and the information gathered should be fed back to record-keeping bodies. For example, land managers such as the Snowdonia National Park wardens should be empowered to monitor crash sites during the course of their general work programme when they are out in the field. A systematic programme of monitoring should be piloted to test its efficacy.
- It would be useful to canvass the views of the bereaved families of aircrew in order to provide an evidence base on which to make claims as to the general preference for or against the right to a known grave for missing aircrew, one of the prime motivating factors for a number of recoveries. The publication of the results would reduce the potential for conflict over the issue. Should the outcome be that the families believe that their relatives need a known grave, this will require further research to identify the best course of action and potentially provide a basis for a review of MoD policy.
- In order to establish the level of threat to certain types of aircraft it would be useful to undertake research to identify which aircraft types are unrepresented or under-represented in museums. Subsequently this information could be cross-referenced with available crash site data to determine which sites are most likely to be at risk from collectors or which elements would be valuable additions to museum collections.

5.2 Management and protection of military aircraft crash sites

There are a number of ways in which the management and subsequent protection of military aircraft crash sites can be achieved and the below recommendations aim to address at least some of these.

- All landowners of military aircraft crash sites should be informed about the sites and their protected status under the PMRA 1986. They should also be informed of the basic management needs of the sites and their responsibility to curate them for the Nation. The distribution of literature and guidance is an important factor in this and the landowner press (*e.g.* the Welsh Government's *Gwlad* magazine) or output from the Country Land and Business Association (formerly the Country Landowners Association and still known as the

CLA) should be targeted with relevant articles to address this problem. For example, information could be provided on the CLA's *Frequently Asked Heritage Questions* web page (http://www.cla.org.uk/Professional_Advice/Heritage_FAQs/ last viewed 14/05/2012)

- The dataset generated by this project must be dynamically managed to allow for the addition of new information when this becomes available. Inclusion in the HERs facilitates this, but it should be understood to be part of the normal HER backlog and the resources must be in place to allow HER officers to add this information to the records promptly.
- Excavation or recovery decisions should be made only on a sound basis of preparatory work including an understanding that the remaining sites are a dwindling resource and these should not be disturbed unless a research framework or project design highlights the necessity of doing so.
- The results of any interventions or site research should be made available to the HERs in order to ensure the data will be placed in the public domain. This will add to the corpus of literature and information relating to each crash site, and will improve the quality of archaeological responses through the provision of more detailed information.
- All fieldwork relating to military aircraft crash sites should adhere to accepted standards. In the absence of an agreed methodology for crash site interventions the IfA Standards and Guidelines should be employed.
- There should be a standardised national response from the UK archaeological community with regard to aircraft recovery and excavation. This would improve the ability of aviation recovery groups and enthusiasts to act in accordance with archaeological standards. If a UK-wide response is not possible, a standard should at least be developed for Wales and resourcing identified for commenting on project designs and monitoring any works. WAT development control staff have built up expertise for assessing the archaeological implications of development proposals, and could apply this to applications to recover crashed aircraft. Alternatively, the MoD should consider appointing an archaeologist specifically to assist the JCCC with this facet of their role. Assistance is currently provided by MoD archaeologists in addition to their other duties.
- The process of licensing should be made more transparent and placed within the public domain. HERs are normally notified by the MoD of licence applications during the course of consultations, however it is also important to ensure that the decisions made by the JCCC are communicated to HERs for their records. The reasons for those decisions should also be made available in order to facilitate decision-making for heritage purposes. Returns forms (including nil returns) should be supplied to HERs for inclusion into the records and the MoD should ensure that resourcing is in place to facilitate and monitor this.
- A second licence to recover an aircraft should not be granted to anyone who has not fulfilled the archaeological conditions of the previous one or completed returns forms. This would seek to resolve any problems in tracking the results of recoveries.
- The Heritage Crime Initiative introduced in England should be taken forward in Wales in order to address illegal activity on the sites of crashed military aircraft.
- The Civil Aviation Authority's controls on aircraft restorations need to underline the PMRA 1986. Although extensive guidance is available from the CAA (http://www.caa.co.uk/docs/33/CAP562RFSComp.pdf last viewed 22/05/2012), it would also benefit from the inclusion of an acknowledgement that the Act may be an issue in the acquisition of parts for restoring aircraft and should demonstrate that material must not be illegally taken from crash sites for this purpose.
- The Countryside Code should be amended and updated to note the existence of the PMRA 1986 and to include that crashed aircraft components are historic environment features that should not be tampered with, in the *Leave gates and property as you find them* section (see http://www.countrysidecodewales.org.uk/advice-for-visitors.aspx last viewed 22/05/2012)

- Clarity is needed for the appropriate management regimes and responsibilities with regard to the intertidal zone. A number of aircraft wrecks are known to be located, or may be located, in this landscape and as such the matter requires attention. In Gwynedd and Anglesey especially the definition of the intertidal and sub-tidal zones need to be clarified and the management regime identified (*i.e.* terrestrial/marine) in order to identify whether management through PPG Wales and local planning authority Supplementary Planning Guidance documents, or management by the Welsh Government through marine spatial planning, integrated coastal zone management or marine consents is the most appropriate mechanism.
- The needs of military aircraft crash sites should be included in all local development plans, supplementary planning guidance documents, marine spatial plans, marine consent consultations and integrated coastal zone management documents in order to ensure they are perceived as a component of the historic environment and a material consideration in planning and management terms.
- The potential for signage to inform people of crash sites, providing background information and highlighting the protected status of military aircraft crash sites should be considered. This would also reduce the defence of unintentional transgression in cases where crash site material is subsequently tampered with or removed from sites with interpretation present.
- Other outreach activities or materials could be produced (*e.g.* guided or self-guided walks; general leaflets) that will educate and inform people about crash sites and their historical background and protected status.
- The creation of memorials should be encouraged for military aircraft crash sites. They not only provide a reminder of the crash and a memorial to the tragic loss of life, but they also seek to create a link between the past and present; foster a sense of empathy; and increase the communal value of the sites.
- Site investigation methodology should learn from current guidance written by the Air Accidents Investigation Branch of the Department of Transport (Anon., 2008). This notes that crash scenes are rich in forensic evidence and highlights the importance of preserving as much of the scene as possible (*ibid.*, 18-19). It demonstrates that both the wreckage trail and the crash site are examined in detail as normal practice and highlights the importance of keeping visitors to a minimum. Vital evidence can be easily destroyed by well-intentioned disturbance of the site by others (*ibid.*)
- Any aircraft or crash site remains should be noted and located/recorded as far as possible during the course of any archaeological or other works and this information then fed back to appropriate authorities. HERs that carry this information can update records and pass any relevant information back to the MoD

5.3 Productive working practice

In order to move forward positively, there are a number of measures that should be considered by all parties involved in the sphere of crashed military aircraft:

- Lessons should be learned from the way that the Portable Antiquities Scheme (PAS) has brought together the interests of metal detecting and the interests of archaeology by fostering common links and promoting good practice. The Finds Liaison Officers of the PAS work to promote responsible detecting and encourage recording; to place information within the public domain that would otherwise be lost; and they support the Treasure Act 1996 through their roles (see http://finds.org.uk/info/advice/aboutus last viewed 23/05/2012). The scheme has also acknowledged the difference between responsible

detectorists who operate within the law and those who do not in order to emphasise the need to adhere to legislation and standards.

- Non-intrusive photography of sites should not be discouraged, but images taken should be shared with record-holding institutions. This will develop the potential for ad-hoc community monitoring of sites through the provision of date-stamped photographs providing a point-in-time visual assessment of sites to inform management processes.
- A Guide to Good Practice and development of accepted standards for site investigation (as noted above) would play a useful part but consultation must involve all stakeholder groups.
- There should be an appreciation of the need to consider all views on the subject. An understanding of the nature and application of the term *archaeology*, as the physical remains of the past (which, by definition, can include anything that happened as recently as the day before) should be fostered.
- Literature arising from work into military aircraft crash sites should seek raise awareness of military aircraft crash sites generally, and must emphasise the following points:
    - although it is not an offence to accidentally disturb crashed aircraft, it becomes an offence to tamper with the site when it has been identified as such
    - it is an offence to tamper with remains, including to unearth them in order to check the identity, or to move them in order to create a more evocative photograph
    - additionally to the legal requirements of the PMRA, military aircraft remains should not be disturbed because exposure to the agents of decay in the atmosphere will accelerate corrosion, and placing materials together that may have not originally been next to each other may also exacerbate decay.
- Consideration should be given to the notion of *Cultural Capital* (*i.e.* our attitudes, values, aspirations and sense of self-efficiency) and the potential to effect culture change through the employment of consistent policy narratives and other initiatives using enabling, encouraging, engaging and exemplifying means to reinforce ideas and expectations (Knott, 2008). As primarily a tool for policymakers this concept would need to be considered at a strategic level in order to apply principles that may change the way people perceive and react to military aircraft crash sites.
- A national (UK-wide) list of military aircraft crash site specialists should be agreed by the MoD, the Association of Local Government Archaeological Officers, the Institute for Archaeologists, English Heritage, Historic Scotland, the British Aviation Archaeological Council and other relevant bodies in order to provide an expert panel to guide interventions and management practice in this field. This body should have input into the creation of management guidance and aim to define what constitutes a site requiring specialist input, as noted below.

5.4 Principles for military aircraft crash site management

The need to produce principles for the management of military aircraft crash sites was clearly identified during the course of this project. However it was not possible to produce a full management prescription and therefore this remains an outstanding aim for those involved in the study and management of military aircraft crash sites. The basic questions that remain are:

- Who should be asked for advice when a military aircraft crash site falls within an area subject to archaeological intervention or consultation?
- If a site is **not** regarded as of national importance and worthy of preservation *in situ*, what should be the most appropriate evaluation or mitigation strategy?
- If a specialist report is required, who can provide this?

The answers to these questions must be addressed by experts in the field and could be included in the revised Military Aircraft Crash Sites Guidance Note, originally written by Schofield and Holyoak (EH) in 2002 but subject to revision in 2012.

Some basic principles can be more easily noted and are listed here.

- When a military aircraft crash site is noted as part of an archaeological consultation or falls within an area of research, the following course of action should be taken:
    - familiarisation with available documentation
    - notify MoD and establish the need for a licence
    - clarify identity of aircraft
    - clarify extent of site through research and non-intrusive fieldwork
    - apply a recording methodology where appropriate – is specialist input required? (this should be agreed with a designated "expert" in the field – see recommendation above with regard to the creation of a list of experts).
- The factors which make sites more important are the following:
    - A lesser extent of recovery or salvage is known to have taken place
    - The aircraft is of an unusual or extinct type
    - There is potential for buried remains due to the cumulative effect of landscape type, airframe construction materials, and the speed/angle of impact
    - There is a potential for human remains
    - The site is a focus for commemoration.
- Preservation in situ should be the default option for all sites due to the lack of current research frameworks and understanding about the resource.
- Any intention to excavate a site should be justifiable – it should be based on a research question and mitigate the damage to the context and sense of place inherent in military aircraft crash sites.
- The potential for ordnance at crash sites should be regarded as a different issue to the potential for human remains due to the way it impacts upon intervention methodology rather than the significance of the site.
- There should be a presumption that ordnance will be found at crash sites and risk assessments must address this as a facet of the management of hazards when undertaking fieldwork.

6. Conclusions

The project undertaken by Gwynedd Archaeological Trust to define and assess the archaeological resource of military aircraft crash sites in north-west Wales has demonstrated the wealth of data to be identified and collated on the subject, but also highlighted the need for further research in many aspects of this theme in order to decrease the number of unknown factors. Thorough data collection across Wales is a priority in order to establish the nature and extent of the known resource across the country and to facilitate a standardised response to management issues.

In order to identify the more significant sites it was necessary to augment the database supplied to GAT by the RCAHMW with new information. The additional fields will be incorporated into the Regional HERs in due course and will facilitate site management and will allow the dynamic management of the dataset through the updating of, and addition of new, records. This information will be shared with the MoD and will provide a useful pilot exercise to see how provision of a unified dataset for Wales impacts on their ability to advise on the sites and grant licences to recover crashed military aircraft.

The detailed understanding of the resource gathered during the course of this project has allowed for an understanding of the multi-faceted levels of significance of military aircraft crash sites to be articulated and has facilitated the production of recommendations for future work, management and productive working practices. It is hoped that these will be taken forward across Wales and the UK.

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8. Appendices

1. Site Gazetteer

2. HER Data Map

3. Vince Holyoak's Aircraft Tables, amended by GAT 2011

4. MoD Project Design Proforma

5. Abbreviations used in the report

Appendix 1 - Site Gazetteer

PRN	25878
NPRN	240201
Sitename	Aircraft Crash Site, Lockheed P38F Lightning, Harlech
Serial number	41-7677
NGR	SH5532
Period	Modern
Community	Harlech
Terrestrial/Intertidal	Intertidal
Crash site landscape	Foreshore
Circumstances of crash	Emergency landing on beach in c. 2ft of water, slight damage to wing tip from minor collision with anti-invasion post on beach.
Notes	News Item: Associated Press, New York, November 14, 2007 WWII Plane Found on Beach in Wales Sixty-five years after it ran out of gas and crash-landed on a beach in Wales, an American P-38 fighter plane has emerged from the surf and sand. Ric Gillespie's organization, the International Group for Historic Aircraft Recovery, known as TIGHAR, learned of the plane's existence in September from a British air history enthusiast and sent a seven-member team to survey the site last month. It plans to collaborate with British museum experts in recovering the nearly intact but fragile aircraft next spring. The Imperial War Museum Duxford and the Royal Air Force Museum are among the institutions expressing interest. Based on its serial number and other records, "the fighter is arguably the oldest P-38 in existence, and the oldest surviving 8th Air Force combat aircraft of any type. In that respect it's a major find, of exceptional interest to British and American aviation historians," Gillespie said. Officially, the U.S. Air Force considers any aircraft lost before Nov. 19, 1961 - when a fire destroyed many records - as "formally abandoned," and has an interest in such cases only if human remains are involved. The twin-engine P-38, a radical design conceived by Lockheed design genius Clarence "Kelly" Johnson in the late 1930s, became one of the war's most successful fighter planes, serving in Europe and the Pacific. Some 10,000 were built, and about 32 complete or partial airframes are believed to still exist, perhaps 10 in flying condition. The Wales Lightning, built in 1941, reached Britain in early 1942 and flew combat missions along the Dutch-Belgian coast. Second Lt. Robert F. "Fred" Elliott, 24, of Rich Square, North Carolina, was on a gunnery practice mission on Sept. 27, 1942, when a fuel supply error forced him to make an emergency landing on the nearest suitable place - the Welsh beach. His belly landing in shallow water sheared off a wingtip, but Elliott escaped unhurt. Less than three months later, he was shot down over Tunisia, in North Africa. His plane and body were never found. As the disabled P-38 could not be flown out, "American officers had the guns removed, and the records say the aircraft was salvaged, but it wasn't," Gillespie said. It was first spotted by a family enjoying a day at the beach on July 31. He said that since the survey in October, the sands have again buried the plane, and "whether and when it will reappear is anybody's guess." Source; http://www.military.com/NewsContent/0,13319,156222,00.html?wh=wh The report compiled of the incident noted that the P38 was assigned to 14th Fighter Group (TE). The incident occurred at 15:05pm on 27 September 1942. The aircraft had been delivered on 26 June 1942 and had been flown 105:05 hours. The aircraft took off from Llanbedr at 14:00 and climbed to 6000ft. Elliot flew the range in the usual manner with another ship firing at the target. After 55 minutes, the left engine lost power. Believing the problem to be the propeller, he tried to correct it with manual controls. Elliot then decided to go into land. The pilot trimmed the plane for single engine flight and, flew over the airfield at 1000ft. He dropped the target, then circled again and began a landing approach. At around 800ft and 2 miles from the airfield, the right engine stopped . Elliot then turned to glide down onto the beach. Undershooting, he landed in 2ft of water. He later checked the tanks and found that they were still set on reserve and realized his error (he had been flying for 1 hour and 5 minutes). The investigators noted that it was carelessness on the part of the pilot - he should have switched to the main tank about 15 minutes after take-off and immediately prior to landing switched back to reserve tanks. A memo from the Office of the Enginner Officer dated 2 October 1942 noted that the damage by crash landing and salt water was extensive and that it would be necessary to salvage the entire airplane. Source: US Army Air Force Report of Aircraft Accident 43-06-24-508, RCAHMW Digital Collections
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew survived crash
Object of flight	Gunnery practice - target towing
Record Origin	RCAHMW
Date of Compilation	08/01/2012

PRN	33609
NPRN	1008
Sitename	Aircraft Crash Site, Consolidated Catalina, Afon Cadnant
Serial number	
NGR	SH561727
Period	Modern
Community	Menai Bridge
Terrestrial/Intertidal	Intertidal
Crash site landscape	Foreshore
Circumstances of crash	Not known
Notes	
International rarity of aircraft	1-5% of total produced survive globally
Crew survival	Not known
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	04/01/2012

PRN	33610
NPRN	240078
Sitename	Aircraft Crash Site, Hawker Hurricane, Bodorgan
Serial number	V7023
NGR	SH3544867568
Period	Modern
Community	Bodorgan
Terrestrial/Intertidal	Intertidal
Crash site landscape	Foreshore
Circumstances of crash	Crashed during forced landing
Notes	21 December 1940, Hawker Hurricane V7023, at Bodorgan, from 79 Squadron RAF Pembrey, crashed on beach during forced landing. Source; Sloan, R 2002
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Not known
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	08/01/2012

PRN	33611
NPRN	240080
Sitename	Aircraft Crash Site, Hawker Hurricane, Rhoscolyn
Serial number	V6788
NGR	SH292752
Period	Modern
Community	Rhoscolyn
Terrestrial/Intertidal	Intertidal
Crash site landscape	Foreshore
Circumstances of crash	Aircraft crashed on beach
Notes	15 May 1941, Hawker Hurricane V6788, Rhoscolyn from RAF Valley, crashed on beach pilot seriously injured. Source: Sloan, R, 2002, Anglesey Air Accidents during the 20th Century
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew survived crash
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	08/01/2012

PRN	33612
NPRN	240134
Sitename	Aircraft Crash Site, Bristol Beaufighter, Valley
Serial number	T3024
NGR	SH3030274686
Period	Modern
Community	Llanfair yn Neubwll
Terrestrial/Intertidal	Intertidal
Crash site landscape	Foreshore
Circumstances of crash	Struck sand dunes on landing & broke off undercarriage. Aircraft repaired.
Notes	15 Nov 1941, Bristol Beaufighter T3024, crashed at RAF Valley, from 456 squadron based at Valley, struck sand dunes on landing and broke off under carriage. Source: Sloan, R, 2002, Anglesey Air Accidents during the 20th Century, pg 236 Aircraft undershot on approach (at night). The undercarriage hit sand dunes and collapsed on landing, which resulted in the aircraft swinging off the runway into the sand. The aircraft could be repaired. Source: Air Ministry Form 1180
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew survived crash
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	08/01/2012

PRN	33613
NPRN	240136
Sitename	Aircraft Crash Site, Hawker Henley MKIII, Malltraeth Sands
Serial number	L3352
NGR	SH3905966944
Period	Modern
Community	Bodorgan
Terrestrial/Intertidal	Intertidal
Crash site landscape	Foreshore
Circumstances of crash	Forced to ditch on approach to RAF Bodorgan due to engine fire
Notes	9 June 1942, Hawker Henley L3352, near the shore at Bodorgan, aircraft was from RAF Bodorgan, after an engine fire near Bardsey, the aircraft attempted to reach base but was forced to ditch, both crewman safe. Source: Sloan, R, 2002, Anglesey Air Accidents during the 20th Century, pg 236 The author notes that this Henley was one of 200 delivered to the RAF by Gloster Aircraft between November 1938 and September 1940. Its service life included assignments to 5 ATS/9 BGS/1 AACU. On 8 June 1942, the aircraft ditched off Angelsey. Source: Halley, J J, 1979, Royal Air Force Aircraft L1000 to L9999, pg21 Source: Halley, J J, 1993, Royal Air Force Aircraft L1000 to N9999, pg33
International rarity of aircraft	No known surviving examples globally
Crew survival	Entire crew survived crash
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	08/01/2012

PRN	33614
NPRN	240137
Sitename	Aircraft Crash Site, Avro Anson, Malltraeth Sands
Serial number	AX408
NGR	SH4015866618
Period	Modern
Community	Rhosyr
Terrestrial/Intertidal	Intertidal
Crash site landscape	Foreshore
Circumstances of crash	Crashed during forced landing
Notes	6 August 1942, Avro Anson AX408, Malltraeth Sands, aircraft was from No 3 (O) AFU, crashed during forced landing. Source: Sloan, R, 2002, Anglesey Air Accidents during the 20th Century, pg 236 The author notes that this Anson was one of 750 delivered to the RAF between July 1941 and February 1942. Its service history includes assignments to 3 AOS and 3 OAFU. It crashed on force-landing on Maltraeth Sands on 6 August 1942. Source: Halley, J J,1985, Royal Air Force Aircraft AA100 to AZ999, pg103
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Not known
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	08/01/2012

PRN	33615
NPRN	515214
Sitename	Aircraft Crash Site, Avro Anson MKI, Foel Fras
Serial number	N4980
NGR	SH7068
Period	Modern
Community	Caerhun
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rough Grassland
Circumstances of crash	Aircraft hit eastern side of Foel fras.
Notes	The author notes that this AVRO ANSON was assigned to 9 AOS. The aircraft hit the eastern side of Foel Fras on 20 April 1942 due to a map reading error. Three of the four crew survived. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg90 The author notes that two of the crewmembers were Sgt Les Cooper and T J Cilly, who had completed training in Canada as observers; pilot Sgt C C Symonds; wireless operator D J Stokes. The flight was to familiarise the observers with some of the beacons and other lights used as navigational aids. The Anson had flown over Llandudno Bay and passed over Menai Bridge, when it struck and cartwheeled up the slope Foel Fras. The pilot had to be released from his harness and he was hanging upside down. Crilly was thrown against the navigator's table and his chest was crushed and he died soon after Stokes, the wireless operator, passed him his rosary. Stokes inflated the dinghy and made an impromptu shelter for the three survivors. He also found a fuel tap and managed to light a fire using parts of the plane Stokes also went to explore the landscape, but found he had reached the 600ft cliffs of Llyn Dulyn in the dark and so returned to the fire until dawn. An aircraft flew over and the survivors released the Verey pistol flare and were dropped some spirits and cigarettes. A farmer arrived to investigate and later in the afternoon the RAF rescue team arrived to assist the survivors on the 4 mile walk to the ambulance. However, a policeman arrived from the east and the crew were assisted to a large house near Bethesda where they were tended. Source: Doylerush, E, 1999, No landing Place Volume 2: More Tales of Aircraft Crashes in Snowdonia, pg62-3 The author notes that this Anson was one of 500 delivered to the RAF by Avro, Chadderton, to contract 766119/38 between October 1938 and September 1939. Its service history includes assignments to 12 ERFTS/12 EFTS/1 CANS/1 AONS/9 AOS. The aircraft flew into a mountain on a night navigation exercise near Bethesda, caernarfon, on 20 April 1942. Source: Halley, J J, 1993, Royal Air Force Aircraft L1000 to N9999, pg156 Source: Halley, J J, 1977, Royal Air Force Aircraft N1000 to N9999, pg28 Only a very small patch of burnt ground marks the spot where the aircraft was burnt by 34 M.U. when they had salvaged what they could from the aircraft. Source: Snowdonia Aviation Historical Group, 1985
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Some crew survived crash
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	18/01/2012

PRN	33616
NPRN	240337
Sitename	Aircraft Crash Site, Heinkel HE111 H-5, Pwllheli
Serial number	F8+LW
NGR	SH3764734179
Period	Modern
Community	Pwllheli
Terrestrial/Intertidal	Intertidal
Crash site landscape	Foreshore
Circumstances of crash	Aircraft shot down - dived 2000ft into beach
Notes	The author notes that on night of 10 July 1942, a Beaufighter flown by Wing Commander Wolfe (Commanding Officer 456 Squadron) and Pilot Officer Ashcroft operating from RAF Valley were patrolling Cardigan Bay. Information regarding two contacts was relayed. The first was identified as a Ju88, but managed to escape after violent a manoeurving. The second proved to be a Heinkel HEIII, F8+LW. The British Beaufighter closed to 250yds and fires two short burst. The Heinkel responded by dropping its bomb load. More gunfire caused flames to appear from the Heinkel which went into a dive from 2,000ft and crashed into Pwllheli beach. Two men baled out and were picked up from the sea, but the other members of the crew were killed in the crash. Source; Sloan, R, 1991, Wings of War over Gwynedd, pg 32-3 The author notes that Wing Commander E C Wolfe and Pilot Officer A E Ashcroft were patrolling over Bardsey island at 10,000ft, when at 0112 hours they were taken by Trewan Sands GCI radar and given a course of 280 degrees. At 0125 hours two blips were observed. The first was a JU88 which managed to turn inside the Beaufighter and escape to continue its mission to bomb gasworks in Birmingham. The second blip was a Heinkel with a load of high explosives also for Brimingham. Wolfe closed on the Heinkel which was making jinking turns at 270-290knots and at 250 yards and opened fire for 2 seconds and then at 150 yards fired for another 1 second. The Heinkel skidded off to port and jettisoned its bomb load. Wolfe broke away to starboard and fired again for 2 seconds and broke way violently to avoid a collision. The gunfire resulted in bright flashes from the fuselage and pieces of the enemy plane falling off. The Heinkel crashed into the beach with the dead gunner, Gefreiter Heinz Hofkes, on aboard and also taking with it the observer Feldwebel Horst Vogt, whose parachute had become entangled with the tail. The wireless operator, Unteroffizier Johann hesketh, was resuced from the sea with two broken legs by fisherman Owen Thomas. The pilot, Stabsfeldwebel Dirk Hokes, baled out successfully and was soon rounded up. The recovered Heinkel engine is at Caernarfon Air Museum. Source: Doylerush, E, 1999, No Landing Place Volume 2: More Tales of Aircraft Crashes in the Snowdonia, p45, photos 42-3
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Some crew survived crash
Object of flight	Bombing
Record Origin	RCAHMW
Date of Compilation	08/01/2012

PRN	33617
NPRN	240343
Sitename	Aircraft Crash Site, Hawker Hurricane, Porth Dinllaen
Serial number	V6626
NGR	SH2851540864
Period	Modern
Community	Nefyn
Terrestrial/Intertidal	Intertidal
Crash site landscape	Foreshore
Circumstances of crash	Crashed in shallow water upside down after catching wing on rock on landing
Notes	The author notes that on 11 July 1941, a Hurricane from 312 Squadron crashed landed onto the beach at Nefyn due to engine failure. The 21 year pilot, Stephens had brought the aircraft down in a steep glide from 18,000ft, but on landing the aircrafts' wing caught a rock and somersaulted to come to rest in shallow water. The pilot was trapped outside the cockpit, underneath the plane, with the edge of the cockpit across his shoulders. The author also notes that the local coroner was worried by the RAF's attitude of not wanting an inquest and wrote to the Coroner's Society for guidance. Source; Sloan, R, 1991, Wings of War over Gwynedd, pg 23 Hurricane V6626 crash landed on the beach at Nefyn with the loss of the pilot, Andrew Arthur Stephen. Source: http://www.flickr.com/photos/28731066@N03/6322015689/
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	08/01/2012

PRN	33618
NPRN	506056
Sitename	Aircraft Crash Site, Airspeed Oxford, Tyn y Groes
Serial number	W6628
NGR	SH77407165
Period	Modern
Community	Caerhun
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - grass?
Circumstances of crash	Aircraft crash-landed. No further details known
Notes	The author notes that this Oxford crash landed near Tyn y Groes on 27 July 1943. The pilot was killed. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg90 The author records the recollections of members of the 34 Maintenance Unit, RAF Detachment at Bethesda - a team of skilled technicians, armourers, airframe and engine technicians, plus MT drivers with a large Coles crane. Oxford W6628 was placed on Queen Mary transporter but got stuck on a Belisha Beason in Llanwrst highstreet. Local passers by helped to lift to out of the way. Source: Doylerush, E, 1999, No Landing Place Volume 2: More Tales of Aircraft Crashes in Snowdonia, pg104
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Training (General)
Record Origin	RCAHMW
Date of Compilation	09/01/2012

PRN	33619
NPRN	507055
Sitename	Aircraft Crash Site, Airspeed Oxford MKI, Sychnant Pass
Serial number	N4568
NGR	SH7577
Period	Modern
Community	Penmaenmawr
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface; Heath; Scrub; Rough Grassland
Circumstances of crash	Flew into hill in mist; fire on impact (AM Form 1180)
Notes	The author notes that this Oxford was assigned to 11 SFTS. The pupil became lost in cloud and crashed on Synchant Pass on 3 August 1941. There were no survivors. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg90 The author notes that the pilot, Leading Aircraftman Tommy W Gurnell, had been in reserved occupation, but wanting to fly had joined the RAF. He was assigned to 11 SFTS Shawbury. After a shakey takeoff when he just missed the control tower, he left the local flying area and found his way into the Conway valley. Witnesses, Ian Dean and his parents, were situated near the head of the Sychnant Pass between Conway and Penmaenmawr when they saw it flying low at an odd angle and later heard the crash. The inquiry found that the young pilot had lost control in cloud. Source: Doylerush, E, 1999, No Landing Place Volume 2: More Tales of Aircraft Crashes in Snowdonia, pg99 The author notes that this Oxford was one of 200 delivered to the RAF by De Havilland, Hatfield, to contract 765080/38 between February 1939 and Janaury 1940. Its service life included assignments to 11 FTS/8 FTS/11 FTS. The aircraft flew into a hill in mist 1.5 miles southwest of Conway on 3 August 1941. Source: Halley, J J, 1993, Royal Air Force Aircraft L1000 to N9999, pg152
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Training (General)
Record Origin	RCAHMW
Date of Compilation	09/01/2012

PRN	33620
NPRN	507057
Sitename	Aircraft Crash Site, Airspeed Oxford, Llyn Crafnant
Serial number	LB537
NGR	SH732620
Period	Modern
Community	Trefriw
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Heath; Rock (Scattered)
Circumstances of crash	Aircraft off course and flew into summit of 2000ft mountain in poor weather, c.1300 hrs; not found until 4/5 Feb 1945 (AM Form 1180)
Notes	The author notes that this Oxford crashed at night on Cornell mountain on 13 January 1945. The aircraft heading for Squires Gate and was 50 miles off course. No survivors.Wreckage can be found at OS sheet 115, NGR 746599. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg90 The author notes that the on 13 January 1945, the Oxford was booked for a flight from Abbotsinch, via Woodvale in Lancashire for refuelling. Warrant officer Jim Firth was to be the pilot and Drew the navigator. Two other flying officers, Geoffrey Day and Wal Retzer asked to go along. On checking the weather forecast, Drew found that 9/10ths low cloud level to Lancashire thickening towards Scotland. Believing the flight would be cancelled, he set off by train. The next day the squadron adjutant telephoned to tell him that the Oxford had taken off, but not arrived at Woodvale. Searches were instigated, but nothing was found until three weeks later, when farmer Owen Thomas of Cornel Farm, beside Llyn Crafnant, was climbing a ridge towards Llyn Cowlyd and he spotted the aircraft on the skyline. The bodies of three of the crewmen were found resting together against the rocks, with Flt Lt Mathews body found some distance forward of the Oxford. The Mountain Rescue team arrived, too late in the day to recover the bodies, and decided to return the next morning. By which time, the bodies had been rifled for their personal possessions such as watches, etc. The inquiry found that the flight should not have been allowed in a plane that had no radio or navigational aids and that whilst Firth had been a skilled pilot he was not a skilled navigator. Source: Doylerush, E, 1999, No Landing Place Volume 2: More Tales of Aircraft Crashes in Snowdonia, pg66-9 Aircraft flew into summit of 2000 ft mountain in bad weather, the summit probably being covered by cloud. The aircraft was 50-60 miles off track. Source: Air Ministry Form 1180
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Training (General)
Record Origin	RCAHMW
Date of Compilation	09/01/2012

PRN	33621
NPRN	507058
Sitename	Aircraft Crash Site, Armstrong Whitworth Whitley, Foel Fras
Serial number	BD232
NGR	SH7030967057
Period	Modern
Community	Caerhun
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Heath; Rough Grassland; Boulders
Circumstances of crash	Aircraft flew into hill at night due to technical problems. Fire at impact site
Notes	The author notes that this Whitley was assigned to 24 OTU. The aircraft was on a night cross-country flight and crashed on Foel Fras above Llyn Dulyn. Wreckage can be found at OS sheet 115, NGR 703670. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg90 The aircraft flew into a hill, 12 miles west of track, probably whilst descending through cloud to obtain a visual fix. The aircraft was deemed to have experienced technical problems. Source: Air Ministry Form 1180 Scraps of aluminium above Llyn Dulyn found. 3rd party comment claims to have found impact site at SH7021267054 (large area of disturbed ground + some alumnium and steel). 120m below this is a reasonable collection of aluminium panels and tubes at SH7033167012. 15m below this is more riveted aluminium stamped SO9920057 and JZKG, and ?BP on rivet head. Where slope levels out undercarriage and flanged steel tube were found at SH7036466949. Further comment states that BD232 was recovered by Elliot Smock of the Whitley Project in order to build a museum piece. Source: http://peakwreckhunters.blogspot.com/2008/05/whitley-mkv-bd232_24.html Aircraft flew into mountainside during night time cross country navigational exercise from RAF Honeybourne (Worcestershire). Following a recovery of wreckage in 2005, where an RAF Chinook was used to remove large pieces, only small fragments remain scattered south-east down the slope. Source: Wotherspoon/Clark/Sheldon, 2009
International rarity of aircraft	No known surviving examples globally
Crew survival	Entire crew died in crash
Object of flight	Training (General)
Record Origin	RCAHMW
Date of Compilation	16/01/2012

PRN	33622
NPRN	507059
Sitename	Aircraft Crash Site, Taylorcraft Auster AOP 6, Llwytmor
Serial number	VF554/G
NGR	SH676692
Period	Modern
Community	Abergwyngregyn
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Heath; Rough Grassland
Circumstances of crash	Aircraft flew into downdraft and came down steeply into boggy ground adjacent to river (Wotherspoon/Clark/Sheldon)
Notes	The author notes that this Auster was assigned to 663 Squadron and was searching for lost army cadets when it crashed above Aber Falls on 21 October 1956. Souurce: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg90 Pilot attempted to turn in the Cwm yr Afon Goch while searching for lost cadets but flew into downdraft and came down steeply into boggy ground next to the river. The framework and engine remined in situ for years although nothing is now visible. Pieces of framework thought to be from the Auster were noted downstream in the 1990s. Source: Wotherspoon/Clark/Sheldon 2009
International rarity of aircraft	Not known
Crew survival	Entire crew survived crash
Object of flight	Reconnaissance
Record Origin	RCAHMW
Date of Compilation	16/01/2012

PRN	33623
NPRN	507060
Sitename	Aircraft Crash Site, Avro Lancaster Mk III, Rhinog Fawr
Serial number	NE132
NGR	SH6373628879
Period	Modern
Community	Llanbedr
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rough Grassland; Boulders (Scattered)
Circumstances of crash	Aircraft is thought to have partly broken up in the air when attempting to recover from a dive caused by penetration of cloud. Aircraft disintegrated and burnt out on impact with hillside. 2 crew members never found.
Notes	The author notes that this Lancaster was assigned to 1653 HCU. The aircraft broke up in the air and crashed in Rhinogs. There were no survivors. Wreckage can be found at OS sheet 124, NGR 632285. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg90 The author notes that the LANCASTER was on a cross country training flight. It was detected flying eastwards by RAF Llanbedr. Its base at 1653 HCU, North Luffenham, Rutland, reported it missing coming inland from Cardigan bay. There were 7 crewmen onboard including the pilot navigator Flying Officer David H R Evans and Flying Officer M W Moon, both Australians; Sgt H Neilsen from South America; Sgt GE W Hodge; Sgt A E Cliff; Sgt C W Souden; Flying Officer Evans and Sgt A D Gash (the bodies of the latter two were never found and are perpetuated on the Runnymede Aircrew Memorial). The subsequent investigation found that the LANCASTER had flown into cumulo-nimbus storm cloud and the pilot had lost control. In pulling out of the dive, the aircraft broke up with parts breaking off over a wide area. Source: Doylerush, E, 1999, No Landing Place Volume 2: More Tales of Aircraft Crashes in Snowdonia, pg18-19 Aircraft crashed into the ground out of control, it is considered that the pilot lost control in cumulo-nimbus cloud and the aircraft broke up whle pulling out of a dive. There may have been poor instrument flying or the aircraft may have iced up in the clouds. Parts of the aircraft were found three miles from the main burnt-out wreckage. Source: Air Ministry Form 1180 The aircraft entered a high-speed dive after penetrating clouds and structural loading from an attempt to break out of the dive may have caused a section of the port fin and several wing panels separating from the aircraft prior to the impact with the rocky hillside, where the aircraft disintegrated. The shattered remains of the engines, undercarriage assemblies, armoured plating, and fragments of airframe are scattered across the hillside. A memorial was erected on the site in 1997. Source: Wotherspoon, Clark and Sheldon, 2009 The bottom of the wreckage trail is located at SH6372028916, where a wall prevented much material falling further downslope. There used to be two engines at this location but remaining wreckage includes the crank from a merlin engine as well as armour plating and undercarriage components. Source: http://peakwreckhunters.blogspot.co.uk/2009/11/avro-lancaster-ne132.html
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Navigational training - night time cross country
Record Origin	RCAHMW
Date of Compilation	16/01/2012

PRN	33624
NPRN	515215
Sitename	Aircraft Crash Site, Avro Anson, Conwy
Serial number	K6227
NGR	SH752785
Period	Modern
Community	Conwy
Terrestrial/Intertidal	Intertidal
Crash site landscape	Foreshore
Circumstances of crash	Aircraft nose-dived into the sea
Notes	The author notes that this AVRO ANSON was assigned to 220 Sqn. The aircraft crashed into the sea near Conwy avoiding the coastal mountain, Penmaenbach. There were no survivors. Image included (p10 in 1985 edition) showing local residents with wreckage. Souurce: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg90 Aircraft crashed at old ship cottages beach while avoiding Penmaenbach headland. It had been taking part in bombing practice at RAF Penrhos and was returning to base at Bircham Newton (first leg to Sealand). Aircraft had been flying to left of formation and had strayed towards land in mist. At height of less than 100 ft, pilot W. H. V. Rimer pulled up sharply and lost flying speed, nose-diving into sea. One of the casualties was Michael Kirwin. Source: composite description from forum entires at http://penmaenmawr.a-wing.co.uk/index.php?topic=695.0
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	18/01/2012

PRN	33625
NPRN	507062
Sitename	Aircraft Crash Site, Avro Lincoln, Carnedd Llewelyn
Serial number	RF511
NGR	SH6780563844
Period	Modern
Community	Capel Curig
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rough Grassland; Boulders; Rock
Circumstances of crash	flew into steep rocky slope at night
Notes	The author notes that this Lincoln was assigned to 230 OCU. The aircraft was flying at night and flew into Cwm Llafar. There were no survivors. Wreckage can be found at OS sheet 115, NGR 679638. Souurce: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg90 Lowest recognisable section of Lincoln on Carnedd Llewelyn at SH6759863908. More is found along the bed of Nant Fach. No evidence of engines as mentioned in http://www.wilderness-wales.co.uk/articles/aircraft-wreckage-in-snowdonia.html. Site in Hell on High Ground but not much on the internet about it. 3rd party commentator describes finding the crash site in 1968. Other comment notes that the botha and he-111 on Llwydmor have not so far (2008) been "cleaned up" and claims that wreckage from a few sites, including the Lincoln, is visible on Google Earth. Source: http://peakwreckhunters.blogspot.com/2008/04/avro-lincoln-rf511_7358.html A plaque marks roughly the topmost extent of the wreckage Source: http://peakwreckhunters.blogspot.com/2008/04/avro-lincoln-rf511.html Unable to return to Scampton due to the weather, the aircraft was diverted to RAF Valley, but on descending over Anglesey it appears to have turned onto a south-easterly track rather than out to sea and then flew into the steep rocky slope at the head of Cwm Llafar. Pieces of melted aluminium are present and sections of armoured plating are built into a nearby stone shelter. Remains of undercarriage assemblies and airframe fragments lie further down the slope and further sections including a wing spar, engine mounting frame and 2 superchargers from the Rolls Royce engines lie at SH679638. Source: Wotherspoon, Clark and Sheldon 2009
International rarity of aircraft	Not known
Crew survival	Entire crew died in crash
Object of flight	Navigational training - night time cross country
Record Origin	RCAHMW
Date of Compilation	11/01/2012

PRN	33626
NPRN	515216
Sitename	Aircraft Crash Site, De Havilland Mosquito, Aran Fawddwy
Serial number	LR412
NGR	SH8566021485
Period	Modern
Community	Mawddwy
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Heath; Rough Grassland; Rock (Scattered)
Circumstances of crash	Aircraft hit summit of Aran Fawddwy. Reported to police by farmer who discovered wreckage 5 days later
Notes	The author notes that this MOSQUITO was assigned to 540 SQN. The aircraft crashed near the summit of Aran Fawddwy on 9 February 1944. There were no survivors. Wreckage can be located at 125/859213. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg92 The author notes that aricraft took off from Benson for a flap test and then a cross country flight. It struck the summit of Aran Fawddwy in cloud at 2000ft. The crew, Polish pilot Flying officer M Ostoja-Slonski, and navigator, Flying Officer Paul Riches DFC, were both killed. The author includes photograph of the aircraft in flight from the Imperial War Museum. Also a photograph of a memorial to the crew (plinth made of large stones on which sits the engine) at the gate of Esgair-gawr, near Rhydymain, on the A494. Source: Doylerush, E, 1999, No Landing Place Volume 2: More Tales of Aircraft Crashes in Snowdonia, pg102 The ROC lost track of the aircraft, which was found 5 days after the crash by the local farmer who reported it to the polilce. A propeller hub with remains of two blades lies close to impact point. Many small fragments of plywood and aluminium are scattered. Lower down the slope are sections of armour plate with crumpled fuel tanks. Source: Wotherspoon, Clark & Sheldon, 2009
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Training (General)
Record Origin	RCAHMW
Date of Compilation	18/01/2012

PRN	33627
NPRN	515217
Sitename	Aircraft Crash Site, Avro Anson MKI, Llyn Cowlyd
Serial number	LT433
NGR	SH7275363532
Period	Modern
Community	Dolgarrog
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Heath; Rough Grassland; Rock (Scattered)
Circumstances of crash	Flew into snow-covered hillside at night. Wreck spotted following day and surviviors rescued.
Notes	The author notes that this AVRO ANSON was assigned to SPTU. The aircraft hit a ridge on the north side of Llyn Cowlyd in a snowstorm on 20 February 1944. The plane had set out from Staff Pilot Training Unit (SPTU) at Cark, Lake District. Onboard were pilot Sgt Grant, wireless operator Pilot Officer Mervyn J Byrne, 2nd pilot Warrant Officer Renton, and navigator Sgt Birch for a training flight. The weather deteriorated to a snowstorm as they reached the north Wales coast and at 16:00hrs the Anson hit the top of the ridge bwteeen Cowlyd and Eigiau Lakes. Birch and Byrne were injured but stuck fast in the wreckage (Byrne was pinned by his right leg). Renton had been thrown out missing and Grant was dead in his seat. The following morning the plane was found by farmer's son, Will Roberts, whilst undertaking a patrol of the outlet pipes from the lake (checking for Fifth Columist bombs). Renton was still alive at this time, but otuside the plane Roberts made for Siglen farm to raise the alarm. The rescue team reached the Anson at 13:45, and took Renton down first in stretcher. Byrne was extricated with a double fracture of the right leg, a fractured skull and severe injuries to his right eye. Certain valuable instruments from the Anson were recovered at the same time as the last body of the pilot. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg76-8, 91 The author records the recollections of members of the 34 Maintenance Unit, RAF Detachment at Monkmore, Shrewsbury - a team of skilled technicians, armourers, airframe and engine technicians, plus MT drivers with a large Coles crane. The team obtained two bumpers from a garage in Bethesda and built a sledge on which most of the wreckage was brought down over a week. Source: Doylerush, E, 1999, No Landing Place Volume 2: More Tales of Aircraft Crashes in Snowdonia, pg104 The author notes that this Anson was one of 750 delivered in January and July 1943 by Avro at Yeadon. It was assigned to SPTU (Staff Pilots Training Unit). The aircraft flew into a mountain during a night navigation exercise at Pen Llithwrig-y-Wrach, 5 miles southeast of Bangor on 20 February 1944. Source: Halley, J, 1991, Royal Air force Aircraft LA100 - LZ999, pg97 Wreckage above Llyn Cowlyd is mainly undercarriage and engine components; unburned wreckage spread around area as well as burned spots with previously molten aluminium in vicinity. Source: http://peakwreckhunters.blogspot.com/2008/06/avro-anson-mki-lt433-coded-mi_06.html, last viewed 26/04/11
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Some crew survived crash
Object of flight	Navigational training - night time
Record Origin	RCAHMW
Date of Compilation	18/01/2012

PRN	33628
NPRN	515218
Sitename	Aircraft Crash Site, Avro Anson, Drum
Serial number	AX583
NGR	SH7168469790
Period	Modern
Community	Caerhun
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Heath; Rough Grassland
Circumstances of crash	flew into hillside in cloud - AM Form 1180 determined that human error (largely navigational) caused the crash
Notes	The author notes that this AVRO ANSON was assigned to 2 (O) AFU. The aircraft flew into the east side Drum at night on 25 April 1944, at 2000 ft. There were no survivors. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg91 The author notes that this Anson was one of 750 delivered to the RAF between July 1941 and February 1942. It's service history includes assignments to 2 AOS and 2 0AFU. The aircraft flew into a mountain at night near Dolgarrog on 25 April 1944. Source: Halley, J J,1985, Royal Air Force Aircraft AA100 to AZ999, pg107 Undercarriage with burned scar on marshy ground behind, with assortment of bits & previously molten aluminium. Could not verify reports of fragments spread downhill Source: http://peakwreckhunters.blogspot.com/2008/06/anson.html
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Navigational training - night time cross country
Record Origin	RCAHMW
Date of Compilation	18/01/2012

PRN	33629
NPRN	515219
Sitename	Aircraft Crash Site, Avro Anson MKI, Cwm Silyn
Serial number	N9562
NGR	SH518505
Period	Modern
Community	Llanllyfni
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Heath; Rock
Circumstances of crash	Aircraft broke cloud and hit hillside
Notes	The author notes that this AVRO ANSON was assigned to 9 AOS. The aircraft flew into high ground Cwm Silyn while undertaking a training flight in a narrow valley on 7 January 1942. There were no survivors. Souurce: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg90 The author notes that this Anson was one of 350 delivered to the RAF by Avro, Chadderton, to contract 766119/38 between September 1939 and March 1940. It was assigned to 9 FTS/6 FTS/9 AONS/9 AOS. The aircraft broke cloud and hit hillside while trying to get of of valley, Talmignedd, Mountain, Caernarvonshire, on 7 January 1942. Source: Halley, J J, 1993, Royal Air Force Aircraft L1000 to N9999, pg209
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Training (General)
Record Origin	RCAHMW
Date of Compilation	18/01/2012

PRN	33630
NPRN	515221
Sitename	Aircraft Crash Site, Avro Anson, Foel Gron
Serial number	DJ635
NGR	SH563566
Period	Modern
Community	Llanberis
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - grass?
Circumstances of crash	Aircraft flew into mountainside in bad weather
Notes	The author notes that this AVRO ANSON was assigned to 9 (O) AFU. The aircraft flew into the mountainside of Foel Gron on 28 November 1942 at night after being recalled due to bad weather. There were no survivors. Souurce: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg90 The author notes that this Anson was one of 700 delivered to the RAF between December 1941 and July 1942 by Avro at Yeadon. It was assigned to 9 OAFU.and flew into a mountain near Lake Cwellyn, Caernarfon, on 28 November 1942. Source: Halley, J J,1985, Royal Air Force Aircraft DA100 to dZ999, pg38
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Training (General)
Record Origin	RCAHMW
Date of Compilation	18/01/2012

PRN	33631
NPRN	515222
Sitename	Aircraft Crash Site, Avro Anson MKI, Foel Grach
Serial number	EG110
NGR	SH696654
Period	Modern
Community	Caerhun
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rough Grassland; Rock (Scattered)
Circumstances of crash	Crashed into mountainside within 200ft of top of ridge when attemting emergency pull up
Notes	The author notes that this AVRO ANSON EG110 was one of 600 assembled at Yeadon (Leeds) in 1941. It was assigned to 9 (O) AFU. The Anson left RAF Llandwrog for a bombing exercises at 19:45 hours on 14 January 1943. The crew consisted of three New Zealanders (pilot, bomb aimer and pupil navigator) and British wireless operator. The aircraft was to undertake a bombing run near Shrewsbury, but low cloud prevented the target from being seen and so they headed back. Iceing prevented the pilot, Pilot Officer Ken Archer, from taking the plane up for an astro-fix and the wireless was non-operational. The aircraft strayed into the central mass of the Carneddau and flew over the Melynllyn, and in attempting an emergency pull-up struck within 200ft of the top of the ridge (some 3000ft above sealevel). When Archer came to, he realised that Barnett in the seat next to him was unconsious with facial injuries; the navigator was unconscious laid across the chart table; the wireless operator was also unconscious. Archer used the parachutes to drape over his colleagues to keep them warm whilst he went for help. Some 17 hours after the crash he stumbled into the farmyard of Rowlyn Uchaf (the Upper Whirlpool). The farmer, Mr Williams, raced to the post office at Tal Y Bont to raise the alarm. Archer was handed over to the station medical officer, Flight Lt George Graham and two nursing orderlies, whilst search parties were organised. The Anson was eventually found some 18 hours later in a small steep ravine. Sgt Patterson, the navigator was still alive, but the other two men (Barnett and Broclehurst) had succumbed to their injuries and exposure. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg81-7, 90 The author notes that this Anson I was one of 600 delivered to the RAF between July 1942 an Janaury 1943 by Avro at Yeadon. It was assigned to 9 OAFU and flew into a mountain 2 miles southwest of Llyn Dulyn, Caernarfon, on 13 January 1943. Source: Halley, J, 1988, Royal Air Force Aircraft EA100 - EZ999, pg31 This wreck is fairly hard to find and is amongst large rocks in a gulley. Not much remains, only a few small fragments of alloy in the small stream. Source: Snowdonia Aviation Historical Group, 1985
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Some crew survived crash
Object of flight	Navigational training - night time
Record Origin	RCAHMW
Date of Compilation	18/01/2012

PRN	33632
NPRN	515220
Sitename	Aircraft Crash Site, Avro Anson MKI, Moel Eilio
Serial number	N4981
NGR	SH556571
Period	Modern
Community	Llanberis
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rough Grassland
Circumstances of crash	Aircraft flew into hillside
Notes	The author notes that this AVRO ANSON was assigned to 9 (O) AFU. The aircraft flew into the south side of Moel Eilio whilst flying up a narrow valley on 20 November 1942. There were no survivors. Souurce: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg90 The author notes that this Anson was one of 500 delivered to the RAF by Avro, Chadderton, to contract 766119/38 between October 1938 and September 1939. Its service history includes assignments to 12 ERFTS/12 EFTS/1 CANS/1 AONS/9 AOS/9 OAFU. The aircraft flew into a a mountain on a navigation exercise, Moel Milion, Caernarfonshire on 20 November 1942. Source: Halley, J J, 1993, Royal Air Force Aircraft L1000 to N9999, pg156 Source: Halley, J J, 1977, Royal Air Force Aircraft N1000 to N9999, pg28
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Navigational training (General)
Record Origin	RCAHMW
Date of Compilation	18/01/2012

PRN	33633
NPRN	515223
Sitename	Aircraft Crash Site, Avro Anson MKI, Penygroes
Serial number	EG129
NGR	SH458517
Period	Modern
Community	Clynnog
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Scrub; Rough Grassland; Marsh Reeds Or Saltmarsh
Circumstances of crash	Aircraft dived into marshy ground at night following engine failure
Notes	The author notes that this AVRO ANSON was assigned to 9 (O) AFU. The aircraft dived into a marsh near Penygroes following an obscure engine failure at night on 1 March 1943. There were no survivors. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg90 The author notes that this Anson I was one of 600 delivered to the RAF between July 1942 an Janaury 1943 by Avro at Yeadon. It was assigned to 9 OAFU and crashed during a force landing at Pen-y-Groes, Caernarvon on 1 March 1943. Source: Halley, J, 1988, Royal Air Force Aircraft EA100 - EZ999, pg31 The form records the place of the crash as Lleuar Fawr Farm (possibly - script difficult to read). The crash is attributed to engine failure, possibly the result of stalling after recovering from a dive. 5 people were on board. Source: Air Ministry Form 1180
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Navigational training (General)
Record Origin	RCAHMW
Date of Compilation	19/01/2012

PRN	33634
NPRN	515224
Sitename	Aircraft Crash Site, Avro Anson, Pantglas
Serial number	
NGR	SH484479
Period	Modern
Community	Clynnog
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Heath; Rock (Scattered)
Circumstances of crash	Aircraft force-landed on rising ground in cloud
Notes	The author notes that AVRO ANSON 'ON926' was assigned to 9 (O) AFU. The aircraft flew into rising ground in cloud near Pant Glas on 29 April 1943. All four crewmen survived. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg90 Anson EG926 was forced to return to Llandwrog in bad weather. The pilot descended through cloud to find the aircraft was in hilly terrain and was unable to see a way back through the cloud. He decided to make a forced landing and while trying to find a suitable field he was forced to land on the hillside. The crew were unhurt. Source: Snowdonia Aviation Historical Group, 1985 Avro Anson EF823 crashed at Pant Glas on 29/04/1943 Source: http://www.baaa-acro.com/archives/1943-JAN-JUN.htm
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew survived crash
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	19/01/2012

PRN	33635
NPRN	515226
Sitename	Aircraft Crash Site, Avro Anson MKI, Foel Fras
Serial number	N5371
NGR	SH699678
Period	Modern
Community	Caerhun
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rough Grassland
Circumstances of crash	Aircraft pancaked onto summit of mountain, hit boulder and spun round.
Notes	The author notes that this AVRO ANSON was assigned to 9 (O) AFU. On 23 August 1943, pilot Sgt Arthur Bickersdike was completing a long flight back from the Midlands with full crew of five onboard. The course passed to the pilot by the navigator was supposed to take them via Conwy to avoid the Snowdon range back to Llandwrog, but the plane was caught in cloud. Flying on instruments alone, the pilot suddenly noted that there were scattering sheep below him and pulled the aircraft up into a steep climb. The plane pancaked onto the eastern summit of Foel Fras and was spun 180 degrees when the starboard wing caught on a boulder. All five crewmen survived. The crew returned after evacuating because of the risk of fire, and found the wireless still working. At 10:30am a message was sent back to base (the location suggested by the crew was actually 2 miles further east than where the were actually found). The crew lit Very lights every half hour. A plane was sent to look for them and eventually spotted these lights. The mountain rescue team left Llandwrog at 11:00 and eventually reached the crewmen at 15:00. The crew were found to be in good shape apart for a few cuts and bruises and shock. The Anson has sustained a broken wing and bent propellor blades, and it was later recovered leaving only the boulder and a few pieces of scrap metal to mark the place. Wreckage is located at 115/699678. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg65-6, 90 The author notes that this Anson was one of 500 delivered to the RAF by Avro, Chadderton, to contract 766119/38 between October 1938 and September 1939. Its service history includes assignments to 612/3 OUT/9 OAFU. The aircraft flew into high ground in cloud on a navigation exercise at Foel Grach, 1 mile north of Llyn Dylun Reservoir, Caernarvonshire, on 23 August 1943. Source: Halley, J J, 1993, Royal Air Force Aircraft L1000 to N9999, pg155 Source: Halley, J J, 1977, Royal Air Force Aircraft N1000 to N9999, pg32 Little remains of the site, only a few small bits of alloy and screws, and it is very difficult to find. Source: Snowdonia Aviation Historical Group, 1985
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew survived crash
Object of flight	Navigational training (General)
Record Origin	RCAHMW
Date of Compilation	19/01/2012

PRN	33636
NPRN	515227
Sitename	Aircraft Crash Site, Avro Anson MKI, Caernarfon
Serial number	EG278
NGR	SH504654
Period	Modern
Community	Y Felinheli
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - grass?
Circumstances of crash	Aircraft disintegrated in the air, rolled over, and crashed in an inverted position
Notes	The author notes that this AVRO ANSON was assigned to 9 (O) AFU. The aircraft had 2 crewmen and 2 ATC cadets onboard when it disintegrated in the air near Caernarfon on 4 September 1943. There were no survivors. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg91 The author notes that this Anson I was one of 600 delivered to the RAF between July 1942 an January 1943 by Avro at Yeadon. It was assigned to 9 OAFU and broke up in the air over Caernarfon on 4 September 1943. Source: Halley, J, 1988, Royal Air Force Aircraft EA100 - EZ999, pg31 Parts of the aircraft broke away in the air. The pilot lost control and the aircraft rolled over and crashed in an inverted position at Parciau Farm. The subsequent AIB investigation found that the plywood skin of the port wing failed. Source: Air Ministry Form 1180
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Night Flying Test
Record Origin	RCAHMW
Date of Compilation	19/01/2012

PRN	33637
NPRN	515228
Sitename	Aircraft Crash Site, Avro Anson MKI, Caernarfon Bay
Serial number	LV152
NGR	SH383473
Period	Modern
Community	Llanaelhaearn
Terrestrial/Intertidal	Intertidal
Crash site landscape	Foreshore
Circumstances of crash	Aircraft collided with unseen cable and rolled over, plunging into the sea
Notes	The author notes that this AVRO ANSON was assigned to 3 AGS. The aircraft was being used to train two new pupil gunners on 9 September 1943. The gunnery practice was being taken in Caernarfon Bay, but soon the two Browning machine guns had jammed. Whilst Ft Sgt Ivor Ormondroyd left his seat to free the guns, the aircraft was kept flying making low passes, along the coast near the village of Trevor. Due east of the village are the two peaks of Gurn Goch and Gurn Ddu with extensive granite quarries. Cable cars were used to transports the stone to the jetty where the cars discharged into sloping hoppers ready to load a vessel. On the last pass, the pilot made to pass to landward of the jetty but at the last minute saw the cable. As he turned away, the port wing hit. The Anson, rolled over and plunged into the sea. In the gun turret, Flt Sgt Ormondroyd was immediately immersed in water and escaped by kicking out the triangular perspex panel between the two Browing machine guns. He started to swim down, disorientated, but inflated his Mae West lifetjacket and made it to the surface. Two other gunnery pupils surfaced near by, with no idea how they had escaped. As the ANSON was still afloat they climbed on top. Ormondroyd kept diving down to get the side door open but as there were no sounds inside and the door was jammed he presumed that the remaining crewmembers were dead. The nearby Royal Observers Corp post immediately notified the Caernarfon Centre that the aircraft was in the water. Two of the Observers rushed to the pier to commandeer a small boat. The Observers, Bott and Jones, took off the two pupils (Eastman and Jeffs), rowed them to shore, and then returned for Ormondroyd. The Observers rowed out the aircraft twice more with medical officers and rescue crews from the RAF launch could not get any closer. Two further bodies were recovered, but could not be resusitated. The Observers also took it upon themselves to secure the Anson to prevent it from floating away. The plane was visible, lying upside down on the beach, when the tide went out (see picture pg 80). Three of the 6 crewmen survived. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg79-80, 91 The author notes that this Anson was one of 750 delivered in January and July 1943 by Avro at Yeadon. It was assigned to 3 AGS. The aircraft collided with a cable and crashed into the sea off Trevor Point, Caernarvon, on 9 September 1945. Source: Halley, J, 1991, Royal Air force Aircraft LA100 - LZ999, pg99
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Some crew survived crash
Object of flight	Gunnery practice
Record Origin	RCAHMW
Date of Compilation	19/01/2012

PRN	33638
NPRN	515229
Sitename	Aircraft Crash Site, Avro Anson MKI, Mynydd Perfedd
Serial number	LT184
NGR	SH626622
Period	Modern
Community	Llandygai
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rough Grassland; Rock (Scattered)
Circumstances of crash	Aircraft flew into the mountain in cloud
Notes	The author notes that this AVRO ANSON was assigned to 7 AOS. The aircraft crashed into the east face of Mynydd Perfedd at night in cloud on 5 October 1943. There were no survivors. Wreckage remains at 115/626622. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg91 The author notes that this Anson was one of 750 delivered in January and July 1943 by Avro at Yeadon. It was assigned to 7 AOS. The aircraft flew into high ground at night in a snow storm on Mynydd Perfedd near Bethesda on 4 October 1943. Source: Halley, J, 1991, Royal Air force Aircraft LA100 - LZ999, pg96 The aircraft drifted off the planned route and hit the mountain in cloud in an apparent sudden deterioration in weather. The first of two Ansons to hit this slope within a year, wreckage thought to originate from this Anson begins on the escarpment above a rock face at SH625622 and on the scree below at SH627622 are the remains of undercarriage, exhaust ducting, aluminium panels and engine casing. Source: Wotherspoon, Clark and Sheldon, 2009
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Navigational training - night time
Record Origin	RCAHMW
Date of Compilation	19/01/2012

PRN	33639
NPRN	515232
Sitename	Aircraft Crash Site, Avro Anson MKI, Foel Grach
Serial number	EF909
NGR	SH691660
Period	Modern
Community	Caerhun
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rough Grassland
Circumstances of crash	The aircraft flew into the mountain in cloud
Notes	The author notes that this AVRO ANSON was assigned to 5 AOS. On the night of 30 November 1943, the unit was based in the Isle of Man,and it is from here that Sgt Jim Knight took off for a night exercise with wireless operator Sgt Gilbert and pupil navigators leading Aircraftmen Reid and Thomson. The course set was for Maughol Head to Worcester and back. The pilot found that the aircraft was flying too far north and into the anti-aircraft defences of Liverpool. A change of course - 30 degrees to port - was immediately instigated aiming to fly out to sea, but the aircraft was actually flying into the Snowdonian hills. The aircaft crashed into the eastern ridge of Foel Grach at around 21:30 hours. The crew survived although Thomson was found to have a crushed foot. At first light, Knight and Glibert decide to go for help, as the cloud was still too low to allow them to be spotted by aircraft. They eventually met local people who took them to a cottage called Llwyn Radyr above Gerlan, near Bethesda, where they were tended and the police were informed. At first light on 2nd December, rescue teams set out. At 11am, they received a message saying that a third crewman had made it to Bethesda and that they were searching the wrong mountain. At 16:30, they finally located the last crewman (Thomson) stil inside the Anson wrapped in a parachute. He was carried down the mountain and some 2 hours later whisked away by ambulance to RAF Llandwrog's hospital. The engines from the Anson could be seen lying in a stream bed on Foel Grach for many years after the accident (location 115/69166) Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg67-70, 91 The author notes that this Anson I was one of 600 delivered to the RAF between July 1942 an January 1943 by Avro at Yeadon. It was assigned to 5 AOS and flew into a mountain in cloud 1 mile northwest of Lake Dulyn on 30 November 1943. Source: Halley, J, 1988, Royal Air Force Aircraft EA100 - EZ999, pg30 The aircraft entered cloud and struck the mountain, having descended due to icing. The remains of undercarriage assemblies and some pieces of airframe can be found scattered downhill from the head of a shallow gully. Source: Wotherspoon, Clark and Sheldon, 2009 Authors note (1985) that the two Cheetah engines can still be seen at the crash site as well as the undercarriage and a lot of alloy panelling. Source: Snowdonia Aviation Historical Group, 1985
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew survived crash
Object of flight	Navigational training - night time
Record Origin	RCAHMW
Date of Compilation	19/01/2012

PRN	33640
NPRN	515233
Sitename	Aircraft Crash Site, Avro Anson MKI, Bwlch y Llan
Serial number	EF953
NGR	SH620176
Period	Modern
Community	Barmouth
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Heath; Rough Grassland; Boulders; Rock (Scattered)
Circumstances of crash	Aircraft flew into hillside in cloud
Notes	The author notes that this AVRO ANSON was assigned to 9 (O) AFU. The aircraft flew into Bwlch y Llan near Barmouth at 1000ft in cloud on 26 December 1943. There were no survivors. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg91 The author notes that this Anson I was one of 600 delivered to the RAF between July 1942 and January 1943 by Avro at Yeadon. It was assigned to 9 OAFU and flew into a hill near Barmouth on 26 December 1943. Source: Halley, J, 1988, Royal Air Force Aircraft EA100 - EZ999, pg30
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	19/01/2012

PRN	33641
NPRN	515234
Sitename	Aircraft Crash Site, Avro Anson, Llandudno Junction
Serial number	N5130
NGR	SH798787
Period	Modern
Community	Conwy
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Not known
Circumstances of crash	Aircraft disintegrated in the air and the pilot lost control
Notes	The author notes that this AVRO ANSON was assigned to 8 (O) AFU. The aircraft disintegrated in mid-air near Marl Farm, Llandudno Junction on 15 February 1944. There were no survivors. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg91 A structural failure in mid air (part of the wing broke away) meant that the pilot lost control. There were no survivors. Source: Air Ministry Form 1180 The author notes that this Anson was one of 500 delivered to the RAF by Avro, Chadderton, to contract 766119/38 between October 1938 and September 1939. Its service history includes assignments to 35 ERFTS/12 FTS/3 AONS/2 SAN/4 AONS/2 SAN/8 OAFU. The aircraft's wing broke off in the air, presumbly after the ailerion had been lost. The aircraft subsequently crashed at Marl farm, Llandudno Junction, on 16 February 1944. Source: Halley, J J, 1993, Royal Air Force Aircraft L1000 to N9999, pg160 Source: Halley, J J, 1977, Royal Air Force Aircraft N1000 to N9999, pg29
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Navigational training - cross country
Record Origin	RCAHMW
Date of Compilation	19/01/2012

PRN	33642
NPRN	515235
Sitename	Aircraft Crash Site, Avro Anson MKI, Mynydd Perfedd
Serial number	LT116
NGR	SH625623
Period	Modern
Community	Llandygai
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rough Grassland
Circumstances of crash	Aircraft flew into mountain
Notes	The author notes that this AVRO ANSON was assigned to 9 (O) AFU. The aircraft flew into Myndd Perfedd at night on 8 June 1944 (200 ft away from ANSON LT184) (see NPRN 515229). There were no survivors. Wreckage can be found at 115/625623. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg91 The author notes that this Anson was one of 750 delivered in January and July 1943 by Avro at Yeadon. It was assigned to 9 OAFU. The aircraft flew into high ground in cloud at Mynydd Perfedd, 3 miles south of Bethesda on 8 June 1944. Source: Halley, J, 1991, Royal Air force Aircraft LA100 - LZ999, pg96 The aircraft flew into the mountain approximately 40 minutes after take off at Llandwrog. It impacted close to Anson LT184 and the wreckage lies in the same area although the trail of wreckage thought to belong to this Anson begins on the escarpment at SH626623 and can be traced down the scree to SH628623 where remains of the undercarriage assembly and engine casing are evident. Source: Wotherspoon, Clark & Sheldon, 2009
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Navigational training - night time
Record Origin	RCAHMW
Date of Compilation	23/01/2012

PRN	33643
NPRN	515236
Sitename	Aircraft Crash Site, Avro Anson MKI, Moel Hebog
Serial number	EG472
NGR	SH568470
Period	Modern
Community	Beddgelert
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rough Grassland; Rock
Circumstances of crash	Aircraft flew into steep slope at night and skidded up the mountain into a rock outcrop, where it caught fire
Notes	The author notes that this AVRO ANSON was assigned to 9 (O) AFU. In the early hours of 13 June 1944, the Anson was returning to Llandwrog after a night navigation exercise. On board were staff wireless operator Sgt Harry Howard, the pilot Flyuing Officer Dawson, and a pupil navigator, air bombadier and wireless operator. The plane was experiencing a great deal of turbulence and the pilot was asked if they could descend to ease the air sickness of the bombadier. The navigator believed that they were flying over Hawarden and so it was safe to do so. The pupil wireless operator was having trouble with his radio fixes, and so Howard left his seat to provide assistance. A few moments later, the plane hit the steep rising slope high on Moel Hebog. Sgt Howard was thrown through the plane's fabric roof. The Anson careered on to hit the cliffs crowning Moel Hebog and burst into flames. Howard was knocked breathless and dazed, but began to make his way down. Meanwhile, a farmer raised the alarm at 1:45. and by 3:00 the mountain rescue teams had arrived at Beddgelert station. The rescuers eventually located Howard crawling down towards the valley. Wreckage can be found at 115/568470. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg58-9, 91 The author notes that this Anson I was one of 600 delivered to the RAF between July 1942 an January 1943 by Avro at Yeadon. It was assigned to 9OAFU and flew inot Moel Hebog near Beddgelert on 13 June 1944. Source: Halley, J, 1988, Royal Air Force Aircraft EA100 - EZ999, pg33 The accident was witnessed by villagers in Beddgelert. Rescue Teams found Sgt Howard crawling down the mountain. He had been thrown from the aircraft on impact before it skidded up the slope into a rock outcrop where it caught fire. Quite a few pieces of airframe remain, including the engine nascelles, and undercarriage assemblies. These lie scattered on the slope below the rock outcrop where the aircraft burned. Source: Wotherspoon, Clark and Sheldon, 2009 The aircraft crashed into high ground due to a navigational error and was flying below safety height.
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Some crew survived crash
Object of flight	Navigational training - night time
Record Origin	RCAHMW
Date of Compilation	23/01/2012

PRN	33644
NPRN	515237
Sitename	Aircraft Crash Site, Avro Anson MKI, Foel Fras
Serial number	MG804
NGR	SH6961767586
Period	Modern
Community	Caerhun
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rough Grassland
Circumstances of crash	Aircraft flew into mountainside in cloud, at night
Notes	The author notes that this AVRO ANSON was assigned to 8 (O) AFU. The aricraft crashed into the east slope of Foel Fras near the summit at night on 12 July 1944. four of the five crewmen survived. The skeleton of the aircraft remained near the summit of Foel Fras (photo pg37). Wreckage can be found at 115/699675. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg37, 91 The aircraft crashed in Foel Fras in cloud while on a night navigation exercise from RAF Mona. Although the wireless operator was killed on impact, the pupil suffered only minor injuries and was able to transmit a message to base on the still-functioning equipment. RAF Llandwrog Mountain Rescue was called out and found the aircraft and its 4 survivors within a few hours. The crash site comprises an area of stones strewn with small fragments of melted aluminium, where wreckage was burned during the recovery operation, and lower down the slope are some larger fragments of wreckage including pieces of the undercarriage assemblies. Source: Wotherspoon, Clark and Sheldon, 2009
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Some crew survived crash
Object of flight	Navigational training - night time
Record Origin	RCAHMW
Date of Compilation	23/01/2012

PRN	33645
NPRN	515238
Sitename	Aircraft Crash Site, Avro Anson MKI, Bala
Serial number	LT238
NGR	SH9236
Period	Modern
Community	Bala
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - grass?
Circumstances of crash	Aircraft crashed following structural failure in mid air
Notes	The author notes that this AVRO ANSON was assigned to 7 (O) AFU. The pilot lost control at 8000ft due to structural failure and crashed near Bala on 4 April 1945. There were no survivors. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg91 The author notes that this Anson was one of 750 delivered in January and July 1943 by Avro at Yeadon. It was assigned to 7 AOS/7 OAFU. Control was lost of the aircraft in cloud and the wing broke off. It crashed at Tyn-y-Cont, near Bala, on 4 April 1945. Source: Halley, J, 1991, Royal Air force Aircraft LA100 - LZ999, pg96 Placename listed above may be mis-recorded - not shown on maps and translation of the Welsh suggests that the above may not be accurate.
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	23/01/2012

PRN	33646
NPRN	515239
Sitename	Aircraft Crash Site, Avro Anson, Snowdon
Serial number	VM407
NGR	SH609557
Period	Modern
Community	Llanberis
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rock
Circumstances of crash	Aircraft flew into mountain and bounced upslope onto Snowdon Mountain Railway track. Wreckage cleared within hours.
Notes	The author notes that this AVRO ANSON was assigned to 23 MU. The pilot flew into Snowdon in cloud on 11 August 1952, after failing to obtain a meterological forecast or to take radio bearings. There were no survivors. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg91 The author notes that this Anson was one of 84 C.19s delivered to the RAF between February and August 1947 to contract ACFT/5680. It was assigned to 23 MU and flew into Snowdon in cloud on 11 August 1952. Source: Halley, J J,1985, Royal Air Force Aircraft SA100 to VZ999, pg70 The aircraft was flying from RAF Aldergrove (County Antrim) to RAF Llandow to collect radio spares. It was flying in cloud below safety height when it struck Snowdon. On impact the aircraft bounced up the steep slope onto the track of the Mountain Railway. Two trains were kept at the summit station while it burned out. The wreckage was cleared later that day. There is no trace of wreckage where the aircraft burned out but a few fragments have been found on the slope below. Source: Wotherspoon, Clark and Sheldon, 2009
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Transporting equipment
Record Origin	RCAHMW
Date of Compilation	23/01/2012

PRN	33647
NPRN	515240
Sitename	Aircraft Crash Site, Avro Anson, Tal y Fan
Serial number	VV955
NGR	SH7236672056
Period	Modern
Community	Caerhun
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Heath; Rough Grassland; Boulders; Rock (Scattered)
Circumstances of crash	Aircraft flew into cloud-covered hill
Notes	The author notes that this AVRO ANSON was assigned to CCCS. On 20 May 1959, on a flight from Bovington to Ballykelly, the plane was diverted to Valley. It flew into Tal y Fan in cloud. There were no survivors. There is wreckage at 115/722722. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg91 The author notes that the aircraft belonged to Coastal Command Communications Squadron. The pilot was Flt Lt E A Hart and the navigator was Flying Officer F N Handa. The passenger was Group Capt J E Preston who was to attend an anti-submarine course in Londonderry. Above the Conwy Valley, the crew received orders to divert to RAF Valley but never arrived. The plane was spotted flying quite low in cloud over Roe Wen. The wreckage was spotted the next morning by a search Anson. All onboard had been killed instantly. If the plane had been 30ft higher it would have cleared the summit. Three photographs of the wreckage are included with the captions 'on the western end of 2,000ft Tal-y-Fan'. Source: Doylerush, E, 1999, No Landing Place Volume 2: More Tales of Aircraft Crashes in Snowdonia, pg93-5 When the command to divert to Valley was received the aircraft turned onto a south-westerly track and descended. It then flew into the cloud-covered mountain. A few tiny fragments of wreckage lie at the site and slightly to the west lies an undercarriage assembly. Further small fragments can be found to the east at SH725721 Source: Wotherspoon, Clark and Sheldon, 2009
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Training (General) - transporting staff
Record Origin	RCAHMW
Date of Compilation	23/01/2012

PRN	33648
NPRN	515241
Sitename	Aircraft Crash Site, Blackburn Botha, Moel Wnion
Serial number	W5142
NGR	SH648697
Period	Modern
Community	Llanllechid
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Heath; Rough Grassland
Circumstances of crash	Aircraft stalled onto side of mountain when pilot attempted to avoid it in low cloud.
Notes	The author notes that this BLACKBURN BOTHA was assigned to 3 SGR. On 20 July 1942, the plane stalled onto the summit of Moel Wnion whislt flying in cloud. All five crewmen survived. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg91 When flying in a patch of low cloud the aircraft stalled onto the side of the mountain. The pilot was aware that the mountain was ahead and had turned to avoid it despite a navigational error. Pilot and pupil navigator not to blame. Source: Air Ministry Form 1180 The author notes that this Botha was one of 138 delivered to the RAF between March 1941 and June 1942. It was assigned to 3 SGR. The aircraft crashed into a moutain in cloud at Llanllychid, Bethesda, on 20 July 1942. Source: Halley, J J, 1983, Royal Air Force Aircraft V1000-V9999, W1000 - W9999, pg70
International rarity of aircraft	No known surviving examples globally
Crew survival	Entire crew survived crash
Object of flight	Reconnaissance Exercise
Record Origin	RCAHMW
Date of Compilation	23/01/2012

PRN	33649
NPRN	515242
Sitename	Aircraft Crash Site, Blackburn Botha, Tal y Fan
Serial number	L6318
NGR	SH742734
Period	Modern
Community	Henryd
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Heath; Rough Grassland
Circumstances of crash	Aircraft flew into rocky slope on low cloud
Notes	The author notes that this BLACKBURN BOTHA was assigned to 3 SGR. On 23 August 1942, the aircraft flew into the east end of Tal y Fan whilst flying in cloud. There were no survivors Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg91 The author notes that the aircraft was assigned to No 3 School of General Reconnaisance. It had taken off from Squires Gate airfield, near Blackpool, and was being flown by Sergeant Herdord Linton Pendal, born in 1901 near Kimblery South Africa. He had joined the RAF in 1930 on a short service commission after taking private flying tuition. He was badly inuured in a crash on 24 June 1931 and discharged in September 1931. His job in 1942 was to help trainee pilots and navigators as a staff pilot at the SGR, from where the pilots would be sent to Coastal Command Sqaudrons. The BOTHA flew into cloud just before making landfall. It hit a rocky bank on the north east slope of 2000ft Tal Y Fan near the enclosure of Ffriddlys. The four other crewmen who died were Sgt R W Patrick, Sgt J B Wood of the RNZAF; AC1 A Smyth; and ACI Ronald Ibbotson. The first three are buried at Llanbelig cemetry and Ibbotson at Colne. The external pilot head which detected airspeed for the pilot's cockpit display was found to be covered and this may have afffected the pilot's judgement of airspeed on entering cloud. Source: Doylerush, E, 1999, No Landing Place Volume 2: More Takes of Aircraft Crashes in Snowdonia, pg15. The author notes that this Botha was one of 242 delivered to the RAF by Blackburn, Brough, to contract 563935/36 between March 1939 and March 1941. Its service life included assignments to 3 SGR. The aircraft flew into mountain in cloud whilst on a navigation exercise, at Tal-y-fan, Caernarfon on 23 August 1942. Source: Halley, J J, 1993, Royal Air Force Aircraft L1000 to N9999, pg70 Only a few small pieces of wreckage can be found amongst gorse and heather. Source: Wotherspoon, Clark and Sheldon, 2009
International rarity of aircraft	No known surviving examples globally
Crew survival	Entire crew died in crash
Object of flight	Navigational training - daytime
Record Origin	RCAHMW
Date of Compilation	23/01/2012

PRN	33650
NPRN	515243
Sitename	Aircraft Crash Site, Blackburn Botha MKI, Llwytmor
Serial number	L6202
NGR	SH684692
Period	Modern
Community	Abergwyngregyn
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Heath; Rough Grassland; Boulders (Scattered)
Circumstances of crash	Aircraft flew into mountainside
Notes	The author notes that this BLACKBURN BOTHA was assigned to 11 RS. On 28 August 1943, the aircraft flew into the west face of Llwydmor whilst flying in cloud. There were no survivors Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg91 The author notes that this Botha was one of 242 delivered to the RAF between March 1939 and March 1941. Its service life included assignments to 1 OUT/3 AONS/11 RS. On 28 August 1943, it crashed into a mountain in cloud near Bethesda, Caernarvon. Source: Halley, J J, 1979, Royal Air Force Aircraft L1000 to L9999, pg41 Delivered by Blackburn, Brough, to contract 563935/36, crashed 7 miles south of Bethesda, Caernarfon, 28 August 1943. Source: Halley, J J, 1993, Royal Air Force Aircraft L1000 to N9999, pg69 Aircraft in flight struck mountain top at 3000ft height while flying in cloud. Source: Air Ministry Form 1180 The aircraft hit the mountainside and burned out. It had been on a training flight. Following a search the wreck was found on 31/08/1943. Many pieces retaining paintwork are scattered down the mountainside from the point of impact and include both Bristol Perseus engines, one wedged in rocks at SH683692 and one in a stream at SH678692. Source: Wotherspoon, Clark and Sheldon, 2009
International rarity of aircraft	No known surviving examples globally
Crew survival	Entire crew died in crash
Object of flight	Training (General)
Record Origin	RCAHMW
Date of Compilation	25/01/2012

PRN	33651
NPRN	515244
Sitename	Aircraft Crash Site, Blackburn Skua, Elidir Fawr
Serial number	L3054
NGR	SH6097661526
Period	Modern
Community	Llanddeiniolen
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Scree
Circumstances of crash	Aircraft flew into east face of mountain in cloud
Notes	The author notes that this BLACKBURN SKUA was assigned to 801 Sqn. On 19 February 1941, the aircraft flew into the east face of Elidir Fawr whilst flying in cloud. There were no survivors. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg91 Remains of Skua seem to be in dispute as fragments may also be thought to be Blenheim V6099. NGR given for burn site. Source: http://peakwreckhunters.blogspot.com/2008/10/blackburn-b-24-skua-mkii-l3054.html last viewed 26/04/2011 Fleet Air Arm records note serial number as L5304: Entry 4. A/Petty Officer Airman A Ashby. Wind/Squadron/flight: 801. Ship/Station: HMS SPARROWHAWK. A/C Type: Skua. AC Number: L5304. Date of Death: 19/2/1941. Place of Death: Snowdon. Notes: died on war service 7.5 nm east of Llanberis. A/C flew into Snowdon in fog enroute from Donibristle to St Merryn. Source: Royal Fleet Air Arm Museum Database, RNAS Yeovilton, RCAHMW Digital Collections (faaroh.wales.htm) Entry 38. A Sub Lt (A) N Dm M Parsons. Wing/Squadron/flight: 801. Ship/Station: HMS FURIOUS. A/C Type: Skua. AC Number: L5304. Date of Death: 19/2/1941. Place of Death: Snowdon. Notes: Died on war service 7.5miles east of Llanberis enroute to Donibristle to St Merryn. Navsec and CLO confirmed death 19 Feb 1941. Source: Royal Fleet Air Arm Museum Database, RNAS Yeovilton, RCAHMW Digital Collections (faaroh.wales.htm)
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	25/01/2012

PRN	33652
NPRN	515245
Sitename	Aircraft Crash Site, Boeing B17 Flying Fortress, Arenig Fawr
Serial number	42-3124
NGR	SH8243037069
Period	Modern
Community	Llanycil
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rough Grassland; Boulders; Rock (Scattered)
Circumstances of crash	The aircraft struck the mountain, at 50ft below the summit, while flying on a level altitude and in a north-westerly direction.The aircraft came to rest on the summit where it burned. Some pieces of wreckage were found on the other side of the peak.
Notes	The author notes that this BOEING B17 FORTRESS was assigned to 303 BG. On 4 August 1943, the aircraft struck just below the summit of Arenig Fawr. There were no survivors. Wreckage can be found as 125/826372. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg91 The author notes that FORTRESS took off from Molesworth on a cross-country training flight with 8 crewmen onboard (not the usual 10), including 1st Lt James N Pratt, pilot; 2nd Lt Allan M Boner; 2nd Lt William A Bowling; (T) Sgt Frederic J Royar; S Sgt Walter J Johnson; Sgt Walter B Robinson; Sgt Phillip Simonte; and PFc Alfred B Van Dyke. At 0045am on 4 August, the plane flew into the western side of summit of Arenig Fawr (2800ft). The Home Guard took two hours to climb to the wreck, but there was nothing they could do with exploding .50 in calibre ammunition strewn around. Most of the wreckage was removed by 34 MU from Bethesda and the 2nd Strategic Air Depot from Abbots Ripton. A memorial plaque was placed on the summit and replaced in 1983 after being damaged. A memorial plaque was also placed on the face of the Old Town Hall at Bala in 1996. A pilgrimage to the summit is undertaken by youth groups and servicemen every year. Source: Doylerush, E, 1999, No Landing Place Volume 2: More Tales of Aircraft Crashes in Snowdonia, pg24-6 The investigation into the accident noted that this B-17 was assigned to the 8th Bomber Command of 8th Air Force, 303rd Bomb Group, 427th Bombardment Squadron. The incident occurred on 4 August 1943 at 01:00. The crew comprised pilot 1st Lt James N Pratt (killed), pilot 2nd Lt William A Bowling (killed), navigator 2nd Lt Allan M Boner (killed), engineer staff Sgt Walter J Johnson (killed), radio operator T Sgt Frederic J Royar (killed), gunner sgt Walter B Robinson (killed, gunner Sgt Phillip (NMI) Simonte (killed) , and PFC Alfred B Van Dyke (killed). The pilot had some 401 hours of flying experience, 241 on this model. The pilot's mission was a routine flight across country and the cause of the accident was given as crashed into high ground. The plane had taken off at 23:54 hours on 3 August 1943. The course had been checked by the navigator and pilot with Flying Contol for any obstacles. No communications was sent or received by the ground station. At 02:50 Flying Control at AAF Station 107 reported the aircraft overdue. At 03:00 hours, information was received that an unidentifed aricraft had crashed on the peak of Arenig Fawr (52 54 08N, 03 44 03W). At 07:30, a report was received confirming that the aircraft was a B17, that it was burnt out and that four bodies had been recovered. Eight bodies were later recovered and identified. The aircraft had struck about 50ft below the summit in a slightly nose-up position and had then continued to the peak where it burst into flames. The crew had apparently made no attempt to escape - parachutes and safety equipment were found with the wreckage. Three damaged propellers were observed where the aircraft impacted and the tail section remained intact following the fire. Source: US Air Accident Record 44-08-04-503, RCAHMW Digital Collections Following the accident virtually all the wreckage was salvaged by No 34 MU and only pieces of melted aluminium lie in a patch of stony ground where the aircraft burned out. From here small fragments are scattered down the slope for some distance. A slate memorial plaque is built into the wall of the stone shelter at the summit. Source: Wotherspoon, Clark and Sheldon, 2009. Linear spread of debris from SH8243037069 to SH8264936942. Source: http://peakwreckhunters.blogspot.com/2008/10/flying-fortress-arenig-fawr_07.html
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Navigational training - night time cross country
Record Origin	RCAHMW
Date of Compilation	25/01/2012

PRN	33653
NPRN	515246
Sitename	Incorrect Record (NOT Aircraft Crash Site) - Boeing B-17 Fortress 44-6005
Serial number	44-6005
NGR	
Period	Modern
Community	
Terrestrial/Intertidal	Terrestrial
Crash site landscape	
Circumstances of crash	Aircraft did NOT crash at Craig Cwm Llwyd
Notes	The author notes that this BOEING B17 FORTRESS was assigned to 351 BG. On 8 June 1945, the aircraft flew into Craig Cwn Llwyd after encountering cloud and asking for bearings from RAF Valley. There were no survivors. Wreckage can be found as 124/645122. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg91 Although this aircraft crash exists in the literature, it is not correct. B17 44-6005 DID NOT CRASH AT CRAIG CWM LLWYD. See PRN 33713 for Craig Cwm Llwyd crash.
International rarity of aircraft	
Crew survival	
Object of flight	
Record Origin	RCAHMW
Date of Compilation	25/01/2012

PRN	33654
NPRN	515247
Sitename	Aircraft Crash Site, Bristol Beaufighter MKIF, Moel Siabod
Serial number	X7640
NGR	SH7155
Period	Modern
Community	Capel Curig
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Heath; Rock
Circumstances of crash	Aircraft hit east face of Moel Siabod in cloud
Notes	The author notes that this BRISTOL BEAUFIGHTER was assigned to 2FPP ATA. On 8 September 1941, the aircraft was on a ferry flight from Weston to Sealand when it hit the east face of Moel Siabod in cloud. There were no survivors. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg91 The author notes that this Beaufighter IF was one of 239 delivered between February 1941 and February 1942 by Bristols of Weston-super-Mare. The aircraft was assigned to 2 FPP and flew into high ground 3 miles south-west of Capel Curig, Caernarfon, on 8 September 1941 Source: Halley, J, 1984, Royal Air force Aircraft X1000 - X9999, Z1000 - Z9999, pg24
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Ferry flight
Record Origin	RCAHMW
Date of Compilation	25/01/2012

PRN	33655
NPRN	515248
Sitename	Aircraft Crash Site, Bristol Beaufighter, Bangor
Serial number	X7845
NGR	SH571698
Period	Modern
Community	Pentir
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - grass?
Circumstances of crash	Mid air collision. Fire on impact.
Notes	The author notes that this BRISTOL BEAUFIGHTER was assigned to 256 Sqn. On 11 October 1942, the aircraft collided with a Wellington near Bangor. There were no survivors. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg91 The author notes that the crew of the Beaufighter were Squadron leader Roger De Winton Kelsall Winlaw, based at RAF Woodvale near Stourport. The navigator was Pilot Officer C T Ashton. The Beaufighter X7845 was to take part in a 'bullseye' exercise invloving mock attacks on Wellington bombers. Unforutnately the two planes (Wellington III BK234, see NPRN 515299) collided and fell together at Perfeddgoed Farm, near Bangor. The crews of both planes were all killed. Source: Doylerush, E, 1999, No Landing Place Volume 2: More Tales of Aircraft Crashes in Snowdonia, pg96 The author notes that this Beaufighter IF was one of 239 delivered between February 1941 and February 1942 by Bristols of Weston-super-Mare. The aircraft was assigned to 256 Sqaudron and was in collidon with Wellington BK234 near Bangor on 31 October 1942. Source: Halley, J, 1984, Royal Air force Aircraft X1000 - X9999, Z1000 - Z9999, pg24 Mid air collision at night between Beaufighter X7845 and Wellington BK234 during a bulls eye exercise. Beaufighter closed behind Wellington and did not break off engagement as soon as he was in position to open fire. The pilot of the Wellington acknowledged the attack by turning on his lights and sought to shake off his pursuer by diving steeply. The Beaufighter overtook and collided. There was a fire on impact. Source: Air Ministry Form 1180
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Training - mock bullseye attacks
Record Origin	RCAHMW
Date of Compilation	25/01/2012

PRN	33656
NPRN	515249
Sitename	Aircraft Crash Site, Bristol Beaufighter, Mynydd Carreg
Serial number	JL544
NGR	SH163291
Period	Modern
Community	Aberdaron
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rock (Scattered)
Circumstances of crash	Aircraft hit mountain at night
Notes	The author notes that this BRISTOL BEAUFIGHTER was assigned to 9 OTU. On 3 February 1943, the aircraft hit Mynydd Carreg near Aberdaron whilst on a night flight. There were no survivors. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg91 The author notes that this Beaufighter was one of 269 VIs delivered to the RAF between October 1942 and February 1943 by Bristols of Weston Super Mare. On 3 February 1943, its was on a navigation exercise when it flew into the ground 2 miles north-north-west of Aberdaron, Caernarvon. Source: Halley, J J,1990, Royal Air Force Aircraft JA100 to JZ999, pg45
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Navigational training - night time
Record Origin	RCAHMW
Date of Compilation	25/01/2012

PRN	33657
NPRN	515250
Sitename	Aircraft Crash Site, Bristol Beaufighter, Aran Fawddwy
Serial number	RD210
NGR	SH8647022609
Period	Modern
Community	Llanuwchllyn
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Boulders; Rock
Circumstances of crash	Aircraft flew into hill in cloud
Notes	The author notes that this BRISTOL BEAUFIGHTER was assigned to 1 FU. On 10 February 1945, the aircraft flew into the summit of Aran Fawddwy whilst in cloud. There were no survivors. Wreckage can be found at 125/863225. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg91 The author notes that the pilot was flying Officer A L Roe, RAAF, and Warrant Officer Newbry. The aircraft was on a fuel consumption test. It was assigned to No 1 Ferry Unit, RAF Pershore. A photograph of a Bristol Hercules engine within a pool is shown. Source: Doylerush, E, 1999, No Landing Place Volume 2: More Tales of Aircraft Crashes in Snowdonia, pg96 The aircraft was apparently endeavouring to avoid storm clouds and struck the hillside in cloud, immediately above the source of the river. Source: Air Ministry Form 1180 Site visit undertaken by N. Steele, GAT, 20/11/2011. Small-medium-sized fragments of Beaufighter identified at multiple locations including SH8657622600; SH8657822610; SH8653922621; SH8653022610; SH8652122611; SH8654822639; SH8655622640; SH8658522653; SH8657722657. Entire wreckage trail not followed due to deteriorating weather conditions. Colleague attending site visit noted that landowner had been supportive of removal of engine from lake some years ago. Source: PRN 33657 GAT Site Visit Record 20-10-11
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Consumption test
Record Origin	RCAHMW
Date of Compilation	25/01/2012

PRN	33658
NPRN	515251
Sitename	Aircraft Crash Site, Bristol Blenheim MKIV, Craig yr Ysfa
Serial number	L9039
NGR	SH6962463897
Period	Modern
Community	Caerhun
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Scree
Circumstances of crash	Aircraft flew into mountainside in cloud
Notes	The author notes that this BRISTOL BLENHEIM was assigned to 13 OTU. On 9 April 1940, the aircraft hit the cliffs of Craig yr Ysfa while on a night flight. There were no survivors. Wreckage can be found at 115/694638. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg91 The author notes that this Blenheim was one of 130 delivered to the RAF by Rootes Securities to contract 551920/37 between September and November 1939. Its service life included assignments to 108/13 OTU. The aircraft flew into a mountain in cloud, Carnedd Llewelyn, 6 miles south-southeast of Bethesda, Caernarvon on 8 April 1940. Source: Halley, J J, 1993, Royal Air Force Aircraft L1000 to N9999, pg103 Bristol Mercury Engine and lots of sheet aluminium around crash site. Third party comment noted a collection of bits including propeller hub at SH6924464090, another hub at SH6924764078,with other pieces scattered around and up a nearby gully. Remains of undercarriage are present at SH6929364101. Source: http://peakwreckhunters.blogspot.com/2008/06/bristol-blenhiem-mkiv-l9039.html last viewed 26/04/2011 Aircraft left formation and was flying off course - it made a gentle turn and the pilot, dazzled by the sun, flew into the mountainside in cloud. Source: Air Ministry Form AM 1180
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Flying formation practice (cross-country)
Record Origin	RCAHMW
Date of Compilation	25/01/2012

PRN	33659
NPRN	515252
Sitename	Aircraft Crash Site, Bristol Blenheim MKVI, Elidir Fawr
Serial number	V6099
NGR	SH6087462112
Period	Modern
Community	Llanddeiniolen
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rough Grassland; Rock
Circumstances of crash	Aircraft flew into mountainside
Notes	The author notes that this BRISTOL BLENHEIM was assigned to 13 OTU. On 30 March 1943, the aircraft flew into Elidir Fach at night. The wreck was not found for 12 days. There were no survivors. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg91 The author notes that this Blenheim VI was one of 800 delivered to the RAF between October 1940 and May 1941. Its service life included assignments to 9 AOS/1 AOS/13 OUT. The aircraft went missing on 31 March 1943 and was later found in Snowdonia. Source: Halley, J J, 1983, Royal Air Force Aircraft V1000-V9999, W1000 - W9999, pg23 Aircraft at SH6087462112 considered to be Blenheim wreck described by High Ground Wrecks based on proximity to coordinates. No identifying marks. Some discussion on this web page and others as to disputed identity of a number of fragments Source: http://peakwreckhunters.blogspot.com/2008/10/bristol-blenheim-mkiv-v6099.html Authors give NGR as SH610616. Aircraft flew into mountainside in poor visibility during day navigation exercise. Wreckage was reported on Elidir Fawr and on 13/04/1943 RAF Llandwrog Mountain Rescue Unit climbed to the site and identified it as the missing Blenheim. Where the aircraft impacted on the scree there are bits of melted aluminium and parts from the wing main spar. Further fragments of wreckage are scattered down the slope including undercarriage assembly parts at SH610618. Source: Wotherspoon, Clark and Sheldon, 2009
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Navigational training (General)
Record Origin	RCAHMW
Date of Compilation	26/01/2012

PRN	33660
NPRN	515230
Sitename	Aircraft Crash Site, Avro Anson MKI, Pen yr Ole Wen
Serial number	N9855
NGR	SH655619
Period	Modern
Community	Capel Curig
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rough Grassland; Boulders
Circumstances of crash	Aircraft flew into the mountain at night and in cloud
Notes	The author notes that this AVRO ANSON was assigned to3 (O) AFU. The aircraft hit the summit of Pen Yr Ole Wen at night on 8 November 1943. There were no survivors. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg91 The author notes that this Anson was one of 350 delivered to the RAF by Avro, Chadderton, to contract 766119/38 between September 1939 and March 1940. It was assigned to 14 FTS/3 FTS/12 FTS/4 AOS/ 3 AOS/3 OAFU. The aircraft hit a mountain in cloud on a night navigation exercise on Pen yr Ole Wen, near Bethesda on 8 November 1943, DBR. Source: Halley, J J, 1993, Royal Air Force Aircraft L1000 to N9999, pg212 Source: Halley, J J, 1977, Royal Air Force Aircraft N1000 to N9999, pg58
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Navigational training - night time
Record Origin	RCAHMW
Date of Compilation	19/01/2012

PRN	33661
NPRN	515231
Sitename	Aircraft Crash Site, Avro Anson MKI, Craig Cwm Silyn
Serial number	MG111
NGR	SH520507
Period	Modern
Community	Llanllyfni
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Heath; Rock
Circumstances of crash	Aircraft flew into cliffs in cloud
Notes	The author notes that this AVRO ANSON was assigned to 9 (O) AFU. The aircraft into the cliffs of Cwm Silyn which were obscured with clouds, following air to air firing practice on 20 November 1943. There were no survivors. Wreckage has been located at 115/520507 Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg91 The author notes that this Anson was one of 800 delivered to the RAF Avro Yeadon between July 1943 and January 1944. It was assigned to 4 AGS. The aircraft flew into high ground in cloud at Craig Cwm Silyn, Caernarfonshire on 20 November 1943. Source: Halley, J J, 1991, Royal Air Force Aircraft MA100 to MZ999, pg30
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Air to air firing practice
Record Origin	RCAHMW
Date of Compilation	19/01/2012

PRN	33662
NPRN	515253
Sitename	Aircraft Crash Site, Consolidated B24 Liberator, Moelfre
Serial number	42-99991
NGR	SH7156474345
Period	Modern
Community	Llanfairfechan
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Scrub; Rough Grassland; Boulders (Scattered)
Circumstances of crash	The aircraft hit side of hill where number 4 prop and fuselage hit. It dragged for 150 yds pulling off bomb doors and strewing baggage. The aircraft, airborne again for 600 yds, descended slightly and crashed again, skidding for 100 yds before burning.
Notes	The author notes that this CONSOLIDATED B24 LIBERATOR flew into mountains near Moelfre, Llanfairfechan, and burnt out. Six of the 11 crewmen survived. Wreckage can be found at 115/716744 Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg92 The author provides details of the crewmen killed - Sgt Bill Lorenz, 2nd Lt Art Davies, Staff Sgt Sammy Offutt, Sgt Bill Nichols and passenger Sgt NM Cennemo - and notes that aircraft spares and remains of luggage strewn along the debris trail leading to the main crash site. He notes that the National Park have placed a memorial plaque on the site. Source: Doylerush, E, 1999, No Landing Place Volume 2: More tales of Aircraft Crashes in Snowdownia, pg9-12 The report compiled of the incident noted that the aircraft was assigned to 8th Air Force, 8th Bomb Group, 7 EKATC(?). The place of loss is give as 57 degrees 15 minutes north, 3 degrees, 57 minutes west (off the Scillies?). The incident occurred at approximately 14:05 on 7 January 1944. The crew comprised 2nd Lt Adrian J Schultz, pilot (minor injuries); 2nd Lt Arthur Davies, co-pilot (killed); 2nd Lt Julian S Erts, navigator (minor); 2nd Lt Norman P Bayer, Bomber (minor injuries); Staff Sgt Samuel K Offutt, engineer (killed); Staff Sgt John E Tynesak, radio operator (minor injuries); Sgt Harold Alexander, air gunner (minor injuries); Sgt Joseph Niegles, c(?) gunner, (killed); Sgt William G Nichols, c(?) gunner (minor); Sgt William Lorens, c(?) gunner (killed); Flight Sgt Nicholas Cennene, engineer (killed). The pilot had some 444 hours of flying time. The weather had a ceiling of 300ft visibility and 4-6 miles over water, but inland the hills were covered in cloud. The cause of the accident was determined as adverse weather conditions and lack of judgment of instrument conditions - 'the pilot had very little instrument experience'. The aircraft had taken off from RAF Valley at 13:45 and had been briefed to fly in formation with the lead B-17G piloted by flight Officer L L Dorrie, an internal ferry pilot with 8th Air Force Service Command. Schultz was briefed to stay on 6440 hz in case of running into adverse weather, to land at the first aerodrome or turn back to the Valley range and fly the range back to Valley. The route to be followed was Rhyl-Chester-Kettering-Watton. After take-off, Dorrie set a course of 80 degrees magnetic, checking Schultz was in formation. After 10 miles past Anglesey, low cloud was encountered at 700ft. Schultz radioed that he was losing sight of the lead ship and that he would climb. Dorrie radioed him to stay on course. After Dorrie determined that Schultz was no longer n formation, he circled Conway bay for 15 minutes calling on 6440 hz and then returned to RAF Valley. According to observers the B-24 was seen flying low over a small town in clouds going south towards a mountain range, none less that 3000ft. The aircraft hit the side of the hill at 1300ft (90 degrees off course). The number 4 prop and fuselage hit simultaneously and dragging for 150 yard pulling off the bomb bay doors and strewing baggage for about 550-600 yards. Going down a slight incline, the plane crashed again almost on a level plane, skidded for around 100 yards and then caught fire. Three crewmen were burnt in the wreckage, two died later and six were taken to hospital. The pilot should have maintained his course or turned out to sea. Source: US Army Air Force Report of Aircraft Accident 44_01_07_500 RCAHMW Digital Collections Burn site with 2 memorials. Majority of crew died. Source: http://peakwreckhunters.blogspot.com/2008/11/consolidated-b-24-j-liberator-42-99991_8377.html; http://peakwreckhunters.blogspot.com/2008/11/consolidated-b-24-j-liberator-42-99991.html The aircraft, off-course in cloud. It struck the side of Clip-yr-Orsedd and flew briefly on before hitting the ground on the plateau beyond and sliding to a halt at the base of Moelfre where is caught fire. A patch of bare earth remains on the burn site and only a few tiny fragments of the aircraft remain. There is a memorial plaque mounted on a large slate slab and a metal cross mounted on a large boulder. Source: Wotherspoon, Clark and Sheldon, 2009
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Some crew survived crash
Object of flight	Ferry flight
Record Origin	RCAHMW
Date of Compilation	26/01/2012

PRN	33663
NPRN	515254
Sitename	Aircraft Crash Site, De Havilland Mosquito MKVI, Drum
Serial number	HX862
NGR	SH716692
Period	Modern
Community	Caerhun
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Heath; Rough Grassland
Circumstances of crash	Aircraft flew into mountainside at night
Notes	The author notes that this DE HAVILLAND MOSQUITO was assigned to 60 OTU. The aircraft flew into the east side of Drum at night on 25 September 1944. There were no survivors. Wreckage can be located at 115/716692 Souurce: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg92 The author notes that this Mosquito VI was one of 130 delivered to the RAF by De Havilland between July and October 1943. Its service life included assignments to 29/307/60 OUT. It flew into high ground at night at Talybont, Caernarfon, on 25 September 1944. Source: Halley, J, 1989 Royal Air Force Aircraft HA100-HZ999, pg115 Aircraft crashed due to navigational error. It turned too soon, flew into the hillside at 2250ft and exploded. Wreckage still in situ Oct 10. Investigated by 12 Group HQ. Form describes location as Foel Fras, Talybont. (this is 2km SW of Foel Lwyd, Drum, where secondary sources have placed the wreckage) Source: Air Ministry Form 1180 The aircraft flew into the mountainside at night and following a 5 hour search, the RAF Llandwrog Mountain Rescue Unit found the burned-out remains of the Mosquito. Sections of armour plating, remains of undercarriage assemblies and a propeller hub lie on the slope below the point of impact, which is marked by a small scar containing burnt plywood and brass woodscrews. Source: Wotherspoon, Clark and Sheldon, 2009
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Practice night intruder sortie
Record Origin	RCAHMW
Date of Compilation	26/01/2012

PRN	33664
NPRN	515255
Sitename	Aircraft Crash Site, De Havilland Mosquito MKII, Mynydd Mawr
Serial number	W4088
NGR	SH5433555127
Period	Modern
Community	Betws Garmon
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rough Grassland; Rock (Scattered)
Circumstances of crash	The aircraft flew into mountainside and disintegrated across slope
Notes	The author notes that this DE HAVILLAND MOSQUITO was assigned to 51 OTU The aircraft flew into the dip or saddle near the summit of Mynydd Mawr at night on 11 November 1944. There were no survivors. Wreckage can be located at 115/543552 Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg92 Aircraft impact site identified although little remains due to recovery operations onsite. Undercarriage remains can be found downslope. 3rd party comment provides NGRs for other parts of wreckage: SH5453555182, SH5448755187, SH5441655146. Recovered remains allegedly used as garden ornaments or melted down. Source: http://peakwreckhunters.blogspot.com/2008/08/mosquito-w4088-impact-point.html last viewed 26/01/12 The pilot turned onto the next course too soon and subsequently flew into the mountainside, disintegrating across the slope. Small fragments of wreckage remain in a scar between Craig Cwmbychan and the summit of Mynydd Mawr where the aircraft burned out. Undercarriage assemblies and sections of armour plating are scattered across the heather-covered slope below. Source: Wotherspoon, Clark and Sheldon, 2009 The author notes that this Mosquito was one of 207 delivered to the RAF between January and March 1942. It was assigned to 157/AAEE/51 OTU. The aircraft flew into Mynydd Mawr on 1 November 1944. Source: Halley, J J, 1983, Royal Air Force Aircraft V1000-V9999, W1000 - W9999, pg65
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Navigational training - night time
Record Origin	RCAHMW
Date of Compilation	26/01/2012

PRN	33665
NPRN	515256
Sitename	Aircraft Crash Site, De Havilland Mosquito, Cwm Llan
Serial number	TV982
NGR	SH611530
Period	Modern
Community	Beddgelert
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rough Grassland
Circumstances of crash	Aircraft flew into cumulo-nimbus clouds and broke up
Notes	The author notes that this DE HAVILLAND MOSQUITO was assigned to 502 Sqn. The aircraft disintegrated in cumulo-nimbus cloud and fell near Watkin Path, on Snowdon on 31 July 1943. There were no survivors. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg92 The author notes that the aircraft took off from Horsham St Faith near Norwich to fly to Aldergrove, Belfast, after a Royal Auxiliary Air Force summer camp. The pilot gave a lift to Corporal Carlisle, whose wife had just had twins. The Mosquito flew into cumulo-nimbus thunder clouds, broke up and fell near the summit of Snowdon. Both pilot and passenger were killed. Source: Doylerush, E, 1999, No Landing Place Volume 2: More Tales of Aircraft Crashes in Snowdonia, pg102 Most upstream collection of material is lcoated at SH6108652993 Source: http://peakwreckhunters.blogspot.com/2009/05/de-havilland-mosquito-mkiii-tv982_1620.html last viewed 26/01/2012 Undercarriage component found at SH6111952762 Source: http://peakwreckhunters.blogspot.com/2009/05/de-havilland-mosquito-mkiii-tv982.html last viewed 26/01/2012 Where the aircraft impacted at the base of a rock outcrop, only a few small fragments and one piece of armour plating remain. Scattered approximately 50m south are remains of undercarriage assemblies, a propeller hub unit, remains of engine mounts and other sections of armour plating, including the seat backs. Source: Wotherspoon, Clark and Sheldon, 2009
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	General transportation flight
Record Origin	RCAHMW
Date of Compilation	26/01/2012

PRN	33666
NPRN	515258
Sitename	Aircraft Crash Site, De Havilland Vampire, Cwm Eigiau
Serial number	VV601
NGR	SH7293464739
Period	Modern
Community	Dolgarrog
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rough Grassland; Rock (Scattered)
Circumstances of crash	Aircraft observed impacting on hillside at high speed while in a shallow wings dive
Notes	The author notes that this DE HAVILLAND VAMPIRE was assigned to 7 FTS. The aircraft crashed into the ridge to the north of Llyn Cowlyd on 19 April 1956. There were no survivors. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg92 The author notes that the aircraft was solo-piloted by Midshipman R m Armitage RNVR for an acrobatic exercise over Snowdon. The aircraft dived into the side of the mountain above Hafod y Rhiw near Llyn Eigia and at an angle of 20 degrees with wings level. The pilto was killed. The cause of the accident was belived to be a mild steel bar, not part of the Vampire that was found in the cockpit and which may have jammed the elevator controls (the wreckage was taken away for minute search to establish the cause). The author includes a picture of the crater caused by the crash. Source: Doylerush, E, 1999, No Landing Place Volume 2: More Tales of Aircraft Crashes in Snowdonia, pg102-3 The author notes that this Vampire was one of 200 FB.5s delivered to the RAF between September 1948 and June 1949 by the English Electric Company, Preston, to contract C/ACFT/1387. Its service life includes assignments to 2/4/7 FTS. The aircraft dived into a mountain 7.5 miles south-southwest of Conway on 19 April 1956. Source: Halley, J J,1985, Royal Air Force Aircraft SA100 to VZ999, pg89 Entry 3. Temp Midshipman R M Armitage. Wind/Squadron/flight: 7FTS. Ship/'Station: HMS GOLDCREST. A/C Type: Vampire FB 5. AC Number: VV601. Date of Death: 19/4/1956. Place of Death: Missing presumed killed after hitting high ground. Flying from RAF Valley. Source: Royal Fleet Air Arm Museum Database, RNAS Yeovilton, RCAHMW Digital Collections (faaroh.wales.htm) The crash crater and a few fragments of wreckage remain. Source: http://peakwreckhunters.blogspot.com/2008/06/dehavilland-vampire-f-b-mk5-vv601_06.html last viewed 26/01/2012 A rock outcrop forms the upper part of the impact crater. A few tiny fragments of aluminium are all that remain. Source: Wotherspoon, Clark and Sheldon, 2009
International rarity of aircraft	Not known
Crew survival	Entire crew died in crash
Object of flight	Aerobatics practice
Record Origin	RCAHMW
Date of Compilation	26/01/2012

PRN	33667
NPRN	515259
Sitename	Aircraft Crash Site, De Havilland Vampire, Mynydd Mawr
Serial number	VZ874
NGR	SH5398154613
Period	Modern
Community	Llanllyfni
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rough Grassland; Rock
Circumstances of crash	The aircraft struck Mynydd Mawr and exploded, scattering wreckage
Notes	The author notes that this DE HAVILLAND VAMPIRE was assigned to 7 FTS. The aircraft flew into the summit of Mynydd Mawr at night on 12 October 1956. There were no survivors. Wreckage can be found at 115/539547. Souurce: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg92 The author notes that this Vampire was one of 63 FB.5s delivered to the RAF between June 1949 and August 1951 by the English Electric Company, Preston, to contract 6/ACFT/2961. Its service life includes assignments to 72/202 AFS/7 FTS. The aircraft flew into a mountain at night 6.25 miles southeast of Caernarvon on 12 October 1956. Source: Halley, J J,1985, Royal Air Force Aircraft SA100 to VZ999, pg107 Only remains are now a few scraps scattered in the vicinity of the summit of Mynydd Mawr. Apparently larger fragments are at Caernarfon Airworld. Source:http://peakwreckhunters.blogspot.com/2008/08/vampire-vz874-scraps.html The aircraft was flying towards the cloud-covered mountains and had just started turning when it struck Mynydd Mawr. It exploded on impact and wreckage was scattered over the top of the mountain into Cwm Planwydd. Only small fragments of wreckage in the scree mark the point of impact although the compressor and several engine components and sections of wing spar lie in Cwm Planwydd at SH546546
International rarity of aircraft	Not known
Crew survival	Entire crew died in crash
Object of flight	Night circuits & roller landings
Record Origin	RCAHMW
Date of Compilation	26/01/2012

PRN	33668
NPRN	515260
Sitename	Aircraft Crash Site, Dornier DO215, Trawsfynydd
Serial number	DO215 VB+KK
NGR	SH708333
Period	Modern
Community	Trawsfynydd
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rough Grassland
Circumstances of crash	Aircraft shot down and crash-landed
Notes	The author notes that this DORNIER DO215, werke nbr 0023, VB+KK was assigned to 2/Aufklarungsgruppe had Liverpool as its target for reconnaisance. The aircraft was shot down by Pilot Officer D A Adams for B fight, 611 Squadron from Ternhill. The duel took place at 25,000ft over Liverpool all the way back to Trawsfynydd on 21 September 1940, where it was finally brought down alongside the Dolgellau road. Three of the four crewmen survived. Souurce: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg29, 92 The author tells the story from the persepctive of Pilot Officer Dennis A Adams. He first saw the plane as it was flying along the coastline from Formby the Liverpool at 2000ft. He dived from 15,000ft and made a quarter attack on the starboard side and put the starboard engine out of action. Adams tried to steer the enemy aircraft towards Hooton park or Sealand, but the German pilot Leutnant Rolf Book put the aircraft down in a small field at Tyddyn Sais farm near Trawsfynydd. There was one fatality, Unteroffizier Guztav Pelzer, who was later buried at Pwllheli. The other survivors besides the pilot were Feltwebeln Kurt Jensen and Hans Kuhl. Source: Doylerush, E, 2002, No Landing Place Volume 2: More Tales of Aircraft Crashes in Snowdonia, pg36-7 After a long chase Pilot Officer D. Adams in the Spitfire successfully shot down the Dornier near Trawsfynydd. Within minutes of the crash hundreds of soldiers fron the Royal Artillery camp were on the scene. Three crew members survived and were taken prisoner but the fourth died. Source: Sloan 1991 Images at http://www.pbase.com/gefailgof/image/104563674 and http://www.pbase.com/gefailgof/image/104561354
International rarity of aircraft	No known surviving examples globally
Crew survival	Some crew survived crash
Object of flight	Bombing
Record Origin	RCAHMW
Date of Compilation	26/01/2012

PRN	33669
NPRN	515261
Sitename	Aircraft Crash Site, Douglas Boston, Carnedd Dafydd
Serial number	Z2186
NGR	SH666626
Period	Modern
Community	Capel Curig
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rough Grassland; Boulders
Circumstances of crash	Aircraft flew into the summit of the mountain.
Notes	The author notes that this DOUGLAS BOSTON, capable of 347mph in level flight and armed with four 20mm cannons and four machine guns, was assigned to 418 Sqn based at Bredwell Bay, Essex. The aircraft had taken off at 11:15 on 17 October 1942 on a cross country training flight. After an hour of flying, they ran into mist. Taking radio bearings, they set their cruising height at 3,000ft which should have taken them clear of Snowdon until their turning point off Prestatyn. However, the aircraft flew into the summit of Carnedd Dafydd. The only survivor of the three onboard was Sgt Mervyn Sim, Royal Canadian Air Force. Realising that his legs were broken, he gathered parts of the airplane's fuselage around him to provide shelter. Two days later, he was located by a young airman and his girlfriend who were walking in the mountains. The young airman went for help and flagged down Dr Mostyn Williams from Bethesda. Three hours later, they arrived back at the crash site, followed shortly after by the rescue team who carried Sims down. His injuries included a fractured skull, concussion, broken leg, damaged knee, broken thumb, and assorted cuts and bruises. He was later found to have broken his back. He eventually made a full recovery and rejoined his Sqn. The wing from the plane can still be clearly seen on Carnedd Dafydd (picture page 61) at 115/666626 Souurce: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg59-61,92 NGRs given as SH6655263760. Wreckage found close to location given on http://www.wilderness-wales.co.uk/articles/aircraft-wreckage-in-snowdonia.html, assumption is that these are from the Boston. 3rd party comment also notes further small items and a small patch of disturbed ground at SH6673262918. Slate (memorial) plaque attached to some wreckage found at SH6693462845 Source: http://peakwreckhunters.blogspot.com/2008/04/douglas-boston-mkiii-z2186_26.html
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Not known
Object of flight	Cross-country training flight
Record Origin	RCAHMW
Date of Compilation	26/01/2012

PRN	33670
NPRN	515262
Sitename	Aircraft Crash Site, Douglas Dakota C-47A Skytrain, Conwy
Serial number	43-15105
NGR	SH791732
Period	Modern
Community	Henryd
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - grass?
Circumstances of crash	Unmanned aircraft ran out of fuel and crashed on lowland river plain.
Notes	The author notes that this DOUGLAS DAKOTA (SKYTRAIN) 43-15105 was assigned to 8th Air Force. The aircraft crashed on the left bank of the Conwy river after running out of fuel on 29 March 1944. The five crewmen baled out safely. Souurce: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg92 The author notes that this aircraft has crossed the Atlantic via the Southern Overseas Route. On 29 March 1944, it left Marrakesh and set course for RAF Valley. At 1129, the wireless operator requested approach procedures from Valley, but nothing further was heard until 1220 when the crew advised that an error had been made. They had by-passed Valley and asked for a course to steer. At 1405, the Mountain Rescue Team at RAF Llandwrog were notified of a faded aircraft plot in the Conway area. The team headed for Conway Police Station where they were directed to Tremorfa Farm - the plane could be seen wrecked on the flood plain below the farm. The pilot, Major G Wright Jnr, and co-pilot were with the plane and advised that the others had baled out at 9,000ft after the aircaft began to run out of fuel. They landed safely near Caerhun and were taken to Conway Police station. In 1985, parts of the aircraft, including an engine were recovered with the aid of a mechanical digger by David Roberts Source: Doylerush, E, 1999, No Landing Place Volume 2: More Tales of Crashed Aircraft in Snowdownia, pg30 The report compiled of the incident noted that the C-474 was assigned to the 8t Air Force , 7 EWTAC. The incident occurred on the banks of the Conway river on 19 March 1944 at 13:00. The crew comprised pilot Major Graham Jr Wright (no injuries); co-pilot 1st Lt Norman M Shelburne (no injuries); navigator 2nd Lt Fred F Zweiner (no injuries); CC (?) Staff Sgt Leslie I Tuttle (no injuries); and R (?) Corporal James H Darby (no injuries). The pilot had some 285 flying hours, 85 on this model of aircraft. The aircraft had left from Marrakech and was bound to RAF Valley. The aircraft 'TEACUP HOW' made first contact with RAF Valley at 11:29 or (10:00 GMT according to pilot) and was told the let down procedure. At 12:20 the pilot contacted the tower to advise that he had messed up the set down procedure and requested further instructions. He was told to hold on the South West leg at 8000ft until further advised. In his statement, the pilot stated that he had pulled up from 2000ft and circled until 1250 GMT. The tower called until 13:24. The cause of accident was the 'radio range very unsatisfactory – the pilot was never able to get a cone of silence during the entire three hours, as the radio compass was inoperative, the pilot was unable to use it to locate the cone'. The plane ran out of gas and had to be abandoned. It was evident that the plane had hit the ground with a wing first, exploding and scattering wreckage over a 5 acre site. Nothing was salvageable Source: US Army Air Force Report of Aircraft Accident 44-03-29-504, RCAHMW Digital Collections When control failed to make contact with the aircraft No 9 Group had reported a faded plot in the Conwy area and pin-pointed it to Tremorfa Farm. The Mountain Rescue Unit were notified and rushed to Conwy Police Station where a civilian informed them of the crash and led them to a house where the pilot and co-pilot were having tea. The other three crew members had baled out three minutes earlier, but by the time the likely area to search had been identified they arrived at Conwy police station. The aircraft had flown low over the hill behind Tremorfa Farm, hit the ground with a wing tip, cartwheeled over and broken up. Until the 1980s the aircraft serial number was not known to enthusiasts. As a result permission was gained from the manager of Tremorfa Farm for Snowdonia Aviation Historical Society to dig at the crash site. A mechanical digger unearthed many items from the soft clay in a short time. These included one of the engines, propeller, carburettors and starters. Following cleaning and examination, various serial numbers were stamped on the items. With the aid of these the identity of the arcraft and crew were established. Source: Snowdonia Aviation Historical Group, 1985, 19-20
International rarity of aircraft	1-5% of total produced survive globally
Crew survival	Entire crew survived crash
Object of flight	Ferry flight
Record Origin	RCAHMW
Date of Compilation	26/01/2012

PRN	33671
NPRN	515263
Sitename	Aircraft Crash Site, Douglas Dakota C-47B Skytrain, Craig y Dulyn
Serial number	43-48473
NGR	SH698666
Period	Modern
Community	Caerhun
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - grass?
Circumstances of crash	Aircraft flew into cliffs in cloud
Notes	The author notes that this DOUGLAS DAKOTA (SKYTRAIN) was assigned to 27 ATG. It had taken off from Le Bourget Airport, Paris, on 12 November 1944, with a cargo of mail and freight heading the US base at Burtonwood, near Warrington. As it neared its destination, a radio message was sent and acknowledged by the pilot, 2nd Lt W G Gough that the visibility at Warrington was down to less than 200 yards was advised to divert to RAF Valley. The aircraft did not arrive. 10 days later, a RAF maintenance crew were climbing the track to Melynllyn to check the beacon transmitter on the summit of Foel Grach when they spotted the aircraft rammed into the cliff face some 100ft from the top in a gulley, about 500ft above the lake. A member of the maintenance crew drove to Tal y Bont to summon help. The aircraft could not be approached until the following day. The nose of the plane was found to have burnt out. The four crewmen having died on impact. The mail and freight was strewn over the mountainside and in the mid section of the plane. The tail was reasonably intact. The victims were wrapped in blankets and hauled to the top of the gulley and taken down by stretcher. Photograph of wing in situ above lake, pg36 Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg36-7; 92 The author notes that this aircraft took off from Le Bourget airport, Paris, with a cargo of freight and mail for the American base at Burtonwood. As the aricraft neared Burtonwood, the piolot 2nd Lt W G Gough was advised that the arifield was fogbound and that he should divert to RAF Valley. The message was acknowledged, but no further contact was made. An aerial reconnaisance to look for the missing plane was made in the afternoon, but it was not located. 10 days later it was found bny the Moutain Rescue party on passage to replced the batteries of the radio warning beacon on the summit of Foel Grach. It had flown into the top of the cliffs above Llyn Dulyn. The four crewmen had been killed. The tail hung over the lake and mail and personal effects were strewn around. Source: Doylerush, E, 1999, No Landing Place Volume 2: More Tales of Crashed Aircraft in Snowdownia, pg32, photo 29 The aircraft, unable to land as planned at Burtonwood near Warrington due to poor weather conditions, was instructed to divert to Valley. While on a west-south-westerly track towards Valley the aircraft struck the cliffs above Llyn Dulyn. The wreck was located on 22nd November 1944 by an RAF radio maintenance unit. It had impacted on a narrow ledge at the head of gulley. In the 1940 the sections of wreckage that had not already fallen into Llyn Dulyn were dislodged from the cliffs. In 1972 several parts of the wreckage were brought up from the bottom of the lake by the West Bromwich Underwater Exploration Club for the Warplane Wreck Investigation Group. These included the complete tail section from which the fin was removed. Much of the wreckage raised was left in the lake close to the outflow and as such the propeller assembly is visible when the water levels are low. Source: Wotherspoon, Clark and Sheldon, 2009 C-47 propeller found in Llyn Dulyn at SH7022866367. The propeller used to hang on the gully wall above. Source: http://peakwreckhunters.blogspot.com/2008/05/douglas-c-47b-43-48473.html Following the impact the front end of the aircraft had smashed to pieces as far back as the centre and both wings had crumpled. The tail section, although intact, was hanging down over the rocks. Source: Snowdonia Aviation Historical Group, 1985 The investigation into the accident noted that this C-47C was assigned to the Air Service Command, 27th Group, 86th Squadron, and to Grove station. The incident occurred at 13:00 at Conway on 11 November 1944. The crew comprised pilot 2nd Lt William G Gough (killed); co-pilot 2nd Lt Richard Rolff (killed); radio operator Cpl Hyman Levitski (killed) and engineer S Sgt Kirk H McLoren (killed). The pilot had 187 hours of flying experience, 18 hours in this model. The aircraft had cleared from Le Borget to Burtonwood on a ferry flight. It was diverted to Valley and flew into mountain whilst flying on instruments. The aircraft had left Le Borget in a flight with 3 other C-47s. When the flight arrived it found Burtonwood closed due to bad weather. The pilot made contact with the Burtonwood Flying Control and acknowledge receipt of its diversion instructions. All the other aircraft arrived at Valley, but no other contact was made with the C-47 which crashed. Overdue action was taken and a flight was sent out the search the mountains. On 22 November, the aircraft was discovered by a British Radio Unit. The position was given as 53 09 10N, 03 58W. The aircraft had hit the side of a cliff whilst in full flight and burned. It was resting on a ledge 2800ft above sea level and was flying a true heading of 235degrees. The true course from Burtonwood to Valley direct was 263 degrees. The accident occurred about 20 miles to the left of the aircraft's course. The investigation concluded with recommendation that stations clearing to diverting flight should given more detailed information about terrain, hazards to navigation, weather and air facilities at all points with the radius of the action of the flights

	centre of action. The report from Burtonwood stated that Smoothrun 'M' Mike was given a QDM of 268 degrees and 80 miles and told to fly at 5000ft to reach A-54 (Valley). The pilot was warned of mountains over 3500ft near the destination. The QFE of airdrome was also passed. Source: US Air Accident Record 45-11-11-506, RCAHMW Digital Collections
International rarity of aircraft	1-5% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Transporting mail and freight
Record Origin	RCAHMW
Date of Compilation	30/01/2012

PRN	33672
NPRN	515264
Sitename	Aircraft Crash Site, English Electric Canberra, Carnedd Llewelyn
Serial number	WK129
NGR	SH685647
Period	Modern
Community	Caerhun
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rock; General surface
Circumstances of crash	Aircraft impacted at high-speed into rocky mountain summit
Notes	The author notes that this ENGLISH ELECTRIC CANBERRA was assigned to RRE. The aircraft flew into the summit of Carnedd Llewelyn in cloud on 9 December 1957. There were no survivors. Wreckage can be found at 115/685647. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg92 The author notes that the pilot was Flt Lt W A Bell and the navigator was Flt Lt K C F 'Spike' Shelly. The aircraft was taken part in a trial of the radar on the summit of 2,550ft Drum for the Ministry of Supply. After finishing the test, the pilot radioed that he was off Puffin Island and returning to base, but no more was heard. The RAF Valley Mountian Rescue Team made a radio appeal which resulted in 2 reports - 1) from a farmer, Oswald Jones, who had been in Cwm Dulyn and heard an explosion at 3.00pm which he took as an aircraft breaking the sound barrier; 2) from an electricity board engineer, Mr Adams, in the next cwm who had seen a Canberra flying below cloud (estimated at 2,200ft with icing at 3,000ft). The cloud hampered rescue teams for 3 days, but wreckage was eventually found close to the summit of Carnedd Llewelyn (second highest mountatin at 3484ft). The Inquiry considered that engine failure due to icing was the most probable cause. Both airmen are buried at Ashwood Cemetery. A photograph of the engine from the Canberra is shown on p97. Source: Doylerush, E, 1999, No Landing Place Volume 2: More Tales of Aircraft Crashes in Snowdonia, pg96-7 The aircraft was taking part in radar trials involving the Ministry of Supply Radar Station on the summit of Drum. While flying on a south-easterly track it impacted at high speed into the summit of Carnedd Llewelyn. Much of the wreckage travelled over the top of the ridge and is scattered around the top of Cwm Eigiau. The impact point is marked on the western side by a disrupted patch in the boulder field containing small fragments of wreckage. From this point the wreckage is strewn to the south-east over the ridge and down the rocky eastern slopes of the mountain to Ffynnon Llyffant. Sections of the wing and fuselage, the remains of the Rolls-Royce Avon engines, stainless steel jet pipes and both main wheel and tyre assemblies can be found scattered in and around the lake. Further wreckage can be found in the stream that runs out of the lake including large pieces of wing structure at SH690644 and other sections in a deeper section of the stream at SH694645. Source: Wotherspoon, Clark and Sheldon, 2009 An informal memorial has been incised onto a panel of the aircraft at SH6883964580 Source: http://peakwreckhunters.blogspot.com/2008/07/english-electric-avro-built-canberra_6542.html
International rarity of aircraft	Not known
Crew survival	Entire crew died in crash
Object of flight	Radar trails
Record Origin	RCAHMW
Date of Compilation	30/01/2012

PRN	33673
NPRN	515265
Sitename	Aircraft Crash Site, Gloster Meteor, Yr Eifl
Serial number	WA794
NGR	SH3606845892
Period	Modern
Community	Llanaelhaearn
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Boulders
Circumstances of crash	Aircraft flew into quarry face in sea mist
Notes	The author notes that this GLOSTER METEOR was assigned to RAE. The aircraft flew into the seaward summit of Rivals in cloud on 11 October 1957. The pilot was killed. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg92 The author notes that the pilot was Sgt Bob Barnes. He took off from RAF Llanbedr to carry out an early morning exercise with the army at Ty-Croes. Five minutes after take off and with Yr Eifl (Fork Prongs or The Rivals) in sea mist to 730ft, Barnes radioed that he could see the gap in the mountains. However he flew to port of the gap and skirted the ridge to go for a narrower gap . The Meteor crashed into the seaward peak on the topmost quarry face at 1060ft. The pilot was killed. The author includes photographs of the cliff face showing the crater where the aircraft impacted and the tail section lying amongst quarry waste. Source: Doylerush, E, 1999, No Landing Place Volume 2: More Tales of Aircraft Crashes in Snowdonia, pg100-1 Peak Wreck Hunters note that there is no metal present at the crash site. Source: http://peakwreckhunters.blogspot.com/2009/02/meteor.html
International rarity of aircraft	1-5% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Training (General)
Record Origin	RCAHMW
Date of Compilation	30/01/2012

PRN	33674
NPRN	515267
Sitename	Aircraft Crash Site, Handley Page Halifax, Dolbenmaen
Serial number	LL283
NGR	SH504419
Period	Modern
Community	Dolbenmaen
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rough Grassland; Rock (Scattered)
Circumstances of crash	Aircraft dived into ground on small hill - remains scattered over 3 fields
Notes	The author notes that this HANDLEY PAGE HALIFAX was assigned to 1658 HCU. The aircraft's engine caught fire and it eventually came down near Porthmadoc. All but one of the 8 crewmen baled out, 6 survived. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg92 The author notes that Flt Lt Michael Kidston McGuire from 1664 Heavy Conversion Unit at Dishforth was in command of the Halifax for a cross country training flight. On the acceptance form 700, there were several complaints of low oil pressure on the starboard inner engine, but McGuire accepted that they were within tolereance. The plane took off at 2050 hours with a normal crew of 7 (6 being Canadians) plus an extra flight engineer - Sgt A W Pack. Two hours into the flight the oil pressure on the starboard engine began to drop. Four and a half hours into the flight the oil pressure was at zero and unsuccessful attempts were made to feather the prop. The mid-upper gunner reported that the engine was on fire. At that time they were flying at 20,000ft over the sea on a course for the bombing range off St Tudwalls island. The pilot turned due east to make sure that they would be over land,and the crew all but Sgt Pack baled out. The Halifax dived in the side of a 580ft hill near Ystym Gegid Isaf Farm, a few miles inland from Cricceth. At 0150 hours the medical officer and Mountain Rescue team were alerted. On arriving at the scene found, they found the Halifax scattered over three fields. The body of Sgt Pack was located with an open parachute not fastened to his harness (it was concluded that he had reached for the parachute, but in the aircraft's dive had been unable to bale out. Other surviviors were Sgt J F Morris, air gunner, with head injuries and Sgt M J Swan, uninjured. Warrant Officer C J Hogan hobbled into a farm called Tyddyn Mawr in Cwm Ystradllyn with a sprained ankle and suffering from shock. Flt Sgt R S Lowe was brought into the rescue centre with leg and buttock injuries. Flying Officer H W W Bucke, bomb aimer, walked down the mountain with a slight leg injuury to a farm at Braich Dinas, along with Sgt J D Abson who had slight stomach abrasions. The pilot, McGuire, had been unfortunate enough to strike his head on a wall on landing and was killed outright. He was eventually spotted by a low-flying search aircraft and recovered via Ynys Wen and Cwn Ystadlyn. The inquiry found that the engine bearings were worn and loose and that the inability to feather the engine had been caused by the connecting rod breaking and puncturing the cylinder and cutting the feathering line. The minimum operating pressure for the Merlin engines was increased from 45lb per square inch to 60lb. Source: Doylerush, E, 1999, No Landing Place Volume 2: More Tales of Aircraft Crashes in Snowdonia, pg64-5
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Some crew survived crash
Object of flight	Cross-country training flight
Record Origin	RCAHMW
Date of Compilation	06/02/2012

PRN	33675
NPRN	515268
Sitename	Aircraft Crash Site, Handley Page Halifax, Yr Eifl
Serial number	JD417
NGR	SH370453
Period	Modern
Community	Llanaelhaearn
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Heath; Rough Grassland; Boulders
Circumstances of crash	Aircraft flew into mountainside in poor visibility
Notes	The author notes that this HANDLEY PAGE HALIFAX was assigned to 1656 HCU. The aircraft flew in the the central peak of Rivals, in cloud, whilst diverting from Llandwrog to Penrhos on 3 September 1944. There were no survivors. Wreckage can be found at 123/369454. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg92 ?check reference? The author notes that this Halifax was one of 138 delivered to the RAF between August 1942 and April 1943 by Roots at Speke. Its service history includes assignments to 1663 CU and 1656 CU. The aircraft flew into high ground on navigation exercise near Caernarfon on 3 September 1944. Source: Halley, J J,1985, Royal Air Force Aircraft DA100 to DZ999, pg27 The author notes that this Halifax was one of 350 delivered to the RAF between February and August 1943 by English Electric at Preston. It was assigned to 78 Squadron/1667 CU and 1656 CU. On 23Septmber 1943, it was on a naivigatione exercise when it flew into the mountain Y Eifl, North wales. Source: Halley, J J,1990, Royal Air Force Aircraft JA100 to JZ999, pg18 Some confusion as to serial number: Air Ministry Form 1180 records serial number as DJ417, but "DJ" is written above "JD", which has been crossed-out. The aircraft flew into the mountainside in poor visiblity and burned out. The pilot flew at a low altitude in mountainous country and failed to make use of navigational aids. Source Air Ministry Form 1180 No 34 MU salvaged the burnt out remains of the aircraft. The site lie on a heather-covered slope near to a section of wall and is at the head of a spur running down between a series of escarpments. A small scar contains a few lumps of wreckage including melted aluminium. Source: Wotherspoon, Clark and Sheldon, 2009
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Navigational training - cross country
Record Origin	RCAHMW
Date of Compilation	06/02/2012

PRN	33676
NPRN	515269
Sitename	Aircraft Crash Site, Handley Page Halifax, Llandudno Junction
Serial number	HR723
NGR	SH8141979363
Period	Modern
Community	Llandudno
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - grass?
Circumstances of crash	Aircraft crashed out of control due to icing
Notes	The author notes that this HANDLEY PAGE HALIFAX was assigned to 1666 HCU. Control of the aircraft was lost due to icing and it eventually crashed near Llandudno Junction. The crew baled out, and 6 of the 7 onboard survived. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg92 The author notes that the aircraft was assigned to 1666 Heavy Conversion Unit, part of the number 6 (Canadian) Group and took off from Wombleton. The crew comprised Flt Lt Harold D O'Neil as pilot; Flying Officer Dunlop, navigating; flying Officer W A Steele, bomb aimer; Pilot Officer H W Ferris, wireless operator; Sgt Jack Wagstaff, flight engineer; Sgt Mike Gurcia, mid-upper gunner; Sgt Norm Miller, rear gunner. Wagstaff was the only RAF member of an otherwise all Canadian crew. The proposed route was Wombleton to Reading to Bath then over the Bristol Channel, then north and then northeasterly back to Yorkshire. The plane experienced various technical difficulties wihich meant that it could not maintain the height required (17,000ft). The superchargers did not seem to function and so the aircraft began a series of ascents and descents, and course changes to avoid cumulo-nimbus clouds and possibility of icing. Eventually, they were unable to climb and the last descent began. The crew were ordered to bale out. They waited until the H2s radar showed that they were over land. The crew exited in an orderly fashion and the pilot set the controls so that the plane would head out over the sea. However it kept coming around. On its last pass, it flew over Llandudno North Shore and hit the ground at 23.25hours. The crew all landed safely, apart from Ferris who was killed after forgetting to fasten his leg straps and falling through when the parachute opened. His body was found in a field of what is now Pinewood Riding Stables. Dunlop came down in the river Conwy; Steele and Gurcia on mudflats on the east bank of the river, Miller and Wagstaff came down in fields near Hendre Wen farm. O'neil came down near Dinerth Road, Rhos on Sea. Source: Doylerush, E, 1999, No Landing Place Volume 2: More Takes of Aircraft Crashes in Snowdonia, pg90-2 The aircraft crashed at Bodysgawen cottage (now known by a different name). Animal sheds adjoining the cottage were detatched and moved by the impact, the nearby hedge caught fire, and the roof of the cottage over the road was smashed away. The remains of the aircraft were scattered widely. When the cottage was rebuilt the owner's son cleared up a large amount of wreckage, including the engines, and buried it in a field with builders' rubble. He was not able to remember exactly where it was buried. The author looked over the field and found a number of pieces of engine casting and many other unidentified fragments. Source: Hill, 1994 The aircraft crashed and burned out after all crew had baled out. The aircraft had been out of control and unable to maintain height due to icing of engines, airframe and controls. The engines were not giving full power due to the icing and poor airmanship is considered a factor. Source: Air Ministry Form AM 1180 The author notes that this HALIFAX was one of 250 delivered to the RAF by Handley Page of Radlett, between December 1942 and August 1943. Its service life included assignments to 405/35/77/1666 CU. The aircraft was abandoned in icy conditions 1 mile north of Llandudno Junction, Caernarfon on 27 October 1944. Source: Halley, J, 1989 Royal Air Force Aircraft HA100-HZ999, pg96
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Some crew survived crash
Object of flight	Navigational training - cross country
Record Origin	RCAHMW
Date of Compilation	13/02/2012

PRN	33677
NPRN	515270
Sitename	Aircraft Crash Site, Hawker Audax, Garn Fadryn
Serial number	K7350
NGR	SH278351
Period	Modern
Community	Tudweiliog
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Heath; Boulders
Circumstances of crash	Aircraft flew into mountain in cloud
Notes	The author notes that this HAWKER AUDAX was assigned to 2 FTS. The aircraft was on detached gunnery training at Penrhos when it flew into Garn Fadryn (1250ft) in cloud. Both crewmen survived. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg92
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew survived crash
Object of flight	Gunnery practice
Record Origin	RCAHMW
Date of Compilation	13/02/2012

PRN	33678
NPRN	515271
Sitename	Aircraft Crash Site, Hawker Audax, Pwllheli
Serial number	Not known
NGR	SH3536
Period	Modern
Community	Llannor
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - grass?
Circumstances of crash	Aircraft crashed in cloud. No more detail known at present.
Notes	The author notes that this HAWKER AUDAX was assigned to 2 FTS. The unit's aircraft were flying via Sealand to Penrhos when this Audax crashed near Pwllhelli in cloud. Both crewmen survived. (see 515272 and 3, Audax and Hart, same unit, lost on same flight, same day) Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg92 Audax K7479 did not crash in Wales. Serial number is incorrect in this dataset and relates to an Audax which crashed in East Lothian, 14/09/1939 Source: Halley/ RAFM On 29th November 1937 a squadron of twenty Hawker Harts and Audaxes left Brize Norton for Penrhos. After eighteen had departed a message from Penrhos was received to say that the weather had deteriorated into fog and rain. One aircraft returned. Seventeen continued, of which ten landed at Penrhos. Of the seven that flew on to Pwllheli, only four successfully located the airfield and landed safely. One Hart and two Audaxes crashed en route. The Hart (K5837) crashed at Penygroes, injuring the two occupants; One Audax (K7479) crashed at Efailnewydd, both crew were unhurt. The second Audax (K7392) narrowly avoided crashing in the centre of Pwllheli and eventually made a force landing in a small field near Llannor. The aircraft hit a wall, killing the pilot and seriously injuring the observer. Source: Sloan, 2001 Serial number K7470?? This aircraft from the same unit is recorded as crashing in unknown location on 29/11/1937 according to http://aviation-safety.net/wikibase/dblist.php?Year=1937&page=5
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew survived crash
Object of flight	Cross country flight
Record Origin	RCAHMW
Date of Compilation	13/02/2012

PRN	33679
NPRN	515272
Sitename	Aircraft Crash Site, Hawker Audax, Y Ffor
Serial number	K7392
NGR	SH4039
Period	Modern
Community	Llannor
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - grass?
Circumstances of crash	Aircraft force-landed in small field and hit a wall
Notes	The author notes that this HAWKER AUDAX was assigned to 2 FTS. The unit's aircraft were flying via Sealand to Penrhos when this Audax crashed at Four Crosses. Both crewmen killed (see 515271 and 3, Audax and Hart same unit, lost on same flight, same day). Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg92 On 29th November 1937 a squadron of twenty Hawker Harts and Audaxes left Brize Norton for Penrhos. After eighteen had departed a message from Penrhos was received to say that the weather had deteriorated into fog and rain. One aircraft returned. Seventeen continued, of which ten landed at Penrhos. Of the seven that flew on to Pwllheli, only four successfully located the airfield and landed safely. One Hart and two Audaxes crashed en route. The Hart (K5837) crashed at Penygroes, injuring the two occupants; One Audax (noted as K7479) crashed at Efailnewydd, both crew were unhurt. The second Audax (K7392) narrowly avoided crashing in the centre of Pwllheli and eventually made a force landing in a small field near Llannor. The aircraft hit a wall, killing the pilot and seriously injuring the observer. Source: Sloan, 2001 Two Air Ministry forms exist for this crash. Both are very similar but only one has a description, stating that the rapid deteriation of visibility resulted in the aircraft flying into a cloud-obscured hill. Aircraft lost leader during turn at low height and in bad weather. Source: Air Ministry Form 1180
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Some crew survived crash
Object of flight	Cross country flight (formation)
Record Origin	RCAHMW
Date of Compilation	13/02/2012

PRN	33680
NPRN	515273
Sitename	Aircraft Crash Site, Hawker Hart, Nebo
Serial number	K5837
NGR	SH8456
Period	Modern
Community	Bro Garmon
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - grass?
Circumstances of crash	Aircraft flew into high ground
Notes	The author notes that this HAWKER HART was assigned to 2 FTS. The unit's aircraft (Audaxes and Harts) were flying via Sealand to Penrhos when this Hart flew into High Ground at Nebo in cloud. The crewmen survived (see 515271-2 Audaxes same unit, lost on same flight, same day). Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg92 On 29th November 1937 a squadron of twenty Hawker Harts and Audaxes left Brize Norton for Penrhos. After eighteen had departed a message from Penrhos was received to say that the weather had deteriorated into fog and rain. One aircraft returned. Seventeen continued, of which ten landed at Penrhos. Of the seven that flew on to Pwllheli, only four successfully located the airfield and landed safely. One Hart and two Audaxes crashed en route. The Hart (K5837) crashed at Penygroes, injuring the two occupants; One Audax (K7479) crashed at Efailnewydd, both crew were unhurt. The second Audax (K7392) narrowly avoided crashing in the centre of Pwllheli and eventually made a force landing in a small field near Llannor. The aircraft hit a wall, killing the pilot and seriously injuring the observer. Source: Sloan, 2001
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew survived crash
Object of flight	Cross country flight
Record Origin	RCAHMW
Date of Compilation	13/02/2012

PRN	33681
NPRN	515274
Sitename	Aircraft Crash Site, Hawker Henley, Yr Eifl
Serial number	L3351
NGR	SH365445
Period	Modern
Community	Llanaelhaearn
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Heath; Boulders
Circumstances of crash	Aircraft flew into hillside in cloud
Notes	The author notes that this HAWKER HENLEY was assigned to 1 AACU. The aircraft flew in the Rivals after target towing exercise. There were no survivors. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg92 The author notes that this Henley was one of 200 delivered to the RAF by Gloster Aircraft between November 1938 and September 1940. Its service life included assignments to 5 ATS/9 BGS/1 AACU. On 17 October 1940, the aircraft flew into hillside in clouds at Llanaelhaearn, Caernarfon. Source: Halley, J J, 1979, Royal Air Force Aircraft L1000 to L9999, pg21
International rarity of aircraft	No known surviving examples globally
Crew survival	Entire crew died in crash
Object of flight	Training (General)
Record Origin	RCAHMW
Date of Compilation	16/02/2012

PRN	33682
NPRN	515275
Sitename	Aircraft Crash Site, Hawker Henley, Cwm Silyn
Serial number	L3334
NGR	SH5168950283
Period	Modern
Community	Llanllyfni
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Heath; Rock
Circumstances of crash	Aircraft flew into cliffs in cloud
Notes	The author notes that this HAWKER HENLEY was assigned to 1605 Flt. The aircraft flew into the cliffs of Cwm Silyn whilst in cloud. There were no survivors. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg92 The author notes that this Henley was one of 200 delivered to the RAF by Gloster Aircraft between November 1938 and September 1940. Its service life incldued assignments to 9 ATS/1 AACU/1605 Flight. On 20 November 1942, the aircraft hit a mountain near Penygroes. Source: Halley, J J, 1979, Royal Air Force Aircraft L1000 to L9999, pg21 Wreckage spread between SH5168950283 and SH5163050377 Source: http://peakwreckhunters.blogspot.com/2008/08/hawker-henley-l3334_26.html and http://peakwreckhunters.blogspot.com/2008/08/hawker-henley-l3334.html both last viewed 26/04/2011 The crashed aircraft was a Hawker Henley target tower no. L3334 from Towyn; which was flown from Penrhos. The 26 year old pilot, Walter James Havies of the RAF Volunteer Reserve, must have died instantly. The Mountain Rescue team requested help from the Dorothea quarry workmen who helped to recover the body of the pilot. When the wreckage was cleared some time later, the engine was rolled into the top lake and is probably still there. Source: http://www.nantlle.com/history-tanrallt-plane-crash.htm On the steep scree slope there are small fragments of torn aluminium skinning and sections of fuel pipe below the gully where the aircraft impacted. Source: Wotherspoon, Clark and Sheldon, 2009
International rarity of aircraft	No known surviving examples globally
Crew survival	Entire crew died in crash
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	16/02/2012

PRN	33683
NPRN	515276
Sitename	Aircraft Crash Site, Hawker Hurricane, Cwm Eigiau
Serial number	V7028
NGR	SH720641
Period	Modern
Community	Dolgarrog
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rough Grassland; Boulders
Circumstances of crash	Aircraft force-landed and damaged undercarriage. Later recovered.
Notes	The author notes that this HAWKER HURRICANE was assigned to 312 (Czech) Sqn who were based at Speke for the defence of Liverpool. Towards the end of the war some were posted to Penrhos to intercept enemy bombers taking the route along west Wales to Livepool. On 18 March 1941, the Blue Section of the squadron were ordered to scramble and climbed to a height of 20,000ft. They were later ordered to 8,000ft, but in doing so Cermak lost sight of his wingmen. He climbed again to high altitude to locate them, but became aware that his plane was running out of fuel. So he had to bring the Hurricane down and found himself in the Eigiau valley (about a mile wide with mountains all around). Cermak decided to belly land near a narrow lane. He was uninjured, although the plane had damage to its undercarriage, radiator and centre section. The hurricane was recovered with great difficulty along the narrow, walled lane descending the valley. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pgs71 and 93 Aircraft force-landed in a field with unsuitable surface when the pilot lost formation in cloud. In view of the prevailing weather conditions and the fact that the pilot was ordered to penetrate low cloud he was unable to maintain a known position in the absence of good navigational aids. It had been unwise to demand that should penetrate the clouds in a mountainous area. Aircraft repaired. Source: Air Ministry Form 1180
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Some crew survived crash
Object of flight	Scramble
Record Origin	RCAHMW
Date of Compilation	16/02/2012

PRN	33684
NPRN	515277
Sitename	Aircraft Crash Site, Hawker Hurricane MKI, Allt Fawr
Serial number	P3385
NGR	SH680473
Period	Modern
Community	Ffestiniog
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Heath; Rough Grassland; Rock (Scattered)
Circumstances of crash	Aircraft flew into high ground in cloud
Notes	The author notes that this HAWKER HURRICANE was assigned to the Merchant Ship Fighter Unit operated by RAF personnel for the defence of convoys out of range of the protection of land-based aircraft. Selected merchant vessels were fitted with catapult equipment to fire a hurricane off a ramp. The planes were then ditched into the sea - the pilots hoping to be picked up. On 9th August 1942, two hurricanes flown by Sgt Riddoch and Pilot Officer Robert McIntyre were detailed to fly to RAF Valley from Speke for a two-week gunnery course. Soon after take off the radio failed on Riddoch's aircraft, but he followed McIntyre as the more experienced officer, until he noticed that they were flying overland (in the Conwy valley). Eventually he accelerated past his companion hoping that he would pull up to follow him, but after circling he realised that that McIntyre had flown on into the mountains. So he traced a reciprocal course back along the Conwy river and then down the coast to RAF Valley. The crash of McIntyre's hurricane into the summit of Allt Fawr at 2,000ft on the north side of the lake was witnessed by 17-year-old Maelor Hughes, who sped to provide assistance but found that McIntyre had been killed. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pgs71-3 and 93 The author notes that this Hurricane was one of 1000 delivered to the RAF by Glosters, Hucclecote, and Hawkers, at Brooklands and Langley to contract 962371/38 between November 1939 and July 1940. P3385 being being by Hawkers. Its service life included assignments to 245/605/59 OUT/55 OUT/607/55 OUT/328/32/MSFU. The aircaft flew into a hill in cloud near Blaenau Ffestiniog on 9 August 1942. Source: Halley, J J, 1996, Royal Air Force Aircraft P1000 to R9999, pg29
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	General transportation flight
Record Origin	RCAHMW
Date of Compilation	20/02/2012

PRN	33685
NPRN	515278
Sitename	Aircraft Crash Site, Heinkel HE111, Llwytmor
Serial number	F4801
NGR	SH6868369747
Period	Modern
Community	Abergwyngregyn
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Heath; Rough Grassland; Boulders (Scattered)
Circumstances of crash	Aircraft flew into high ground at night while navigating from landmarks only (compass and radio were out of action)
Notes	The author notes that this HEINKEL HE111 was a sub-type 5 built November 1939 at Oranienburg. It's code letters were IT+EL and it was assigned to the 1st Staffel of KG28. The crew included Lt Lothat Horras, pilot; Gefreiter Josef Brunninghausen, engineer; Fletwebel Bruno Peronwski, observer/bomb aimer and Gefreiter Kurt Schlender, radio operator. The Heinkel had undertaken a reconnaisance flight over Barrow and noted that the aircraft carrier HMS ILLUSTRIOUS was in dock. The next night, 13-14 April 1941, they were sent out bomb the vessel and the docks. During the attack run, the plane's compass and radio were put out of action by ack-ack fire. The crew set a cross country course to land at one of the French coastal fields. The engines would also not give full power, but Heinkel was nose up as it was trying to gain altitude which is probably why three of the four crewmen survived. At 3:00, the arcraft crashed into a plateau between the mountain and the rock pinnacle above at well over 2,000ft. The survivors were Horras, Peronwski and Schlender (the pilot had a severed finger). Schlender went for help and climbed down to the farm owned by the Baxter family at Cydcoed, knocking on the door at 7:20am. The Home Guard were contacted, by the time they had arrived the two other German crewmen had also made it down the hill. They were taken into custody and to Bangor A&E. A Junkers Jumo engine from the Heinkel is believed to remain insitu at 115/685698. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pgs53-7 and 93 The author tells of return visit to the crash site by surviving crewmembers. Source: Doylerush, E, 1999, No Landing Place Volume 2: More tales of Aircraft Crashes in Snowdownia, pg12-15 In 1970 one of the Junkers Jumo engines was recovered by helicopter and now all that remains are lumps of melted aluminium and a couple of small fragments of airframe in a scar on the slope where the aircraft burned out. Source: Wotherspoon, Clark & Sheldon 2009 Some larger pieces remain but majority of wreckage consists of small molten fragments on the burn site Source: http://peakwreckhunters.blogspot.com/2009/03/heinkel-f4801itel-lllwytmor.html
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Some crew survived crash
Object of flight	Bombing
Record Origin	RCAHMW
Date of Compilation	20/02/2012

PRN	33686
NPRN	515279
Sitename	Aircraft Crash Site, Junkers JU88, Drum Ddu
Serial number	4U+BL
NGR	SH920165
Period	Modern
Community	Mawddwy
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rough Grassland; Rock
Circumstances of crash	Aircraft made emergency landing on sloping ground following damage inflicted by Spitfire, sliding along the ground before coming to rest
Notes	The author notes that this JUNKERS JU88 was assigned to 3(F)123. On 7 September 1940 it was sent from Paris Buc airfield to assess the damage to Liverpool caused by a week of intensive bombing. It was spotted by Royal Observer Corps at 20,000ft over Hoylake and a Spitfire from 7 OTU from Hawarden was sent to intercept. The Spitfire was flown by Sgt L S Pilkington. The Junkers was attacked and the port engine put out of action. The Junkers pilot, Lt Erich Bohle, dived his aircraft into thick cloud to avoid his pursuer, emerging in the mountains. He managed to level out his aircraft and made a forced landing on the side of Drum Ddu northeast of Mallwyd. The crew of four and a Gestapo officer survived. One wing was taken back to Hawarden as a souvenir. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg28-9, 93 The author notes that Oberleutant Jans Kauter was in command and acting as observer, with Leutnant Erich Bohle acting as pilot, and Sergeant Kobold as engineer. The plane pancake landed on Drum Ddu. All the crew were injured, but managed to get inside the liferaft for cover. Kauter climbed down the mountain side, and four hours after the crash managed to raise the alarm at Gelli Ddolen Farm a few miles west of Mallwyd. The crew were treated at Machynlleth hospital after being carried down in makeshift stretchers. They were later transported to war camps in Canada. An engine was recovered as far as Gelli Ddolen farm (photo page 35) Source: Doylerush, E, 1999, No Landing Place Volume 2: More Tales of Aircraft Crashes in Snowdonia, pg34-5 One engine failed and the aircraft hit the mountainside in low cloud. Reportedly it made an emergency landing at Hafoty y Bwlch, 4 miles north of Mallwyd. Images from Geff Charles are available from LLGC/NLW Source: http://forum.12oclockhigh.net/showthread.php?p=140230 The Junkers took hits to the fuselage and wings. As black smoke poured from the port engine the pilot cut the motor, feathered the propellor, and dived into the thick cloud below. The aircraft was then diving to the ground so the pilot tried to lift the front of the aircraft and find a safe place to land. The sloping hillside below allowed them to land safely, the aircraft slithering along the ground and finally coming to rest with the propellor torn away from its mounting and smoke still pouring from the port engine. After examination by the RAF and visits from a number of interested people, the aircraft was broken up and removed, mainly by horse and sledge, via Foel and the Northern Valley, to be melted down and reused. Source: Snowdonia Aviation Historical Society, 1985
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew survived crash
Object of flight	Reconnaissance
Record Origin	RCAHMW
Date of Compilation	20/02/2012

PRN	33687
NPRN	515280
Sitename	Aircraft Crash Site, Lockheed Hudson, Llechog
Serial number	AM832
NGR	SH598537
Period	Modern
Community	Betws Garmon
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rough Grassland; Rock
Circumstances of crash	Aircraft flew into high ground in cloud at night
Notes	The author notes that this LOCKHEED HUDSON was assigned to 1OTU. The aircraft flew into Llechog, Snowdon, in cloud on 4 February 1943. There were no survivors. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg93 The author notes that this Hudson was one of 390 purchased in USA and delivered to the RAF between May and August 1941. It was assigned to 1 OTU a flew into a mountain at night at Beddgelert on 4 February 1943. Source: Halley, J J,1985, Royal Air Force Aircraft AA100 to AZ999, pg77 Hudson AM832 was assigned to No 1 (C) OTU Silloth and crashed on Llechog Ridge whilst on a training flight. The crew of 4 was killed. Source: Snowdonia Aviation Historical Group 1985
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Training (General)
Record Origin	RCAHMW
Date of Compilation	20/02/2012

PRN	33688
NPRN	515281
Sitename	Aircraft Crash Site, Martin B-26 Marauder, Y Garn
Serial number	44-68072
NGR	SH6284259856
Period	Modern
Community	Llanberis
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rough Grassland; Rock
Circumstances of crash	Aircraft impacted on high ground in cloud, having been blown off course
Notes	The author notes that strong winds blew this MARTIN B-26 MARAUDER off course and it flew into the summit of Y Garn in cloud on 1 February 1945. There were no survivors. Wreckage can be found at 115/628598 Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg93 The author gives the airframe ID as 44-68072 and notes that the bomber had left Florida towards the end of January 1945 wth a crew of 5 flying across the Atlantic via the Southern Overseas Route via Natal in Brazil and Dakar in West Africa to Marakesh and on to St Mawgan in Cornwall. At 1238 on 1 February, the aricraft took off from St Mawgan to fly to the large USAAF base at Burtonwood, but never arrived. A bus driver on the Llanberis Pass hear a low flying aircraft and then an explosion, but did not report it until the next day. The RAF Mountain Team were called out the next day and found that MARAUDER had struck the very summit opf the 3,104ft Y Garn. Strong winds had blown it off course. A memorial plaque has been placed in the wall of a lay-by in the Llanberis Pass. Source: Doylerush, E, 1999, No Landing Place Volume 2: More Tales of Aircraft Crashes in Snowdonia, pg28 The investigation into the accident noted that this B-26 was assigned to the 9th Army Air Force (9 AAF). The incident occurred on 1 February 1945, at Llanberis at 13:00 local time. The crew comprised pilot 2nd Lt Kenneth W Carty (killed); co-pilot 2nd Lt William H Cardwell Jr (killed); navigator 1st Lt Nalen B Sewell (killed); radio operator Cpl Jack D Arnold (killed); and engineer Cpl Rudolph M Aquirre (killed). The pilot had some 507 hours of flying experience, 189 on this model. The pilot's mission was ferrying and transferring to a new permanent station. The plane was being ferried from St Mawgan to Burtonwood and flew into a mountain whilst relying on instruments and uncertain of position. The plane was a combat replacement aircraft with an ATC navigator. At 09:00 zulu, the crew were briefed with 15 others on their final destination flight to Burtonwood. The crews were told that Valley would be open all day and was an alternative landing field. However, no communications regarding the weather at Valley were available by teletype or telecommunications. The briefing from St Mawgam was to climb immediately to 5000ft and if necessary to rely on instruments. A pilot who had just come in described the heights of the mountains and likely cloud conditions along the Welsh coast. The plane was airbourne by 12:32 zulu time. Twelve of the aircraft in flight arrived at Burtonwood, 2 at RAF aerodromes in the vicinity and 1 at Valley. After its fuel supply would have been exhausted, the plane was reported missing. On 2 February, an unidentified aircraft was located near Llanberis by a British Radio Unit. The following day the search party identified the B-26 by fragments of personal effects from the crew. The aircraft was strewn over an area of 2000 square yards, its position 57 7N, 4 2 50W. The aircraft disintegrated as it skidded over the top of the mountain a distance of 1000yards. The bulk of the aircraft went over a cliff on the far side of the mountain and plunged 500ft into a ravine where it came to rest and burnt beyond recognition. The investigators recommended that inexperienced crews be led to their destination by pilots who have experience of flying in the UK. Source: US Air Accident Record 44-12-29-503, RCAHMW Digital Collections Highest fragments of wreckage (reportedly parts of the crew seats) were found at SH6309560149 Source: http://peakwreckhunters.blogspot.com/2009/09/martin-marauder-b-26g-44-68072.html Impact point identified by authors by parallel lines in the scree and fragments of wreckage at SH6284259856. Authors relate a report that by the early 1960s only the propellors lay on this side, the wing sections having seemingly been pushed over the cliffs. Visual assessment of the wider area identified other fragments including undercarriage at SH631602. Third party comment reported that at Cwm Cywion they identified numerous bits including two large undercarriage legs with remains of brake shoes present. Also found were several heavy steel cowlings which were thought to be armour. Other fragments were identified on a grassy plateau at SH6317560096 and more small pieces of wreckage were found at SH6317760020. Source: http://peakwreckhunters.blogspot.com/2009/04/martin-marauder-b-26g-44-68072_28.html Following the impact the bulk of the wreckage travelled up the slope and fell into Cwm Cywion, leaving only a few fragments near the summit. Strewn across the northern face of the mountain are the undercarriage legs, sections of armour plating and fragments of aluminium. The trail of larger pieces of wreckage runs from SH631600 over an escarpment and along the stream to approximately SH632603 Source: Wotherspoon, Clark and Sheldon, 2009 The authors note (1985) that many fragments were identified on the scree slopes above Cwm Cywion including the rear turret armour and undercarriage legs. They report that the two Pratt and Whitney Double Wasp engines have recently been taken away to be cleaned up so they can be displayed in the museum.

	Source: Snowdonia Aviation Historical Group, 1985
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Ferry flight
Record Origin	RCAHMW
Date of Compilation	20/02/2012

PRN	33689
NPRN	515282
Sitename	Aircraft Crash Site, Miles Master, Rhobell Fawr
Serial number	AZ714
NGR	SH7825
Period	Modern
Community	Brithdir and Llanfachreth
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rough Grassland; Rock
Circumstances of crash	Aircraft clipped Rhobell Fawr in cloud and fell inverted onto a broad ledge
Notes	The author notes that this MILES MASTER was assigned to 17(P)AFU. It crashed on Rhobell Fawr in cloud on 11 July 1943. No survivors. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg93 The author notes that the Master was flown by Sgt Eric Galloway for a routine training flight from the 17 (P) Advanced Flying Unit based Calveley, Cheshire. Visibility became poor with rain and low cloud. After an hour and a half, Galloway was forced to descend to get his bearings. The Masters clipped of Rhobell Fawr and fell inverted onto a broad ledge. Galloway survived the crash, but had a fractured ankle, head injuries, severe bruising and shock. Galloway found his way down a stream bed to a ruined shepfold, where he was eventually discovered by Evan Lloyd Davies, his son, and Lloyd Foster, another farmer who had come to round up a flock of sheep. Lloyd Davies raised the alarm at Blaenau Hall and an ambulance was brought with great difficulty to the sheepfold. Galloway made a complete recovery and resumed flying 8 months later. Source: Doylerush, E, 1999, No Landing Place Volume 2: More Tales of Aircraft Crashes in Snowdonia, pg70-2 On a routine cross-country flight the pilot became lost in poor weather conditions. He descended to 2200 feet in order to pick up a recognisable landmark and struck the upper slopes of Rhobell Fawr shortly afterwards. The pilot was treated for his injuries. Source: Snowdonia Aviation Historical Group, 1985
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew survived crash
Object of flight	Cross Country flight
Record Origin	RCAHMW
Date of Compilation	22/02/2012

PRN	33690
NPRN	515283
Sitename	Aircraft Crash Site, North American P51D Mustang, Cwm y Dolau
Serial number	44-72340
NGR	SH8404323682
Period	Modern
Community	Llanuwchllyn
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rough Grassland; Coniferous plantation
Circumstances of crash	High-speed impact following a dive when pilot experienced problems with oxygen supply
Notes	The author notes that this NORTH AMERICAN P-51 MUSTANG was assigned to 335 FS/4FG. The aircraft dived out of formation and crashed on Aran Fawddwy on 17 May 1945. It was believed that the pilot was deprived of oxygen and passed out. The pilot was killed. Author notes serial number as 44-726844 Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg93 The author gives the aircraft ID as 44-72340 and notes the pilot's name as Capt Richard L Tannehill. The aircraft was flying in a formation with P-51s from the 335th Fighter Squadron coded WD. It dived out of formation into a steep spin and crashed on the lower slopes of Aran Fawddwy (oxygen starvation for the pilot being the mostly likely cause). The pilot was killed. Source: Doylerush, E, 1999, No Landing Place Volume 2: More Takes of Aircraft Crashes in Snowdonia, pg33 The investigation into the accident noted that this P-51d-20NA was assigned to the 2nd AD, 8th Army Air Force, 4th Fighter Group, 335 Fighter Squadron. The incident occurred on 17 May 1945 at 10:30, 1 mile south-east of Drws y Nant. The pilot was Captain Richard L Tannehill (killed). The pilot had some 2103 hours of flying experience, 27 on this model. The pilot's mission was to take 335 Fighter Squadron on a formation training flight from and returning to AAF Station F-356. After 50 minutes flying, when the formation were flying at 29,000ft and above cloud tops at 26-27,000ft, the Captain was seen to pull up and peel off sharply from formation and start down in a dive, disappearing in clouds. The leader of Supreme Section banked to try and keep the aircraft in sight, but it was lost in clouds. The time was 10:23 and the altitude 28,500ft.The lapse of time from peel-off to the reported crash time suggests that recovery was not attempted. As at 10:25, the aircraft crashed approximately 1.5 miles northeast of Drws-y-Nant Railway Station near Dolgellau. From a letter found in the vicinity, the deceased pilot was identified as belonging to 4th fighter group, 335 Squadron. The property on which aircraft crashed was called Ty-Cerrig, Rhydymain, Dolgellau. RAF Llanbedr were notified and a RAF Guard was mounted. The incident reports includes a sketch plan of where various parts of the plane were found Source: US Air Accident Record 45-05-17-527, RCAHMW Digital Collections Site apparently looted in early 1990s Source: http://peakwreckhunters.blogspot.com/2010/06/north-american-p-51-d-mustang-44-72340.html Authors claim to have finally found wreckage relating to this crash in deep tree cover. NGR described as only 25m accurate but site close to small stream and large boulder. Source: http://peakwreckhunters.blogspot.com/2010/09/north-american-p-51-d-mustang-44-72340.html Wreckage is scattered on both sides of the Afon Ty Cerrig. The impact site lies to the south of the river in dense forest and sections of airframe can be found to the north of the river. Source: Wotherspoon, Clark and Sheldon 2009
International rarity of aircraft	1-5% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Flying formation practice
Record Origin	RCAHMW
Date of Compilation	22/02/2012

PRN	33691
NPRN	515284
Sitename	Aircraft Crash Site, Republic P-47 Thunderbolt, Mynydd Copog
Serial number	42-75101
NGR	SH8845314438
Period	Modern
Community	Mawddwy
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rough Grassland
Circumstances of crash	Aircraft stalled at low altitude, spiralled downwards and crashed into the ground at high speed
Notes	The author notes that this REPUBLIC P-47 THUNDERBOLT was assigned to 49 FTG. The aircraft flew into Mynydd Copog in cloud on 4 May 1944. The pilot was killed. Wreckage can be found at 125/884143 Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg93 The author notes that this fighter took off from USAAF Station 342 at Atcham, Shropshire, in the early evening of 4 May 1944 to practice instrument flying and acrobatics. By 1930, the pilot 1st Lt John W Beauchamp, had changed to the acrobatic phase of the flight with visibility at 2 miles and a cloud ceiling at 3,000ft. Beauchamp put the Thunderblot into a steep climb and roll. During the second roll, the Thunderbolt went into a spin. This was recovered from, but at too low an altitude. The aircraft struck Mynydd Copog, near Mallwyd. The pilot was killed. Source: Doylerush, E, 1999, No Landing Place Volume 2: More Tales of Crashed Aircraft in Snowdownia, pg33, photo wreckage pg31 The report compiled of the incident noted that the P-47D was assigned to the 8 AFCC, 8 Air Force , 495 Fighter Training, 521nd SE Fighter Training. The incident occurred at Llwynglas Mountain, Mallwyd, on 4 May 1944 at 19:30. The pilot was 1st Lt John W Beauchamp (killed). The pilot had some 330 flying hours, 84 on this model of aircraft. The aircraft had cleared from Atcham on a non-operational aerobatics and instrument training flight. Through eye-witness accounts, the investigators noted that the pilot had been zooming over the hills and in valleys - down a valley, picking up steeply and executing a double roll each time. In his last roll, the aircraft flicked and spun. After two complete spins, the pilot applied full power for recovery but failed to clear the high ground. His recovery height was estimated at 2000ft, which gave him only 600ft clearance above the terrain. The investigators suggested that the aircraft had stalled. However, other eyewitnesses stated that immediately after completing what appeared to a controlled spin, the aircraft began to spin downwards. The spinning increased as the aircraft fell. A flame was seen coming from the back of the starboard wing where the wing joins the fuselage. Or black smoke was seen coming from both exhaust pipes and suddenly the plane caught fire. Or the dive was straight and appeared to have been at full power. The local police report noted that the airman's body had been recovered by the Home Guard. Source: US Army Air Force Report of Aircraft Accident 44-05_04_524, RCAHMW Digital Collections. The Pratt and Whitney Double Wasp engine and large quantities of airframe wreckage remain on the site which is located on the edge of a tree plantation. Source: Wotherspoon, Clark and Sheldon, 2009 The site is known to have large pieces of wreckage still present. Further wreckage is located in the woods. Source: http://peakwreckhunters.blogspot.com/2008/12/republic-p-47d-thunderbolt-42-75101_1528.html A forest has been planted since the aircraft crashed, and some wreckage has been moved as a result but this is an easily accessible site with a lot of wreckage remaining. Metal skinning with dark olive paint is present along with stainless steel turbo charger items. The main item of interest is the corroded Pratt and Whitney engine. Source: Hill, 1994
International rarity of aircraft	1-5% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Aerobatic and Instrument mission (non-operational)
Record Origin	RCAHMW
Date of Compilation	22/02/2012

PRN	33692
NPRN	515285
Sitename	Aircraft Crash Site, Republic P-47C Thunderbolt, Aran Fawddwy
Serial number	41-6246
NGR	SH8637321886
Period	Modern
Community	Mawddwy
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Boulders; Rock
Circumstances of crash	Aircraft flew into rocky mountainside
Notes	The author notes that this REPUBLIC P-47 THUNDERBOLT was assigned to 49 FTG. The aircraft dived into Aran Fawddwy on 16 September 1944. The pilot was killed. Wreckage can be found at 125/862222 Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg93 The author notes that this fighter took off from USAAF Station 342 at Atcham, Shropshire, on 16 September 1944 for an interception and attack misson and then vanished. A shepherd found the crash site 5 days later, 100ft below the summit of Aran Fawddwy (2970ft) scattered down gullies on the east face. A take off checklist confirmed that it was the missing P-47C. The pilot's remains, Flt Officer Peter Quinci, were recovered and taken back to RAF Llanbedr by the Mountain Rescue team of RAF Llandwrog. Source: Doylerush, E, 1999, No Landing Place Volume 2: More Tales of Crashed Aircraft in Snowdownia, pg33, photo wreckage pg31 The investigation into the accident noted that this P-47C was assigned to the 8 AFCC, 8th Air Force, 495th Group, 551st Fighter Training, and to AAF Station 342 (Atcham). The pilot was Flight Officer Peter Quinci (killed). Quinci had 345 hours of flying experience, 6 hours in this model. The incident happened on 16 September 1944 at around 20:30 at Aran Mawddwy mountain, Merioneth. F/O Quinci had been flying an individual scheduled Interception and Attack mission. The aircraft was reported at 21:30 on 16 September, The RAF carried out searches and then the pilot's home station. Wreckage was not found until the 23 September, when the 'Northwest Filter' informed the station that wreckage had been seen. On 24 September, an investigating party was sent out and identified the aircraft by its tail section. The aircraft was found approximately 100ft from the top of the 2970ft mountain. The plane was judged to have been flying in a northwesterly direction at an estimated at a height of 2300ft (cruising level) when it struck and exploded. There had been no radio contact with the pilot. Source: US Air Accident Record 45-09-16-519, RCAHMW Digital Collections The impact point is located high on a steep rock face but the majority of the wreckage is found at the base of the slope where it came to rest. Present are an undercarriage leg, the turbo-charger and supply ducting along with panels from the fuselage and wings. Source: Wotherspoon, Clark and Sheldon, 2009 A number of larger pieces of wreckage remain on site, some with identifying marks. Unfortunately the wreckage has recently been tampered with, perhaps being arranged for photographs. Source: N Steele GAT site visit 2011
International rarity of aircraft	1-5% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Training - Intercept and attack
Record Origin	RCAHMW
Date of Compilation	23/02/2012

PRN	33693
NPRN	515286
Sitename	Aircraft Crash Site, Supermarine Spitfire, Cwmorthin
Serial number	R6834
NGR	SH678468
Period	Modern
Community	Ffestiniog
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rough Grassland; Boulders
Circumstances of crash	Aircraft impacted with high ground when descending through cloud
Notes	The author notes that this SUPERMARINE SPITFIRE was assigned to 57 OTU. The aircraft crashed 5 miles south-west of Dolwyddelan on 26 May 1941. The pilot was killed. Author records serial number as R6334. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg93 The author records the serial number as R6834 and notes the place of the crash as Cwm Cwmorthin. The aircraft apparently descended through cloud. NGR given as 115/67-46- Source: Smith 1997
International rarity of aircraft	1-5% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	23/02/2012

PRN	33694
NPRN	515287
Sitename	Aircraft Crash Site, Supermarine Spitfire, Yr Aran
Serial number	X4843
NGR	SH6061551687
Period	Modern
Community	Betws Garmon
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rough Grassland; Rock (Scattered)
Circumstances of crash	Aircraft crashed into high ground
Notes	The author notes that this SUPERMARINE SPITFIRE was assigned to 57 OTU. The aircraft flew out of radio range of Hawarden and hit the peak of Yr Aran in cloud. The pilot was killed. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg93 A few fragments remain including a plate stamped with the date of construction. The author notes that more fragments seem to have recently disppeared from this crash site. Source: http://peakwreckhunters.blogspot.com/2009/05/supermarine-spitfire-mk-i-x4843.html
International rarity of aircraft	1-5% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Direction-finding homing Exercise
Record Origin	RCAHMW
Date of Compilation	23/02/2012

PRN	33695
NPRN	515288
Sitename	Aircraft Crash Site, Supermarine Spitfire, Cwm Barlwyd
Serial number	X4239
NGR	SH7148
Period	Modern
Community	Ffestiniog
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rough Grassland
Circumstances of crash	Aircraft crashed into high ground
Notes	The author notes that this SUPERMARINE SPITFIRE was assigned to 57 OUT. The aircraft crashed on Cwm Barlwyd. The pilot was killed. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg93 Crash occurred in Cwm Barlwyd peat bog above Llyn Barlwyd. Source: http://www.aditnow.co.uk/community/viewtopic.aspx?t=2463 Crash occurred at Cwm Bowydd Mountain whilst on training flight Source: Snowdonia Aviation Historical Group, 1985
International rarity of aircraft	1-5% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Training (General)
Record Origin	RCAHMW
Date of Compilation	23/02/2012

PRN	33696
NPRN	515289
Sitename	Aircraft Crash Site, Vickers Wellington MKIC, Garn Fadryn
Serial number	X3198
NGR	SH278351
Period	Modern
Community	Tudweiliog
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Heath; Boulders
Circumstances of crash	Aircraft crashed in fog
Notes	The author notes that this VICKERS WELLINGTON was assigned to 21 OTU. The aircraft flew into the summit of Garn Fadryn in cloud on 28 July 1941. There were no survivors. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg93 The author notes that this Wellington was one of 50 ICs delivered between August 1940 and June 1941 by Vickers at Squires Gate. It was assigned to 15 OTU/21 OTU The aircraft flew into high ground near Llaniestyn, Caernarvonshire, on 28 July 1941. Source: Halley, J, 1984, Royal Air Force Aircraft X1000 - X9999, Z1000 - Z9999 pg7 Aircraft crashed on Garn Fadryn, when the aircraft ran into fog on the captain's first solo cross country flight. All the crew were killed, including one Australian. Source: http://homepage.ntlworld.com/ian.cruttenden1/military_service/40623.htm
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	23/02/2012

PRN	33697
NPRN	515290
Sitename	Aircraft Crash Site, Supermarine Spitfire, Tarrenhendre
Serial number	BL518
NGR	SH675035
Period	Modern
Community	Bryn Crug
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Heath; Rough Grassland
Circumstances of crash	Aircraft flew into hillside in cloud
Notes	The author notes that this SUPERMARINE SPITFIRE was assigned to 41 Sqn. The aircraft hit the summit of Tarrenhendre in cloud on 22 October 1942 along with two others Spitfires (see NRPNs 515291-2). The pilot was killed. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg93 41 Squadron was the resident fighter squadron at Llanbedr from August 1942, although fighters did depart during the summer to take part in the raid on Dieppe. Following their return, 3 Spitfires of A Flight (R7296, BL518, BM573) took off on a formation flying exercise on October 22nd. They entered cloud and struck the western slopes of Tarrenhendre mountain. The pilots were killed. They were presumed to have crashed into the sea until wreckage was found two days later. BL518 was produced at the Castle Bromwich "shadow "factory and was delivered to 5 MU on 12/12/1941, serving with 313, 154 and 71 squadrons before flying with 41 squadron. Aircraft from RAF Llanbedr searched for the aircraft and as no trace was found the spitfires were presumed to have crashed at sea. On October 24th the wreckage was discovered. The bodies of the pilots were recovered and the following day a team from Llanbedr removed the remains of the aircraft. Source: Snowdonia Aviation Historical Group, 1985
International rarity of aircraft	1-5% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Formation flight
Record Origin	RCAHMW
Date of Compilation	23/02/2012

PRN	33698
NPRN	515291
Sitename	Aircraft Crash Site, Supermarine Spitfire MKVB, Tarrenhendre
Serial number	BM573
NGR	SH675035
Period	Modern
Community	Bryn Crug
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Heath; Rough Grassland
Circumstances of crash	Aircraft flew into hillside in cloud
Notes	The author notes that this SUPERMARINE SPITFIRE was assigned to 41 Sqn. The aircraft hit the summit tof Tarrenhendre in cloud on 22 October 1942 along with two others Spitfires (see NRPNs 515290 and 292). The pilot was killed. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg93 The author notes that this Spitfire was one of 1000 delivered to the RAF by Vickers Armstrong of Castle Bromwich, between November 1941 and November 1942. Its service life included assignments to 610/41 Squadrons. The aircraft flew into a hill in bad visibility at Tarrenhendre, Merioneth on 22 October 1942.4. Source: Halley, J J, 2006, Royal Air Force Aircraft BA100 to BZ999, pg83 41 Squadron was the resident fighter squadron at Llanbedr from August 1942, although fighters did depart during the summer to take part in the raid on Dieppe. Following their return, 3 Spitfires of A Flight (R7296, BL518, BM573) took off on a formation flying exercise on October 22nd. They entered cloud and struck the western slopes of Tarrenhendre mountain. The pilots were killed. They were presumed to have crashed into the sea until wreckage was found two days later. BM573 was built at Castle Bromwich "shadow" factory and delivered to the RAF on 02/05/42, serving with 610 squadron before being assigned to 41. The site of the impacts is uneven and heather-covered but with some effort fragments of wreckage can be found including part of a glycol header tank, a fragment of rudder bar and part of a Merlin engine plumbing. Without serial numbers though it is not possible to identify the individual aircraft. Source: Hill, 1994 Aircraft from RAF Llanbedr searched for the aircraft and as no trace was found the spitfires were presumed to have crashed at sea. On October 24th the wreckage was discovered. The bodies of the pilots were recovered and the following day a team from Llanbedr removed the remains of the aircraft. Source: Snowdonia Aviation Historical Group, 1985
International rarity of aircraft	1-5% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Formation flight
Record Origin	RCAHMW
Date of Compilation	23/02/2012

PRN	33699
NPRN	515292
Sitename	Aircraft Crash Site, Supermarine Spitfire MKVB, Tarrenhendre
Serial number	R7296
NGR	SH675035
Period	Modern
Community	Bryn Crug
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Heath; Rough Grassland
Circumstances of crash	Aircraft flew into hillside in cloud
Notes	The author notes that this SUPERMARINE SPITFIRE was assigned to 41 Sqn. The aircraft hit the summit of Tarrenhendre in cloud on 22 October 1942 along with two others Spitfires (see NRPNs 515290-1). The pilot was killed. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg93 41 Squadron was the resident fighter squadron at Llanbedr from August 1942, although fighters did depart during the summer to take part in the raid on Dieppe. Following their return, 3 Spitfires of A Flight (R7296, BL518, BM573) took off on a formation flying exercise on October 22nd. They entered cloud and struck the western slopes of Tarrenhendre mountain. The pilots were killed. They were presumed to have crashed into the sea until wreckage was found two days later. R7296 was built at the Supermarine works at Woolston and first flew from Eastleigh on 03/04/41. It was named "Newbury II" after one of the towns that had collected money in the "Wings for Victory" weeks. It was assigned to No 9 MU before serving with 91, 611, 64 and 317 squadrons before moving to 41. The site of the impacts is uneven and heather-covered but with some effort fragments of wreckage can be found including part of a glycol header tank, a fragment of rudder bar and part of a Merlin engine plumbing. Without serial numbers though it is not possible to identify the individual aircraft. Source: Hill, 1994 Aircraft from RAF Llanbedr searched for the aircraft and as no trace was found the spitfires were presumed to have crashed at sea. On October 24th the wreckage was discovered. The bodies of the pilots were recovered and the following day a team from Llanbedr removed the remains of the aircraft. Source: Snowdonia Aviation Historical Group, 1985
International rarity of aircraft	1-5% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Formation flight
Record Origin	RCAHMW
Date of Compilation	23/02/2012

PRN	33700
NPRN	515293
Sitename	Aircraft Crash Site, Vickers Wellington MKIC, Rhosfarch
Serial number	R1068
NGR	SH688025
Period	Modern
Community	Pennal
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rough Grassland
Circumstances of crash	Aircraft descended through cloud and struck mountain
Notes	The author notes that this VICKERS WELLINGTON was assigned to 21 OTU. The aircraft was being flown by a pupil crew, who mistook the estuary for the coast. It descended through cloud and crashed into Rhosfarch mountain on 17 August 1941. There were no survivors. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg93 The author notes that this Wellington was one of 550 delivered to the RAF by Vickers, Chester, to contract 992424/39 between August 1940 and May 1941. Its was assigned to 21 OTU. The aircraft flew into a hill in cloud near Morfa Towyn, Merioneth, on 17 August 1941. Source: Halley, J J, 1996, Royal Air Force Aircraft P1000 to R9999, pg94 Source: Halley, J J, 1980, Royal Air Force Aircraft R1000 to R9999, 5 Th aircraft was on a routing cross-country training flight when the crew made a navigational error on breaking through the cloud cover. Mistaking the Dyfi estuary for the sea they descended and crashed above Pennal. The crew of six were killed. A memorial plaque was erected in Pennal. Source: Snowdonia Aviation Historical Group, 1985 The author found a reasonable amount of small fragments of wreckage on the hillside, mainly airframe and exploded cartridge cases. Two interesting pieces were found: part of the framework of the Frazer-Nash gun turret; and a rudder bar assembly terminal. The author recalls taking a third piece to Brooklands Museum for identification - a glass lens used in an Aldis lamp. Source: Hill, 1994
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Training (General)
Record Origin	RCAHMW
Date of Compilation	23/02/2012

PRN	33701
NPRN	515294
Sitename	Aircraft Crash Site, Vickers Wellington, Moel Farlwyd
Serial number	R3288
NGR	SH705486
Period	Modern
Community	Dolwyddelan
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rough Grassland; Boulders
Circumstances of crash	Aircraft impacted on mountain while descending from cloud at night.
Notes	The author notes that this VICKERS WELLINGTON was assigned to 150 Sqn based at RAF Newton near Nottingham. The aircraft was part of a flight tasked with bombing submarine base at Lorient. The aircraft reached the coast of Britanny in thick cloud. The wireless operator, Sgt L J Kirk, reported that the radio was inoperable and so without being able to accurately navigate to the target, the pilot Flt Officer C H Elliot turned the Wellington around. The bombs were jettisoned over the channel. The aircraft engaged in a dogfight with a Messerschmidt 110, which was eventually seen to go down. During the evasive maneouvres the aircraft was forced to take, the navigator lost dead reckoning and gave the pilot an approximate course. After another 1.5 hours, the pilot brought the Wellington down from 6000ft to 2000ft, to see if any lights could be spotted. The black mass of mountains were seen for a few brief moments and the pilot was forced to aim for the Crimea Pass whilst putting the Wellington into a climb. The aircaft shattered on the rocks of Moel Farlwyd. The rear turret broke off and, complete with the rear gunner Sgt Martlew inside, rolled some 50ft away. Martlew came to an hour later with a fractured leg and severe bruising from the rolling of the turret. The crash happened at 23:58 and the authorities were notified soon after.The rear gunner had been transferred to hospital some three hours later and returned to duty 8 months later. There were no other survivors. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg62-4, 93 The aircraft was off course on return from operations and was unable to check position so the pilot descended from clouds to ascertain position and crashed into the mountain. The aircraft did not burn out. Source: Air Ministry Form 1180
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Some crew survived crash
Object of flight	Bombing
Record Origin	RCAHMW
Date of Compilation	23/02/2012

PRN	33702
NPRN	515295
Sitename	Aircraft Crash Site, Vickers Wellington MKIC, Mynydd Moel
Serial number	HX433
NGR	SH728138
Period	Modern
Community	Dolgellau
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Heath; Rough Grassland; Rock
Circumstances of crash	Aircraft flew into high ground in cloud.
Notes	The author notes that this VICKERS WELLINGTON was assigned to 1443 Flt. The aircraft flew into Cader Idris at night on 28 May 1942. There were no survivors. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg93 The author notes that this Wellington IC was one of 300 Ics and VIIIs delivered to the RAF by Vickers-Armstrong at Weybridge between April and September 1942. It was assigned to 1443 flight and flew into a mountain near Dolgellau on 28 May 1942. Source: Halley, J, 1989 Royal Air Force Aircraft HA100-HZ999, pg112 The aircraft struck the summit of Mynydd Moel in cloud, 20 degrees off course. All six crew members were killed, four are buried at Tywyn cemetery. Source: Snowdonia Aviation Historical Group, 1985 The purpose of the flight had been to complete day cross-country training and assess fuel consumption prior to ferrying the aircraft overseas. The aircraft struck the mountainside in cloud. Small fragments of wreckage are strewn down an unstable scree slope from the point of impact to the base of the slope. Source: Wotherspoon, Clark and Sheldon, 2009
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Cross-country training/fuel consumption testing
Record Origin	RCAHMW
Date of Compilation	23/02/2012

PRN	33703
NPRN	515297
Sitename	Aircraft Crash Site, Vickers Wellington MKIC, Cwm Dyniewyd
Serial number	P9299
NGR	SH886196
Period	Modern
Community	Mawddwy
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rough Grassland; Rock (Scattered)
Circumstances of crash	Aircraft flew into rocky ground when descending through heavy clouds
Notes	The author notes that this VICKERS WELLINGTON was assigned to 1429 Flt. The aircraft flew into Bryn Uchaf, Dyrsygol, in cloud on 6 April 1942. There were no survivors. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg93 P9299 bombed Stavanger aerodrome in Norway, 30/04/1940 and took part in an attempted raid on Ruhr town of Duisberg but had to abort due to engine failure. From 17/05/1049 to 16/11/1940 P9299 took part on 13 raids with 115 squadron including Wilhelmshaven, Hamburg and Gottingen, and attacked Le Havre with 38 Squadron on 27/09/1940. On 16/11/1940 P9299 was damaged on returning from a sortie to Hamburg with 115 Squadron and crash landed at RAF Wittering on its return. Following repair it was transferred to 218 Squadron and carried out 8 raids on princiaplly naval targets, including Bologne, Calais and Kiel, and including an attack on the Scharhorst at Brest on 30/03/1941. Thei aircraft was transferred to the Czech Training Unit on 16/06/1941. It was damaged on 24/10/1941 and repaired onsite before being returned to the unit on 15/11/1941. The unit was then renamed 1429 Flight (Czech O. T. U.). On 06/04/1942 P9299 took off on a routine cross country training flight and before long was over Wales with poor weather conditions and a malfunctioning radio. The aircraft flew up a short dead-end valley and crashed into high ground. Source: Snowdonia Aviation Historical Group, 1985 The radio had bcome unusable and the pilot chose to descend through thick cloud, thinking that the aircraft was over the sea. In fact the aircraft was flying down Cwm Dyniewyd, near Llanymawddwy. The aircraft struck the end of the valley near Pistyll Gwyn waterfall, killing everyone on board. Tha author notes that he found the site difficult to find, especially as it was cleared over 40 years earlier, but in searching through the scree he found numerous fragments of the wreckage including instrument parts, a a few pieces of the geodetic framework, and fixing plates bearing the VA type number 285 and inspectors' stamps. Source: Hill, 1994 A few small fragments of wreckage are scattered on the slope next to the waterfall. Some are difficult to see among the scree while others are hidden by bracken for much of the year. Source: Wotherspoon, Clark and Sheldon, 2009
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Navigational training - cross country
Record Origin	RCAHMW
Date of Compilation	23/02/2012

PRN	33704
NPRN	515298
Sitename	Aircraft Crash Site, Vickers Wellington MKIC, Cwm Llafar
Serial number	DV800
NGR	SH6758363542
Period	Modern
Community	Capel Curig
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rough Grassland; Boulders; Rock
Circumstances of crash	Aircraft hit high ground when descending through cloud
Notes	The author notes that this VICKERS WELLINGTON was assigned to 27 OTU. The aircraft was off track and flew into the Black Ladders in cloud on 19 July 1942. There were no survivors. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg93 The aircraft crashed into Cwm Llafar near Ysgolion Duon. The crew of five were killed. Source: Snowdonia Aviation Historical Group, 1985 The aircraft descended through cloud to obtain a visual fix and flew into the mountainside while on a day cross country navigation exercise. Small fragments of wreckage including geodetic framework have been gathered into a pile close to the impact site although a few pieces can be found lower down the hillside. Image included shows pile of wreckage and clearly legible unofficial memorial plaque Source: Wotherspoon, Clark and Sheldon, 2009 Pile of wreckage at SH6758363542 with virtually illegible plaque. Wreckage trail runs down the banks and bed of Nant y Graig, where black-painted sheet aluminium was found SH6724363603 http://peakwreckhunters.blogspot.com/2008/04/vickers-wellington-dv800.html
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Navigational training - cross country
Record Origin	RCAHMW
Date of Compilation	23/02/2012

PRN	33705
NPRN	515299
Sitename	Aircraft Crash Site, Vickers Wellington MKIII, Perfeddgoed Farm
Serial number	BK234
NGR	SH571698
Period	Modern
Community	Pentir
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Nonconiferous Trees; Coniferous Trees; Scrub
Circumstances of crash	Mid air collision. Fire on impact.
Notes	The author notes that this VICKERS WELLINGTON was assigned to 25 OTU. The aircraft collided with a Bristol Beaufighter X7845 (see NPRN 515299) near Bangor on 21 October 1942. There were no survivors. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg93 The author notes that the crew of the Beaufighter were Squadron leader Roger De Winton Kelsall Winlaw, based at RAF Woodvale near Stourport. The navigator was Pilot Officer C T Ashton. The Beaufighter X7845 was to take part in a 'bullseye' exercise involving mock attacks on Wellington bombers. Unforutnately the two planes collided and fell together at Perfeddgoed Farm, near Bangor. The crews of both planes were all killed. Source: Doylerush, E, 1999, No Landing Place Volume 2: More Tales of Aircraft Crashes in Snowdonia, pg96 The author notes that this WELLINGTON was one of 600 delivered to the RAF between May and December 1942 by Vickers-Amstrong, Chester, tyo fulfil contract B/1234362/40. It was assigned to 25 OTU. On 31 October 1942, the aircraft was in collsion with Beaufighter X7845 on a bombing practice run 2m from Bangor. Source: Halley, J J, 2006, Royal Air Force Aircraft BA100 to BZ999, pg59 Mid air collision at night between Beaufighter X7845 and Wellington BK234 during a bulls eye exercise. Beaufighter closed behind Wellington and did not break off engagement as soon as he was in position to open fire. The pilot of the Wellington acknowledged the attack by turning on his lights and sought to shake off his pursuer by diving steeply. The Beaufighter overtook and collided. There was a fire on impact. Source: Air Ministry Form 1180
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Training - mock bullseye attacks
Record Origin	RCAHMW
Date of Compilation	25/01/2012

PRN	33706
NPRN	515300
Sitename	Aircraft Crash Site, Vickers Wellington MKII, Gerlan
Serial number	W5494
NGR	SH633666
Period	Modern
Community	Bethesda
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface; Rough Grassland; Boulders (Scattered)
Circumstances of crash	Aircraft impacted in field and skidded across the landscape, through stone walls, before burning out
Notes	The author notes that this VICKERS WELLINGTON was assigned to 1446 Flt. The aircraft flew into a hillside near Gerlan, Bethesda, whilst undertaking a low-flying exercise on 22 December 1942. There were no survivors. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg93 The author notes that this Wellington was one of 20 delivered to the RAF between October 1940 and July 1941. Its service life included assignments to 99/142/1443 Flt/1446 Flt. The aircraft hit a hill whilst low flying 1/2 miles east of Bethesda on 22 December 1942. Source: Halley, J J, 1983, Royal Air Force Aircraft V1000-V9999, W1000 - W9999, pg72 The authors note that W5494 was on a training exercise from Moreton-on-the-Marsh, where it was based with 21 Operational Training Unit. Eye-witnesses saw the aircraft fly very low through Nant Ffrancon, between Carnedd y Filiast and Fronllwyd, narrowly missing the two mountains. It flew above Braichmelyn before impacting in the centre of a field above Gerlan. The aircraft slid along the ground, ploughing through three stone walls until coming to rest 75 yards from a farm where it burned out. The crew members were killed instantly. Local people were onsite but unable to take any action. Oxygen cylinders in the wreckage were initially considered to be bombs. Little remains today except a few fragments of alloy stuck in walls near to the crash site, and an impression in the field where the aircraft hit. Source: Snowdonia Aviation Historical Group, 1985
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Training (General)
Record Origin	RCAHMW
Date of Compilation	27/02/2012

PRN	33707
NPRN	515301
Sitename	Aircraft Crash site, Vickers Wellington MKX, Foel Grach
Serial number	HE466
NGR	SH6919766492
Period	Modern
Community	Caerhun
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rough Grassland
Circumstances of crash	Aircraft impacted on mountainside and burned out
Notes	The author notes that this VICKERS WELLINGTON was assigned to 30 OTU. The aircraft's radio was suspected as the cause of the aircraft flying into the east side of Foel Grach at night on 13 February 1943. There were no survivors. Wreckage can be found at 115/692665. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg93 The author notes that this Wellington X was one of 672 delivered to the RAF by Vickers-Armstrong at Hawarden between November 1942 and May 1943. It was assigned to 30 OTU and flew into high ground, Snowdon, in bad visibility on 13 February 1943. Source: Halley, J, 1989 Royal Air Force Aircraft HA100-HZ999, pg23 The aircraft drifted off-track and disintegrated on impact when it flew into Foel Grach. Pieces of geodetic framework and fragments of aluminium are scattered down the slope from the impact point, which is marked by a peat-filled scar containing small wreckage fragments. Source: Wotherspoon, Clark and Sheldon, 2009 The aircraft burned out on impact with Foel Grach. A local farmer located the wreckage the following day and reported it to the police. A party attended from Llandwrog the following day to recover the bodies. The crash site consists of quite a lot of alloy and sections of geodetic framework. The engines were taken away shortly after the war. Source: Snowdonia Aviation Historical Group, 1985
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Navigational training - night time cross country
Record Origin	RCAHMW
Date of Compilation	27/02/2012

PRN	33708
NPRN	515303
Sitename	Aircraft Crash Site, Lockheed Ventura, Carnedd Dafydd
Serial number	AE688
NGR	SH6597962473
Period	Modern
Community	Capel Curig
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Scree
Circumstances of crash	Aircraft flew into mountainside and burned out
Notes	The author notes that this LOCKHEED VENTURA was assigned to 464 Sqn. The aircraft flew into Carnedd Dafydd at night on 18 August 1943. There were no survivors. A photograph showing one of the engines (a Pratt & Whitney 2000hp Double Wasp radial engine) is shown on pg94 Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg93 The aircraft flew into a mountainside and burned out while on a night cross country navigation exercise. Wreckage is strewn down the steep slope from the impact point onto the scree below. Wreckage includes one of the main undercarriage legs and small fragments of airframe bearing paintwork. Further pieces of wreckage including a section of outboard wing lie with the wreckage of Anson N9855 at SH660622. Source: Wotherspoon, Clark and Sheldon, 2009 Probable exhaust manifold located at SH6600062282 and fragments are scattered down the valley Source: http://peakwreckhunters.blogspot.com/2008/07/lockheed-ventura-ae699_9664.html The impact of AE688 on the steep southern slope of Carnedd Dafydd was heard by the Army Battle School Unit who were training near Ogwen lake. They assisted the Llandwrog Mountain Rescue Unit in locating the crash. When the teams arrived at Ffynnon Lloer they could see the aircraft still alight on the scree slopes to the north of the lake. The bodies of the four crew were recovered the following morning. The wreckage is spread from the point of impact to the edge of the lake where many of the alloy fragments are mixed with Anson N9855. Source: Snowdonia Aviation Historical Group, 1985 Aircraft struck ground with engines turning ok. Aircraft flew up valley at too low an altitude and with fatal results. Source: Air Ministry Form 1180
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Navigational training - night time cross country
Record Origin	RCAHMW
Date of Compilation	27/02/2012

PRN	33709
NPRN	515304
Sitename	Aircraft Crash Site, Vickers Wellington, Llanbedr
Serial number	HE872
NGR	SH57802427
Period	Modern
Community	Dyffryn Ardudwy
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rough Grassland
Circumstances of crash	Aircraft failed to take off from runway and crashed into buildings
Notes	The author notes that this VICKERS WELLINGTON was assigned to 26 OTU. The aircraft crashed near Llanbedr on a test flight on 4 November 1943. Five of the six crew survived. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg94 The author notes that day before the Wellington had been on a routine training flight, but on entering a dark cumulo-numbus cloud, the plane dived out of control. The crew managed gain control but could not maintain height and so an emergency landing at Llanbedr was undertaken. The next day, at the start of a test flight after the plane had been worked on by mechnics overnight, the plane attempted to take off and but did not leave the ground, but careered into outbuildings at Ynys Farm. The mid upper gunner, Sgt Hupage, was killed along with an electrician, LAC I W Jones. The rear gunner, Sgt M O'Hanlon suffered head injuries. The pilot Sgt Les Edwards of Conway had arm injuries which later precluded him from handling a heavy bomber. Two other normal crewmembers, Sgt John Chigwidden, the navigator and Sgt George, the front turret gunner, had been excused from the test flight and had gone into the village. Source: Doylerush, E, 1999, No Landing Place Volume 2: More Tales of Aircraft Crashes in Snowdonia, pg78-9
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Some crew survived crash
Object of flight	Test flight
Record Origin	RCAHMW
Date of Compilation	27/02/2012

PRN	33710
NPRN	515305
Sitename	Aircraft Crash Site, Vickers Wellington MKVIII, Moel y Croesau
Serial number	LB185
NGR	SH74713855
Period	Modern
Community	Trawsfynydd
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Heath; Rough Grassland
Circumstances of crash	Aircraft flew into mountainside at speed when descending to fix position
Notes	The author notes that this VICKERS WELLINGTON was assigned to 3 OTU. The aircraft was being used for a programme of 10 long-distance cross-country training flights incorporating sea legs to prepare crews for operational flying. On this last flight, the Wellington left Withybush at 20:15 relying primarily on the radio for navigational guidance. The wireless operator (Sgt Alex Sinclair) and gunner (Sgt Maskell) routinely changed positions. When the radio failed, the crew flew on for another 6 hours, hoping the radio situation would improve when the cloud base cleared. Low on fuel, the pilor Sgt Wolman had no choice but to reduce altitude in the hope of establishing their position. At 2:25, the Wellington hit the summit of Moel y Croesau near Trawsfynydd. The rear turret, complete with Sinclair, was catapulted another 100 yards further on. The only other surivior, Maskell, had been thrown out into a marsh and was buried waist deep. Sinclair went for help and some 4.5 hours later reached the farm of Bwlch Gwyn to rasie the alarm. The medical officer from an nearby army camp treated Sinclair. At 8:15am, the Llandwrog Mountain Rescue team was called out and reached the crash site at 10:00. Sgt Maskell was found to have broken his spine and Sinclair to have both head and internal injuries, but both had survived. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg74-5,94 The author notes that Maskell spent the remainder of his life in various hospitals. He went the the Star and Garter Home in Richmond in November 1945 and died there as a result of his injuries on 21 January 1946. Source: Doylerush, E, 1999, No Landing Place Volume 2: More Takes of Aircraft Crashes in Snowdonia, pg103 The author notes that this Wellington was one of 150 Ics and VIIIs delivered in September and December 1942 by Vickers at Weybridge. It fitted as a torpedo bomber and assigned to 3 OTU. It flew into a mountainside in cloud 1 mile north of Trawsfynydd on 20 November 1943. Source: Halley, J, 1991, Royal Air force Aircraft LA100 - LZ999, pg13 A few tiny fragments of wreckage remain below a small rocky outcrop on the southern side of the knoll into which the aircraft flew. Source: Wotherspoon, Clark and Sheldon, 2009 During the flight the radio became unservicable, so the pilot decided to descend and fix a position when fuel stores became critically low. The aircraft was still in thick fog when it impacted on Moel y Croeso, a high boggy heathland south of Ffestiniog. The author reports speaking to a witness on visiting the site, who described the scene after the crash as shocking due to the human remains scattered around. The crash site is located a few hundred yards from Dolddinas mine, by a large rocky outcrop next to the track that runs beneath the pylons crossing the moor from Trawsfynydd power station. Most large wreckage has gone but small fragments and sections of geodetics bearing discernable part numbers can be found. Source: Hill, 1994 LB185 flew into a mountainside above Trawsfynydd with a blinding flash and an ear-splitting explosion. Source: Snowdonia Aviation Historical Group, 1985
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Some crew survived crash
Object of flight	Navigational training - night time cross country
Record Origin	RCAHMW
Date of Compilation	29/02/2012

PRN	33711
NPRN	515306
Sitename	Aircraft Crash Site, Vickers Wellington, Aberdyfi
Serial number	X9666
NGR	SN632977
Period	Modern
Community	Aberdyfi
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rough Grassland
Circumstances of crash	Aircraft flew into mountainside while descending through low cloud and broke apart/burned
Notes	The author notes that this VICKERS WELLINGTON was assigned to 21 OTU. The aircraft crashed into a hillside near Aberdyfi on 31 December 1943 after descending through a gap in cloud. Two of the five crew survived. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg94 The aircraft was totally destroyed by the impact. Source: Snowdonia Aviation Historical Group, 1985 The aircraft had just completed a bombing exercise near Aberdyfi and was flying north across the Dyfi estuary and descending through a gap in the cloud. Unfortunately the timings were slightly wrong and they descended slightly too late, instead approaching the high ground. The aircraft banked sharply to port, which may be an indication that the pilot saw the rising ground in front, but the port wing struck the ground, the fuselage broke in two and the aircraft caught fire. Two crew members survived. The site is easily approached by a minor road running uphill from Aberdyfi to high ground south of Happy Valley (Cwm Maethlon). After crossing a cattle grid a faint track through marshes heads towards the site in a southerly(?) direction which is located in a small field. The author notes that he searched the site, with the landowner's permission, but states that there is little hope of finding anything. Source: Hill, 1994
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Some crew survived crash
Object of flight	Bombing practice
Record Origin	RCAHMW
Date of Compilation	29/02/2012

PRN	33712
NPRN	515307
Sitename	Aircraft Crash Site, Vickers Wellington MKX, Llanrwst
Serial number	HF519
NGR	SH8163
Period	Modern
Community	Llanddoged and Maenan
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - grass?
Circumstances of crash	Aircraft dived into hillside after stalling while descending through cloud
Notes	The author notes that this VICKERS WELLINGTON was assigned to 26 OTU. The aircraft crashed into a hillside near Llanrwst after descending to gain a visual fix on 16 May 1944. There were no survivors. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg94 The author notes that this Wellington X was one of 672 delivered to the RAF by Vickers-Armstrong at Hawarden between November 1942 and May 1943. Its service life includes assignments to 466/26 OTU. The aircraft's engines stalled whilst descending in cloud and it dived into the ground 1 mile northeast of Llanrwst, Caernarfon on 16 May 1944. Source: Halley, J, 1989 Royal Air Force Aircraft HA100-HZ999, pg28
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	29/02/2012

PRN	33713
NPRN	515316
Sitename	Aircraft Crash Site, Boeing B-17G Flying Fortress, Craig Cwm Llwyd
Serial number	44-8639
NGR	SH6444112236
Period	Modern
Community	Arthog
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rough Grassland
Circumstances of crash	The aircraft struck the hillside while trying to fly up and over the high ground. It impacted and then slid downwards where it burned out.
Notes	The author notes that this Flying Fortress had taken off from Polebrook, Northampton, for RAF Valley to refuel before heading across the Atlantic for home. The pilot was 1st Lt Howard R Hibbard and in addition to the crew, there were 10 passengers on board (20 in total). On reaching the coast near Barmouth, the pilot was flying at 900ft and requested a QDM or course to steer to RAF Valley. The pilot turned onto a reciprocal bearing and straight into the side of Craig Cwm Llwyd. The investigation concluded that the pilot realised his error inside the Barmouth estuary and tried to climb on a bearing of 230 degrees to clear high ground. The aircraft struck the mountain at 1100ft and careered another 300ft to where it burst into flames and exploded. All were killed. A memorial plaque has been erected on the site by Matt Rimmer, who has undertaken extensive research into the crash. Source: Doylerush, E, 1999, No Landing Place Volume 2: More Tales of Crashed Aircraft in Snowdownia, pg30 The investigation into the accident noted that this B-17 was assigned to the 8th Army Air Force, 1st Division, wing 94 CBW, 351 B H group, 511 BH Squadron. It was stationed at Polebrook (Station 110) and flying from there to 1407th AAF B.U. The pilot was 1st Lt Howard R Hibbard (killed); co-pilot Capt Joseph C Robinson (killed); Navigator Capt Joseph A Glover (killed); Nose Gunner T Sgt Kenneth W Craumer (killed); Tail Turret Gunner (TTG) T Sgt Lester A F Rhein (killed); BTG (?) Sgt David I Rapoport (killed); ROG T Sgt t Sgt Max Markshied (killed); TG (tail gunner?) S Sgt Santo A Caruso (killed); Wg (wing gunner?) S Sgt Robert E Smith (killed); and ECC M Sgt John Q Montgomery (killed). The weather was determined as being a contributing factor with the mountain tops being obscured. The first contact made with the aircraft was at 08:17 GMT, when the pilot asked for the QDM for Valley. The QDM was sent but never acknowledged by the aircraft. Calls were made on 126.18 MGS every three minutes, but no further contact was made with the B-17. The investigator believed that the aircraft was flying at 900ft over the water, came up the inlet at Barmouth, and when inside the inlet realised his postion and was attempting to turn right to get free of high ground. The propellers were in high RPM suggesting the pilot knew the gravity of the situation. The aircraft was on a heading of 230 degrees when it struck at 1100ft. All of the aircraft, but two engines, which rolled down the hill to around 800ft, was consumed by fire. The wreckage was scattered over an area of 800 square yards. The recommendations noted that the accident could have been avoided if the radio navigational aids of the receiving station had been used to the fullest extent and that the published minimum instrument height of 5000ft over northern England had been maintained. Source: US Accident Report, RCAHMW Digital Collections A large scar containing small fragments of melted aluminium is visible on the steep grassy slope where the aircraft burned out. Below the site on a stone wall at SH643124 is a memorial plaque unveiled 50 years after the crash. Source: Wotherspoon, Clark & Sheldon, 2009 The author notes that when he finally located the site, he began to search at the gap in the wall created by the engine and found a fragment of alloy. He then scoured the impact site and identified many fragments of metal as well as a gold fountain pen knib, hydraulic pipe unions, parachute fabric and assorted fuses. He attributes the bright fires witnessed on site to be from pools of melting magnesium. Source: Hill, 1994 (aircraft serial number incorrectly noted in reference as 44-6005) The impact site is located above the burn site at SH6445012218. The wreckage on the burn site (SH6444112236) is small and fragmentary but does include some small personal effects. The wreckage was cleared away in the month following the crash although some elements of the wider site remain. Contemporary eye witness accounts recalled 'rivers of fire' running down the slope to the trackway below. There are frequent signs of tampering on the site. Source: M. Rimmer, Pers. Comm., 2012
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Ferry flight
Record Origin	RCAHMW
Date of Compilation	29/02/2012

PRN	33714
NPRN	515319
Sitename	Aircraft Crash Site, Heinkel HE111 H-6, Bodffordd
Serial number	F8+KR
NGR	SH419778
Period	Modern
Community	Bodffordd
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - grass?
Circumstances of crash	Aircraft dived into ground following attack
Notes	The author tells the story with reminiscences from Pilot Officer Mervyn C Shipard RAAF. Together with Sgt Douglas A Oxby, he was flying a Beaufighter assigned to 68 Squadron based at Ercall, Shropshire. The Beaufighter had been sent to RAF Valley to undertake a routine patrol off Bardsey but was put on alert by Teregwn GCI radar at 2046. The Beaufighter was directed to come up behind the unidentified aircraft and confirmed it was a Heinkel. At 12700ft and 300ft dead astern, Shipard opened fire and starboard engine of the Heinkel caught fire and then the whole of the interior. It fell steeply to port and spiralled down to crash near Bwlch-y-Fen near Gwalchmai at 2305 hours,. The 4-man crew were killed - Leutnant G Leins, Unteroffizieren A Tepe, G Fisher and Gefreiter R Tergesten. The body of Lt Leins was never found. The bombs onboard had exploded on impact leaving a large crater and little of the plane. Source: Doylerush, E, 1999, No Landing Place Volume 2: More Tales of Crashed Aircraft in Snowdonia, pg40-44 The Heinkel was attacked over western Anglesey and as a result the starboard engine caught fire, followed by the interior of the aircraft. It then fell steeply to port and spiralled down through the clouds. The aircraft exploded on impact with the ground and burned. There had been no evasive action and no return fire so apparently the attacking Beaufighter had not been seen by the Heinkel. The four crew were killed. Three were identified and given a service with full military honours before burial at Cannock, but the pilot's body was never found. The aircraft crashed at Bwlch y Fen Bentir farm near Bodffordd, the impact broke all the windows in the house and caused damage to a neighbouring cottage, Tan-y-Bwlch, where the ceilings collapsed. Shortly after the crash it was discovered that the aircraft had a full load of bombs (likely destined for Liverpool) which gave rise to the danger of unexploded ordnance, as a result both cottages were temporarily evacuated. A map of Holyhead was also found amongst the wreckage. Source: Sloan, R., 1991
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Bombing
Record Origin	RCAHMW
Date of Compilation	05/03/2012

PRN	33715
NPRN	515320
Sitename	Aircraft Crash Site, De Havilland Tiger Moth MKII, Llwyngwril
Serial number	N6933
NGR	SH595105
Period	Modern
Community	Llangelynin
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rough Grassland
Circumstances of crash	Aircraft impacted with wall/hillside while trying to make a forced landing
Notes	The author notes that the Tiger Moth was being flown by 2 members of 25 RFS to Llanbedr to make arrangements for summer camps for the University Air Squadrons. After lunch, the Tiger Moth took off and headed south but soon after it collided with the mountain slope which rises from the shore at Llwyngwril. The airmen survived, but the aircraft was a complete write off. The engine was recovered and then the remains were set on fire. Source: Doylerush, E, 1999, No Landing Place Volume 2: More Tales of Aircraft Crashes in Snowdonia, pg74 The author notes that this Tiger Moth was one of 400 delivered to the RAF by De Havilland at Hatfield to contract 778402/38 between November 1938 and July 1940. Its service life saw assignments to 609/Ternill/28 EFTS/25 RFS. The aircraft's engine cut out, and it hit a wall on appoach to a forced landing at Llwyngwril, Merionethshire, on 7 May 1948. Source: Halley, J J, 1993, Royal Air Force Aircraft L1000 to N9999, pg184
International rarity of aircraft	1-5% of total produced survive globally
Crew survival	Entire crew survived crash
Object of flight	General transportation flight
Record Origin	RCAHMW
Date of Compilation	05/03/2012

PRN	33716
NPRN	515322
Sitename	Aircraft Crash Site, Fairey Firefly, Llandwrog
Serial number	WJ153
NGR	SH445553
Period	Modern
Community	Llandwrog
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - grass?
Circumstances of crash	Aircraft crashed making emergency landing
Notes	The author notes that a Firefly was on a test flight from the Royal Aircraft Establishment unit at Llanbedr, flown by Flt Lt Richard Dickinson RAFVR and observer Junior Techncian Alan Hawkins. The Fireflies had two roles - target by guided missiles from Aberporth and pilotless radio control. Ground control crews controlled the aircraft on take-off and landing, and then the crew took over as lookouts in the air over the ranges of Cardigan Bay. The flight was to resolve technical difficulties, but resulted in the engine failure. At that time it was over the sea off the Lleyn peninsula but the crew, on deciding to bale out, found that the dinghy had not been attached to its parachute. The crew had no option but to try and land. The aircraft crashed near the Farmstead of Pen-y-bythod about a mile to the west of Llandwrog village. The crew walked away with only minor injuries and bruising and were given tea and cakes by the farmer's family. Source: Doylerush, E, 1999, No Landing Place Volume 2: More Tales of Aircraft Crashes in Snowdonia, pg73-4
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew survived crash
Object of flight	Test flight
Record Origin	RCAHMW
Date of Compilation	05/03/2012

PRN	33717
NPRN	515323
Sitename	Aircraft Crash Site, Supermarine Spitfire MKXVI, Harlech
Serial number	TE435
NGR	SH5731
Period	Modern
Community	Harlech
Terrestrial/Intertidal	Intertidal
Crash site landscape	Foreshore
Circumstances of crash	Crashed on beach during forced landing
Notes	The author includes a photograph of the Spitfire on the beach at Harlech with four air personnel standing on or investigating the wreck. The plane had engine failure and made a force landing on 24 November 1948. The pilot survived. Source: Doylerush, E, 1999, No Landing Place Volume 2: More Tales of Aircraft Crashes in Snowdonia, pg73-4 The author notes that this Spitfire was one of 1492 IXs and XVIs delivered to the RAF between December 1944 and June 1945 by Vickers Armstong, Castle Bromwich. It was assigned to 631 Squadron. On 24 November 1948, it crashed after being forced to land on Harlech beach. Source: Halley, J J,1985, Royal Air Force Aircraft SA100 to VZ999, pg26
International rarity of aircraft	1-5% of total produced survive globally
Crew survival	Entire crew survived crash
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	05/03/2012

PRN	33718
NPRN	515324
Sitename	Aircraft Crash Site, Hawker Siddeley Gnat T.1, Arenig Fawr
Serial number	XR949
NGR	SH827369
Period	Modern
Community	Llanycil
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rough Grassland; Boulders (Scattered)
Circumstances of crash	The aircraft crashed unmanned when the pilot lost control
Notes	The author notes that this Gnat was asisigned to 4 Flying Training School at RAF Valley. The hood fractured. The crew ejected safely and the plane flew into Arenig Fawr on 27 May 1964 Source: Doylerush, E, 1999, No Landing Place Volume 2: More Tales of Aircraft Crashes in Snowdonia, pg108
International rarity of aircraft	Not known
Crew survival	Entire crew survived crash
Object of flight	Training (General)
Record Origin	RCAHMW
Date of Compilation	05/03/2012

PRN	33719
NPRN	515325
Sitename	Aircraft Crash Site, Hawker Siddeley Gnat T.1, Llyn Celyn
Serial number	XR978
NGR	SH855405
Period	Modern
Community	Llandderfel
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Inland water
Circumstances of crash	Aircraft crashed in drained reservoir in inverted spin - presumed unmanned
Notes	The author notes that this Gnat was assigned to 4 Flying Training School at RAF Valley. The plane was abandoned in a inverted spin and crashed into the drained Llyn Celyn reservoir on 22 July 1964. The pilot was OK, but the instructor was found badly injured on nearby Mynydd Nodol. Source: Doylerush, E, 1999, No Landing Place Volume 2: More Tales of Aircraft Crashes in Snowdonia, pg108 The author notes that this Gnat was one of 41 delivered between May and November 1963 to contract KC/2B/031 by HSA, Hamble. It was assigned to 4 FTS. The aircraft was abandoned in an inverted spin at Pont ar Gelyn, 2.25 miles northwest of Bala on 22 July 1964. Source: Halley, J, 2001, Royal Air force Aircraft XA100 - XZ999, pg79
International rarity of aircraft	Not known
Crew survival	Entire crew survived crash
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	05/03/2012

PRN	33720
NPRN	515326
Sitename	Aircraft Crash Site, Hawker Siddeley Gnat T.1, RAF Valley
Serial number	XR950
NGR	SH3075
Period	Modern
Community	Llanfair yn Neubwll
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - airfield
Circumstances of crash	Aircraft cartwheeled on landing following a collision
Notes	The author notes that this Gnat was assigned to 4 Flying Training School at RAF Valley. The plane was in collision with XS108 (see NPRN 515327) over Carmel, 1 crewmen was killed, but the other ejected safely. Source: Doylerush, E, 1999, No Landing Place Volume 2: More Tales of Aircraft Crashes in Snowdonia, pg108 Following a mid-air collision between Gnat T1s XS108 and XR950, during formation flying practice, XS108 crashed at Carmel, south of Caernarfon. XR950 managed to fly back to Valley but cartwheeled on landing and was written off. Both pilots were killed. Pilot of Gnat T1 XR950 was Flt. Lt. Timothy Francis Haughton Mermagan. He was not able to eject and was killed. Flight Lieutenant R. C. Tyler (in the rear seat) ejected safely. Source: http://aviation-safety.net/wikibase/wiki.php?id=56507 Source: http://www.ejection-history.org.uk/Aircraft_by_Type/Folland_Gnat.htm The author notes that this Gnat was one of 41 delivered between May and November 1963 to contract KC/2B/031 by HAS, Hamble. It was assigned to 4 FTS. The aircraft collided with XS108 in formation over Carmel, Caernarfon on 22 April 1965. Source: Halley, J, 2001, Royal Air force Aircraft XA100 - XZ999, pg79
International rarity of aircraft	Not known
Crew survival	Some crew survived crash
Object of flight	Flying formation practice
Record Origin	RCAHMW
Date of Compilation	09/03/2012

PRN	33721
NPRN	515327
Sitename	Aircraft Crash Site, Hawker Siddeley Gnat T.1, Carmel
Serial number	XS108
NGR	SH4955
Period	Modern
Community	Llandwrog
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - grass?
Circumstances of crash	Aircraft crashed following collision
Notes	The author notes that this Gnat was assigned to 4 Flying Training School at RAF Valley. The plane was in collision with XR950 (see NPRN 515326) over Carmel, 1 crewmen was killed, but the other ejected safely. Source: Doylerush, E, 1999, No Landing Place Volume 2: More Tales of Aircraft Crashes in Snowdonia, pg108 Following a mid-air collision between Gnat T1s XS108 and XR950, during formation flying practice, XS108 crashed at Carmel, south of Caernarfon. XR950 managed to fly back to Valley but cartwheeled on landing and was written off. Both pilots were killed. Pilot of Gnat T1 XS108 was Flg. Off. Gavin Darrell Priest. He was killed when he ejected along the ground on crash landing. Source: http://aviation-safety.net/wikibase/wiki.php?id=56508 Source: http://www.ejection-history.org.uk/Aircraft_by_Type/Folland_Gnat.htm
International rarity of aircraft	Not known
Crew survival	Entire crew died in crash
Object of flight	Flying formation practice
Record Origin	RCAHMW
Date of Compilation	09/03/2012

PRN	33722
NPRN	515328
Sitename	Aircraft Crash Site, Hawker Siddeley Gnat T.1, Y Cnicht
Serial number	XR539
NGR	SH6446
Period	Modern
Community	Llanfrothen
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rough Grassland; Boulders
Circumstances of crash	Aircraft hit the ground in a spin
Notes	The author notes that this Gnat was assigned to 4 Flying Training School at RAF Valley. The plane was abandoned in a spin and fell on or near Y Cnicht. The crew ejected safely. Source: Doylerush, E, 1999, No Landing Place Volume 2: More Tales of Aircraft Crashes in Snowdonia, pg108 Aircraft spun into the ground near y Cnicht. Pilot officer J. M. Ensdon ejected. Source: http://www.ejection-history.org.uk/Aircraft_by_Type/Folland_Gnat.htm The author notes that this Gnat was one of 20 delivered between May and November 1963 to contract KC/2B/05 by HSA, Hamble. It was assigned to 4 FTS. The aircraft was abandoned in a spin 5 miles northeast of Porthmadoc on 13 May 1966. Source: Halley, J, 2001, Royal Air force Aircraft XA100 - XZ999, pg76
International rarity of aircraft	Not known
Crew survival	Entire crew survived crash
Object of flight	Training (General)
Record Origin	RCAHMW
Date of Compilation	09/03/2012

PRN	33723
NPRN	515329
Sitename	Aircraft Crash Site, Hawker Siddeley Gnat T.1, Llyn Celyn
Serial number	XR570
NGR	SH8540
Period	Modern
Community	Llanycil
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Heath; Rough Grassland
Circumstances of crash	Aircraft flew into high tension cables
Notes	The author notes that this Gnat was assigned to 4 Flying Training School at RAF Valley. The plane hit HT cables near Llyn Celyn on 23 May 1966. The pilot ejected safely Source: Doylerush, E, 1999, No Landing Place Volume 2: More Tales of Aircraft Crashes in Snowdonia, pg108 Hit high tension cables 70ft above the ground near Llyn Celyn. Pilot officer Terence Jones ejected. Source: http://www.ejection-history.org.uk/Aircraft_by_Type/Folland_Gnat.htm Source: http://www.ejection-history.org.uk/project/year_pages/1966apr-jun.htm The author notes that this Gnat was one of 20 delivered between May and November 1963 to contract KC/2B/05 by HSA, Hamble. It was assigned to 4 FTS. The aircraft hit high tension cables over Llyn Celyn and was abandoned, crashing into a hill at Llyn Celyn on 23 May 1966. Source: Halley, J, 2001, Royal Air force Aircraft XA100 - XZ999, pg76
International rarity of aircraft	Not known
Crew survival	Entire crew survived crash
Object of flight	Training (General)
Record Origin	RCAHMW
Date of Compilation	09/03/2012

PRN	33724
NPRN	515391
Sitename	Aircraft Crash Site, De Havilland Mosquito MKII, RAF Valley
Serial number	DD611
NGR	SH3075
Period	Modern
Community	Llanfair yn Neubwll
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - airfield
Circumstances of crash	Aircraft crash-landed following engine fire
Notes	The author notes that this Mosquito was one of 150 delivered to the RAF between April and October 1942 by De Havilland at Hatfield. Its service history includes assignments to 157/264/157 OTU. The engine caught fire and the aircraft crashlanded at RAF Valley on 19 June 1945. Source: Halley, J J,1985, Royal Air Force Aircraft DA100 to DZ999, pg5
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Not known
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	09/03/2012

PRN	33725
NPRN	515397
Sitename	Aircraft Crash Site, Avro Anson, Llangybi
Serial number	DG756
NGR	SH425410
Period	Modern
Community	Llanystumdwy
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - grass?
Circumstances of crash	Aircraft crashed after hitting trees
Notes	The author notes that this Anson was one of 700 delivered to the RAF between December 1941 and July 1942 by Avro at Yeadon. It was assigned to 7 OTU and crashed after hitting trees whilst low flying near Llangybi, Caernarfon, on 8 November 1942. Source: Halley, J J,1985, Royal Air Force Aircraft DA100 to DZ999, pg32
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Not known
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	09/03/2012

PRN	33726
NPRN	515296
Sitename	Aircraft Crash Site, Vickers Wellington MKIA, Llanbedr
Serial number	N2866
NGR	SH594251
Period	Modern
Community	Dyffryn Ardudwy
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Scrub; Rough Grassland
Circumstances of crash	Aircraft crashed during forced landing
Notes	The author notes that this VICKERS WELLINGTON was assigned to 18 OTU. The aircraft's engines failed due to icing and the aircraft crash landed on a hillside near Llanbedr on 15 October 1941. All six crewmen survived. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg93 The author notes that the Wellington was piloted by Pilot Officer Mendela and had a largely Polish crew. The plane left Hucknall for a routine cross country training flight during which it suffered engine failure due to icing and later an engine fire, both of which the pilot managed to deal with succcessfully. The Wellington made a forced landing on a hillside just to the east of RAF Llanbedr. All eight crewmen survived without serious injury and were given tea at the nearby farmhouse of Llwynion. The rear gunner, A/C Jenkins, was Welsh. Source: Doylerush, E, 1999, No Landing Place Volume 2: More Tales of Aircraft Crashes in Snowdonia, pg78 The author notes that this Wellington was one of 120 IAs delivered to the RAF by Vickers, Weybridge, to contract 549268/36 between August and December 1939. Its service life included assignments to 149/215/11 OUT/18 OUT. The aircraft's engine cut out and it crashed during a forced landing 1.5 miles east of Llanbeder on 15 October 1941. Source: Halley, J J, 1993, Royal Air Force Aircraft L1000 to N9999, pg133 Source: Halley, J J, 1977, Royal Air Force Aircraft N1000 to N9999, pg16 The aircraft was on a cross-country flight from RAF Bramcote when icing caused the port engine to fail. The pilot was near RAF Llanbedr, but knowing he was unable to get to the airfield he opted to make a forced landing roughly one mile east. The starboard engine caught fire during the landing but this was extinguished and all the crew escaped. Source: Snowdonia Aviation Historical Group, 1985
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew survived crash
Object of flight	Navigational training - cross country
Record Origin	RCAHMW
Date of Compilation	23/02/2012

PRN	33727
NPRN	515416
Sitename	Aircraft Crash Site, Supermarine Spitfire MKXVI, Caernarfon
Serial number	SM472
NGR	SH470626
Period	Modern
Community	Caernarfon
Terrestrial/Intertidal	Intertidal
Crash site landscape	Foreshore
Circumstances of crash	Aircraft crashed following forced landing
Notes	The author notes that this Spitfire was one of 199 XVIs delivered to the RAF in October-November 1944 by Vickers Armstong, Castle Bromwich, under contract B981687/39. Its service life includes assignments to 302 and 631 Squadrons. On 9 March 1946, it crashed after a forced landing on a beach near Caernarvon. Source: Halley, J J,1985, Royal Air Force Aircraft SA100 to VZ999, pg10
International rarity of aircraft	1-5% of total produced survive globally
Crew survival	Not known
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	09/03/2012

PRN	33728
NPRN	515417
Sitename	Aircraft Crash Site, Supermarine Spitfire MKXVI, Talybont
Serial number	TB244
NGR	SH575215
Period	Modern
Community	Dyffryn Ardudwy
Terrestrial/Intertidal	Intertidal
Crash site landscape	Foreshore
Circumstances of crash	Aircraft force-landed on beach after running out of fuel
Notes	The author notes that this Spitfire was one of 1492 Ixs and XVIs delivered to the RAF between December 1944 and June 1945 by Vickers Armstong, Castle Bromwich, under contract B981687/39. Its service life includes assignments to 603 and 631 Squadrons. On 3 April 1946, it ran out of fuel and was forced to land on the beach at Talybont, Meirioneth. Source: Halley, J J,1985, Royal Air Force Aircraft SA100 to VZ999, pg26
International rarity of aircraft	1-5% of total produced survive globally
Crew survival	Not known
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	09/03/2012

PRN	33729
NPRN	515421
Sitename	Aircraft Crash Site, Taylorcraft Auster MKVI, Little Orme's Head
Serial number	TW566
NGR	SH810805
Period	Modern
Community	Llandudno
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - grass?
Circumstances of crash	Aircraft crashed after hitting a hedge on take-off
Notes	The author notes that this AUSTER was one of 80 delivered to the RAF between May and September 1946 by Taylorcraft Aeroplanes, Rearsby. It was assigned to 657 Squadron. The aircraft hit a hedge on take-off and crashed 1 miles south of Little Orme Head on 8 September 1948. Source: Halley, J J,1985, Royal Air Force Aircraft SA100 to VZ999, pg38
International rarity of aircraft	Not known
Crew survival	Not known
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	09/03/2012

PRN	33730
NPRN	515424
Sitename	Aircraft Crash Site, De Havilland Vampire FB5, Llanddyfnan
Serial number	VV554
NGR	SH4580
Period	Modern
Community	Llanddyfnan
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - grass?
Circumstances of crash	Aircraft dived into ground
Notes	The author notes that this Vampire was one of 200 FB5s delivered to the RAF between September 1948 and June 1949 by the English Electric Company, Preston, to contract C/ACFT/1387. Its service life includes assignments to 213/202 AFS/7 FTS. The aircraft dived into the ground 3 miles north-northwest of Llangefni on 31 December 1955. It was presumed that the cause was the canopy opening and hitting the tail. Source: Halley, J J,1985, Royal Air Force Aircraft SA100 to VZ999, pg91
International rarity of aircraft	Not known
Crew survival	Not known
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	09/03/2012

PRN	33731
NPRN	515428
Sitename	Aircraft Crash Site, De Havilland Vampire FB5, Mona
Serial number	VZ863
NGR	SH415770
Period	Modern
Community	Bodffordd
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - grass?
Circumstances of crash	Aircraft abandoned in a spin
Notes	The author notes that this Vampire was one of 63 FB.5s delivered to the RAF between June 1949 and August 1951 by the English Electric Company, Preston, to contract 6/ACFT/2961. Its service life includes assignments to 612/202 AFS. The aircraft was abandoned in a spin 1 mile north of Mona on 24 November 1952. Source: Halley, J J,1985, Royal Air Force Aircraft SA100 to VZ999, pg107
International rarity of aircraft	Not known
Crew survival	Entire crew survived crash
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	09/03/2012

PRN	33732
NPRN	515432
Sitename	Aircraft Crash Site, Handley Page Halifax MKII, Rhoscolyn
Serial number	BB275
NGR	SH271783
Period	Modern
Community	Rhoscolyn
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface; Foreshore; Marsh Reeds Or Saltmarsh
Circumstances of crash	Aircraft dived into ground after experiencing technical problems/stalling
Notes	The author notes that this Halifax was one of 200 delivered to the RAF between January 1942 and August 1943 by The London Aircraft Production Group under contract B124357/50. It was assigned to 1659 CU. Its engine cut out on a navigation exercise and the aircraft swung and dived into the ground near Rhoscolyn on 1 February 1943. Source: Halley, J J,2006, Royal Air Force Aircraft BA100 to BZ999, pg15 Aircraft is understood to have stalled and dived into the mud near Four Mile Bridge. The port outer engine stopped whilst on a training flight from RAF Leeming. An Airspeed Oxford attempted to shepherd the plane to RAF Llanbedr but poor weather conditions meant that the two aircraft lost contact and the Halifax headed for Valley where it crashed roughly 1.5 miles away from the runway killing the 8 crewmembers. The author names them as Pilot J.G.Arsenault, Navigator Flt Sgt. D.C.Carder, Flt Engineer Sgt P.Larsen, Air Gunner Sgt H.F.Corrie, Air Gunner Sgt .D.E Section J.L.Boivin (All RCAF and buried in Holyhead). A third party (the cousin of one of the crew) contributed the final 3 names: Navigator Sgt. A.B.Wedderspoon, Bomb aimer Sgt B.J.George, Wireless Operator Air Gunner Sgt T.H.Clapham. While the board of enquiry identified mis-handling of the fuel system as the likely cause, the third party suggested that the unreliable cooling system on the Merlin may have been the cause of the engine failure. Source: http://www.flickr.com/photos/28731066@N03/5746463520/ The Halifax, which had been on a cross-country flight had dived into the ground near Rhoscolyn School between Valley and Treaddur Bay killing the crew of eight instantly. Source: Snowdonia Aviation Historical Group, 1985
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Training (General)
Record Origin	RCAHMW
Date of Compilation	12/03/2012

PRN	33733
NPRN	515436
Sitename	Aircraft Crash Site, Supermarine Spitfire, Beaumaris
Serial number	L1034
NGR	SH6029976115
Period	Modern
Community	Beaumaris
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Buildings
Circumstances of crash	Aircraft crashed unmanned into buildings
Notes	The author notes that this Spitfire was one of 97 delivered to the RAF between June and September 1939. Its service life included assignments to 19/610/53 OTU. On 13 March 1941, the aircraft crashed into New Street, Beaumaris, after being abandoned out of control. Source: Halley, J J, 1979, Royal Air Force Aircraft L1000 to L9999, pg5 Photograph of damaged buildings shown on page 172 Source: Sloan, 1991 Image of rebuilt buildings 2010 and note that the aircraft took off from Hawarden but became uncontrollable over Anglesey. The pilot bailed out over Gallows Point and the aircraft crashed into New Street. Source: http://www.flickr.com/photos/28731066@N03/4397428227/
International rarity of aircraft	1-5% of total produced survive globally
Crew survival	Entire crew survived crash
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	14/03/2012

PRN	33734
NPRN	515444
Sitename	Aircraft Crash Site, Hawker Henley MKIII, Tywyn
Serial number	L3297
NGR	SH566058
Period	Modern
Community	Llangelynin
Terrestrial/Intertidal	Intertidal
Crash site landscape	Foreshore; Boulders
Circumstances of crash	Aircraft crashed on the beach
Notes	The author notes that this Henley was one of 200 delivered to the RAF by Gloster Aircraft between November 1938 and September 1940. Its service life included assignments to 3 ATS/4 BGS/1 AACU/1605 Flight. On 4 February 1943, the aircraft crashed on the shore 3 miles north of Towyn. Source: Halley, J J, 1979, Royal Air Force Aircraft L1000 to L9999, pg21 Source: Halley, J J, 1993, Royal Air Force Aircraft L1000 to N9999, pg32 Aircraft force-landed on the sea shore after engine failure on take-off, thought to be the result of a defect in the petrol system. Further investigation carried out after salvage found that there was a shortage of petrol in the system (cause unknown). Source: Air Ministry Form 1180
International rarity of aircraft	No known surviving examples globally
Crew survival	Entire crew survived crash
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	14/03/2012

PRN	33735
NPRN	515447
Sitename	Aircraft Crash Site, Hawker Henley MKIII, Tywyn
Serial number	L3284
NGR	SH573020
Period	Modern
Community	Tywyn
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rough Grassland
Circumstances of crash	Aircraft crashed on force-landing and burned out, killing crew
Notes	The author notes that this Henley was one of 200 delivered to the RAF by Gloster Aircraft between November 1938 and September 1940. It was assigned to 1 AACU. On 3 June 1941, the aircraft crashed in a forced landing 0.5miles north of Towyn. Source: Halley, J J, 1979, Royal Air Force Aircraft L1000 to L9999, pg21 Source: Halley, J J, 1993, Royal Air Force Aircraft L1000 to N9999, pg32 Hawker Henley L3284 crashed 0.5 miles north of Towyn airfield on the former golf course. The aircraft burned out, killing the trapped occupants, Flight Officer Rawson (pilot) and A/C Sharp. Source: Jones, R. I., 2000
International rarity of aircraft	No known surviving examples globally
Crew survival	Entire crew died in crash
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	14/03/2012

PRN	33736
NPRN	515458
Sitename	Aircraft Crash Site, Fairey Battle MKI, Nefyn
Serial number	L5255
NGR	SH318396
Period	Modern
Community	Nefyn
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - grass?
Circumstances of crash	Aircraft dived into ground on fire following a mid-air collison
Notes	The author notes that this Fairey Battle was one of 863 delivered to the RAF by Austin Motors between September 1938 and August 1940. It was assigned to 1 AOS/9 BGS/9 AOS. On 24 November 1939, the aircraft collided with another Fairey Battle L5256 and crashed 4 miles northwest of Penrhos. Source: Halley, J J, 1979, Royal Air Force Aircraft L1000 to L9999, pg34 Battle L5256 collided in the air with Battle L5255 4 miles NNW of Penrhos and both aircraft dived to the ground, killing the three occupants of each. The cause was recorded as L5256 being in the glare of the sun when viewed from L5255, and both pilots failing to be on sufficient look out. Source: Air Ministry Form 1180
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Test flight
Record Origin	RCAHMW
Date of Compilation	14/03/2012

PRN	33737
NPRN	515460
Sitename	Aircraft Crash Site, Fairey Battle MKI, Nefyn
Serial number	L5256
NGR	SH318396
Period	Modern
Community	Nefyn
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - grass?
Circumstances of crash	Aircraft dived into ground on fire following a mid-air collison
Notes	The author notes that this Fairey Battle was one of 863 delivered to the RAF by Austin Motors between September 1938 and August 1940. It was assigned to 1 AOS/9 BGS/9 AOS. On 24 November 1939, the aircraft collided with another Fairey Battle L5255 and crashed 4 miles northwest of Penrhos. Source: Halley, J J, 1979, Royal Air Force Aircraft L1000 to L9999, pg34 Source: Halley, J J, 1993, Royal Air Force Aircraft L1000 to N9999, pg57 Battle L5256 collided in the air with Battle L5255 4 miles NNW of Penrhos and both aircraft dived to the ground, killing the three occupants of each. The cause was recorded as L5256 being in the glare of the sun when viewed from L5255, and both pilots failing to be on sufficient look out. Source: Air Ministry Form 1180
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Test/training flight
Record Origin	RCAHMW
Date of Compilation	14/03/2012

PRN	33738
NPRN	515476
Sitename	Aircraft Crash Site, Supermarine Spitfire MKVB, Tonfanau
Serial number	BL317
NGR	SH5604
Period	Modern
Community	Llangelynin
Terrestrial/Intertidal	Intertidal
Crash site landscape	Foreshore
Circumstances of crash	Aircraft belly-landed on beach following engine cut-out
Notes	The author notes that this Spitfire was one of 1000 delivered to the RAF by Vickers Armstrong of Castle Bromwich, between November 1941 and November 1942. It was assigned to 131 Squadron. The aircraft's engine cut out and it belly-landed on the beach at Tonfanau, 8 miles south of Barmouth on 11 May 1942. Source: Halley, J J, 2006, Royal Air Force Aircraft BA100 to BZ999, pg68
International rarity of aircraft	1-5% of total produced survive globally
Crew survival	Not known
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	14/03/2012

PRN	33739
NPRN	515519
Sitename	Aircraft Crash Site, De Havilland Queen Bee, Newborough Warren
Serial number	P4767
NGR	SH4263
Period	Modern
Community	Rhosyr
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Sand dunes
Circumstances of crash	Aircraft crashed - no further details
Notes	The author notes that this Queen Bee was one of 110 delivered to the RAF by De Havilland, Hatfield, to contract 962680/38 between February and May 1939. It was assigned to PAU/1 AACU. The aircraft crashed near Newborough Warren, Anglesey 22 October 1941. Source: Halley, J J, 1996, Royal Air Force Aircraft P1000 to R9999, pg39
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Unmanned
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	14/03/2012

PRN	33740
NPRN	515522
Sitename	Aircraft Crash Site, De Havilland Queen Bee, Ty Croes
Serial number	P4775
NGR	SH330687
Period	Modern
Community	Aberffraw
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - grass?
Circumstances of crash	Aircraft shot down
Notes	The author notes that this Queen Bee was one of 110 delivered to the RAF by De Havilland, Hatfield, to contract 962680/38 between February and May 1939. It was assigned to PAU/1 AACU. The aircraft was shot down at Ty Croes on 5 May 1941. Source: Halley, J J, 1996, Royal Air Force Aircraft P1000 to R9999, pg39
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Unmanned
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	14/03/2012

PRN	33741
NPRN	515525
Sitename	Aircraft Crash Site, De Havilland Queen Bee, Ty Croes
Serial number	P4789
NGR	SH330687
Period	Modern
Community	Aberffraw
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - grass?
Circumstances of crash	Aircraft shot down
Notes	The author notes that this Queen Bee was one of 110 delivered to the RAF by De Havilland, Hatfield, to contract 962680/38 between February and May 1939. It was assigned to PAU/1 AACU. The aircraft was shot down at Ty Croes on 1 August 1942. Source: Halley, J J, 1996, Royal Air Force Aircraft P1000 to R9999, pg40 Alternative source records QUEEN BEE P4788 as "SOC 26.4.45" and QUEEN BEE P4789 as "Shot down at Ty Croes 1.8.42" Source: http://www.dehavilland.ukf.net/_DH%20full%20prodn%20list.txt
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Unmanned
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	14/03/2012

PRN	33742
NPRN	515536
Sitename	Aircraft Crash Site, De Havilland Queen Bee, Ty Croes
Serial number	P4811
NGR	SH330687
Period	Modern
Community	Aberffraw
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - grass?
Circumstances of crash	Aircraft shot down
Notes	The author notes that this Queen Bee was one of 110 delivered to the RAF by De Havilland, Hatfield, to contract 962680/38 between February and May 1939. It was assigned to PAU/1 AACU. The aircraft was shot down at Ty Croes on 14 August 1941. Source: Halley, J J, 1996, Royal Air Force Aircraft P1000 to R9999, pg40
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Unmanned
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	14/03/2012

PRN	33743
NPRN	515549
Sitename	Aircraft Crash Site, De Havilland Queen Bee, Bodorgan
Serial number	P5737
NGR	SH3868
Period	Modern
Community	Bodorgan
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - grass?
Circumstances of crash	Aircraft crashed - no further details
Notes	The author notes that this Queen Bee was one of 28 delivered to the RAF by De Havilland, Hatfield, to contract 962680/38 between June and July 1939. It was assigned to PAU and 1 AACU/1618 Flight/1620 Flight. The aircraft crashed near Bodorgan on 5 August 1943. Source: Halley, J J, 1996, Royal Air Force Aircraft P1000 to R9999, pg50
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Unmanned
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	14/03/2012

PRN	33744
NPRN	515558
Sitename	Aircraft Crash Site, De Havilland Queen Bee, Trawsfynydd
Serial number	P5772
NGR	SH7135
Period	Modern
Community	Trawsfynydd
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - grass?
Circumstances of crash	Aircraft (piloted) hit wall in forced landing in fog
Notes	The author notes that this Queen Bee was one of 28 delivered to the RAF by De Havilland, Hatfield, to contract 962680/38 between June and July 1939. It was assigned to PAS/1 AACU. The aircraft hit a wall during a forced landing in fog near Trawsfynydd on 19 February 1940. The aircraft was piloted at the time. Source: Halley, J J, 1996, Royal Air Force Aircraft P1000 to R9999, pg50
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Not known
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	14/03/2012

PRN	33745
NPRN	515574
Sitename	Aircraft Crash Site, Supermarine Spitfire MKIIB, Llanfairpwll
Serial number	P8661
NGR	SH530735
Period	Modern
Community	Penmynydd
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - grass?
Circumstances of crash	Aircraft flew into ground in bad weather
Notes	The author notes that this Spitfire was one of 1000 delivered to the RAF by Castle Bromwich Aircraft Factory to contract 981687/39 between June and July 1941. Its service life included assignments to 308/315/610/123/3 Del Flight. The aircraft crashed in bad weather near Llanfair, Anglesey, 24 November 1941. Source: Halley, J J, 1996, Royal Air Force Aircraft P1000 to R9999, pg79 P8861 flew into the ground 2 miles NW of Menai Bridge, P/O (Pilot) Philip P. VERNON Source: http://www.rafcommands.com/forum/showthread.php?4160-Unaccounted-airmen-24-11-1941
International rarity of aircraft	1-5% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	15/03/2012

PRN	33746
NPRN	515590
Sitename	Aircraft Crash Site, Hawker Henley MKI, Tywyn
Serial number	L3276
NGR	SH584029
Period	Modern
Community	Llanegryn
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Tidal water
Circumstances of crash	Aircraft crashed into river when pilot lost control
Notes	The author notes that this Henley was one of 200 delivered to the RAF by Glosters, Hucclecote, to contract 540805/36 between November 1938 and September 1940. Its service life included assignments to 1AACU/AAEE/1608 Flight/1628 flight/631/14 APC/631 Squadron. The aircraft lost power and control was lost on approach to a forced landing. The aircraft crashed into a river near Dysynni, Merioneth on 28 February 1945. Source: Halley, J J, 1993, Royal Air Force Aircraft L1000 to N9999, pg32 Aircraft crashed into river and broke up. The pilot was trying to reach airfield with a failing engine. When he found he could not make it, he decided to land at the mouth of the Dysynni but lost control at the last minute. It is thought that the pilot, who only had one arm, may have lost control when putting on the flap as this would necessitate holding the stick with his knees. The cause of the engine failure was not determined. Source: Air Ministry Form 1180 Image of aircraft at held by Imperial War Museum Source: http://www.iwm.org.uk/collections/item/object/205126723 The Henley crashed 800 yards north of Tywyn airfield. The pilot's body was recovered and buried at Chester. Aircraft category E. Source: Jones, R. I., 2000
International rarity of aircraft	No known surviving examples globally
Crew survival	Entire crew died in crash
Object of flight	Anti-aircraft Co-operation
Record Origin	RCAHMW
Date of Compilation	15/03/2012

PRN	33747
NPRN	515634
Sitename	Aircraft Crash Site, Miles Master MKI, Barmouth
Serial number	N8016
NGR	SH6116
Period	Modern
Community	Abermaw
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Scrub; Rough Grassland; Rock (Scattered)
Circumstances of crash	Aircraft apparently dived into ground
Notes	The author notes that this Master was one of 500 delivered to the RAF by Philip & Powis, Woodley, to contract 779602/38 between July 1939 and September 1940. It was assigned to Elmdon/5 FTS. The aircraft crashed during aerobatics at Conway, Caernarvon, on 19 March 1941. Source: Halley, J J, 1993, Royal Air Force Aircraft L1000 to N9999, pg201 Source: Halley, J J, 1977, Royal Air Force Aircraft N1000 to N9999, pg52 Aircraft in fact crashed near Barmouth, according to 5 FTS Operation Record Book (confirmed by place of death registered as Merioneth S). Conway was a later addition to Air Ministry Form 1180. P/O A. L. Munro and Sgt. J. A. H. Mallet (aka Jaques Chaklet, a member of the Free French) received fatal injuries. Source: http://www.rafcommands.com/forum/showthread.php?2525-Unaccounted-airmen-19-3-1941 last viewed 15/03/12
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Aerobatics
Record Origin	RCAHMW
Date of Compilation	15/03/2012

PRN	33748
NPRN	515654
Sitename	Aircraft Crash Site, Miles Martinet MKI, Tywyn
Serial number	MS528
NGR	SH580015
Period	Modern
Community	Tywyn
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - grass?
Circumstances of crash	Aircraft bellylanded
Notes	The author notes that this Martinet was one of 355 delivered to the RAF by Philips & Powis, Reading, between July and November 1943. Its service life included assignments to 287/289/1634 Flight/567/631/20 Squadrons. The aircraft's engine lost power and it bellylanded at Towyn on 17 June 1949. Source: Halley, J J, 1991, Royal Air Force Aircraft MA100 to MZ999, pg99
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Not known
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	15/03/2012

PRN	33749
NPRN	515661
Sitename	Aircraft Crash Site, Fairey Battle, Penrhos
Serial number	N2026
NGR	SH325349
Period	Modern
Community	Buan
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - grass?
Circumstances of crash	Aircraft crashed during forced landing
Notes	The author notes that this Battle was one of 189 delivered to the RAF between February and June 1939. Its service life included assignments to 105/63/12 OTU. The aircraft crashed during a forced landing 1 mile northwest of Penrhos on 24 May 1940. Source: Halley, J J, 1977, Royal Air Force Aircraft N1000 to N9999, pg10
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Not known
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	15/03/2012

PRN	33750
NPRN	515666
Sitename	Aircraft Crash Site, North American Harvard MKI, Pontllyfni
Serial number	N7029
NGR	SH435526
Period	Modern
Community	Llanllyfni
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - grass?
Circumstances of crash	Aircraft crashed during forced landing
Notes	The author notes that this HARVARD was one of 200 delivered to the RAF between December 1938 and October 1939. It was assigned to 10 FTS. The aircraft crashed during a forced landing at Pontllyfni on 18 November 1939. Source: Halley, J J, 1977, Royal Air Force Aircraft N1000 to N9999, pg44 The aircraft, en-route to Penrhos, lost formation and crashed in bad weather in a small field in Pontllyfni. Aircraft wrecked. Source: Air Ministry Form 1180
International rarity of aircraft	1-5% of total produced survive globally
Crew survival	Not known
Object of flight	Formation flight
Record Origin	RCAHMW
Date of Compilation	15/03/2012

PRN	33751
NPRN	515677
Sitename	Aircraft Crash Site, De Havilland Vampire FB5, Mona
Serial number	WA307
NGR	SH415760
Period	Modern
Community	Bodffordd
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - airfield
Circumstances of crash	Aircraft dived into ground
Notes	The author notes that this Vampire was one of 320 delivered to the RAF by English Electric, Preston, between May 1950 and August 1951 to contract 6/Acft/2981. Its service life included assignments to 102 FRS/202 AFS/7 FTS. It yawed on a low level roll and flew into the ground at Mona on 16 July 1954. Soruce: Halley, J J, 2003, Royal Air Force Aircraft WA100-WZ999, 2nd Ed, pg8
International rarity of aircraft	Not known
Crew survival	Entire crew died in crash
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	15/03/2012

PRN	33752
NPRN	515681
Sitename	Aircraft Crash Site, De Havilland Vampire FB5, RAF Valley
Serial number	WA418
NGR	SH3175
Period	Modern
Community	Llanfair yn Neubwll
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - airfield
Circumstances of crash	Aircraft hit the ground and broke up
Notes	The author notes that this Vampire was one of 320 delivered to the RAF by English Electric, Preston, between May 1950 and August 1951 to contract 6/Acft/2981. Its service life included assignments to 102 RFS/202 AFS. It hit the ground on its approach to RAF Valley and broke up on 13 August 1952. Soruce: Halley, J J, 2003, Royal Air Force Aircraft WA100-WZ999, 2nd Ed, pg9
International rarity of aircraft	Not known
Crew survival	Not known
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	15/03/2012

PRN	33753
NPRN	515682
Sitename	Aircraft Crash Site, De Havilland Vampire FB5, Aberffraw
Serial number	WA459
NGR	SH3771
Period	Modern
Community	Aberffraw
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - grass?
Circumstances of crash	Aircraft was forced to land and caught fire
Notes	The author notes that this Vampire was one of 320 delivered to the RAF by English Electric, Preston, between May 1950 and August 1951 to contract 6/Acft/2981. Its service life included assignments to 202 AFS. The engine cut on take off and the aircraft was forced to land 4.5 miles southeast of Valley and caught fire on 11 December 1952. Delivered 24/8/1951. Soruce: Halley, J J, 2003, Royal Air Force Aircraft WA100-WZ999, 2nd Ed, pg9 Date of aircraft being written off recorded as 11/12/1953 Source: http://www.ukserials.com/results.php?serial=WA Source: http://www.dehavilland.ukf.net/_DH100%20prodn%20list.txt
International rarity of aircraft	Not known
Crew survival	Not known
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	15/03/2012

PRN	33754
NPRN	515727
Sitename	Aircraft Crash Site, Boulton Paul Defiant, Llanerch y Medd
Serial number	T3933
NGR	SH415840
Period	Modern
Community	Llannerch y Medd
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - grass?
Circumstances of crash	Aircraft spun into ground. Fire on impact.
Notes	The author notes that this Defiant was one of 150 delivered to the RAF between February and August 1941 (some where converted to TT Mk III, mainy for the Admiralty). It was assigned to 456 Squadron. The aircraft spun into the ground at Llannerchymedd, Anglesey , on 21 July 1941. Soruce: Halley, J J, 1981, Royal Air Force Aircraft T1000-T9999, pg22 A witness reported that the aircraft swooped onto a field two or three times and it was concluded that the aircraft had been flying too low. Source: Air Ministry Form 1180
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Exercise flight
Record Origin	RCAHMW
Date of Compilation	15/03/2012

PRN	33755
NPRN	515739
Sitename	Aircraft Crash Site, De Havilland Tiger Moth, Llangaffo
Serial number	T7612
NGR	SH4468
Period	Modern
Community	Rhosyr
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - grass?
Circumstances of crash	Aircraft stalled at low altitude and crashed
Notes	The author notes that this Tiger Moth was one of 2000 delivered to the RAF between May 1940 and April 1941. It was assigned to 1606 Flight. The aircraft stalled at low altitude and crashed at Llangaffo, Anglesey, on 9 November 1943. Source: Halley, J J, 1981, Royal Air Force Aircraft T1000-T9999, pg48 Aircraft crashed after executing a stall turn at too low an alititude and a failure to recover from it. There was no engine or structural failure and a breach of flying regulations was concluded to be the cause of the crash. Source: Air Ministry Form 1180
International rarity of aircraft	1-5% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Aerobatics practice
Record Origin	RCAHMW
Date of Compilation	15/03/2012

PRN	33756
NPRN	515746
Sitename	Aircraft Crash Site, De Havilland Queen Bee, Llanerch y Medd
Serial number	V4756
NGR	SH408840
Period	Modern
Community	Llannerch y Medd
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - grass?
Circumstances of crash	Aircraft crashed after loss of radio contact
Notes	The author notes that this Queen Bee was one of 50 delivered to the RAF between December 1940 and March 1941. Its service life included assignments to PAU and 1 AACU. The aircraft crashed at Bryngollen, Anglesey, on 28 October 1942. Source: Halley, J J, 1983, Royal Air Force Aircraft V1000-V9999, W1000 - W9999, pg17 Crashed after radio control lost Source: http://www.dehavilland.ukf.net/_DH%20full%20prodn%20list.txt
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Unmanned
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	19/03/2012

PRN	33757
NPRN	515752
Sitename	Aircraft Crash Site, De Havilland Queen Bee, Aberffraw
Serial number	V4766
NGR	SH355676
Period	Modern
Community	Aberffraw
Terrestrial/Intertidal	Intertidal
Crash site landscape	Foreshore
Circumstances of crash	Aircraft hit rocks on beach after radio control was lost
Notes	The author notes that this Queen Bee was one of 50 delivered to the RAF between December 1940 and March 1941. Its service life included assignments to PAU and 1 AACU. The aircraft crashed on Aberffraw Beach, Anglesey, on 4 July 1941. Source: Halley, J J, 1983, Royal Air Force Aircraft V1000-V9999, W1000 - W9999, pg17 Aircraft hit rocks on Aberffraw beach after radio control lost Source: http://www.dehavilland.ukf.net/_DH%20full%20prodn%20list.txt
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Unmanned
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	19/03/2012

PRN	33758
NPRN	515758
Sitename	Aircraft Crash Site, De Havilland Queen Bee, Aberffraw
Serial number	V4791
NGR	SH352686
Period	Modern
Community	Aberffraw
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - grass?
Circumstances of crash	Aircraft dived into ground following loss of radio control
Notes	The author notes that this Queen Bee was one of 50 delivered to the RAF between December 1940 and March 1941. Its service life included assignments to PAU and 1 AACU. The aircraft was dived into the ground at Aberffraw, Anglesey, on 10 September 1942. Source: Halley, J J, 1983, Royal Air Force Aircraft V1000-V9999, W1000 - W9999, pg17 The aircraft dived into the ground at Aberffraw after radio control was lost Source:http://www.dehavilland.ukf.net/_DH%20full%20prodn%20list.txt
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Unmanned
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	19/03/2012

PRN	33759
NPRN	515760
Sitename	Aircraft Crash Site, De Havilland Queen Bee, Snowdon
Serial number	V4793
NGR	SH598557
Period	Modern
Community	Llanberis
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Scree; General surface
Circumstances of crash	Aircraft flew into Snowdon and burned out
Notes	The author notes that this DE HAVILLAND QUEEN BEE radio controlled drone hit Snowdon on 24 February 1952. Source: Doylerush, E, 2002, No Landing Place: A Guide to Aircraft Crashes in Snowdonia, pg92 (date incorrect) The author notes that this Queen Bee was one of 50 delivered to the RAF between December 1940 and March 1941. Its service life included assignments to PAU and 1 AACU. The aircraft flew into Snowdon on 24 February 1942. Source: Halley, J J, 1983, Royal Air Force Aircraft V1000-V9999, W1000 - W9999, pg17 The aircraft flew into Snowdon following a loss of radio control Source: http://www.dehavilland.ukf.net/_DH%20full%20prodn%20list.txt Queen Bee V4793 crashed into Clogwyn Du'r Arddu, Snowdon. It flew from Bodorgan but failed to respond to control systems and flew towards the mountains where it crashed into Snowdon and burst into flames. The crash occurred during the day and was witnessed from the valley below, which prompted a rescue party to visit the scene where they found that the wreck was unpiloted. The site was rediscovered in the 1970s and remains much the same today, comprising fragments of burnt aluminium, timber, steel undercarriage and inter-wing struts in the scree. The Gipsy Major Mk 1 engine also remains at the scene. Source: http://www.peakdistrictaircrashes.co.uk/pages/wales/walesv4793.htm
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Unmanned
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	19/03/2012

PRN	33760
NPRN	515766
Sitename	Aircraft Crash Site, De Havilland Queen Bee, Porth Neigwl
Serial number	V4805
NGR	SH2827
Period	Modern
Community	Llanengan
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - grass?
Circumstances of crash	Aircraft flew into bank in haze
Notes	The author notes that this Queen Bee was one of 50 delivered to the RAF between December 1940 and March 1941. Its service life included assignments to PAU and 1 AACU. The aircraft was crashed near Llangraw, Hell's Mouth, on 23 October 1941. Source: Halley, J J, 1983, Royal Air Force Aircraft V1000-V9999, W1000 - W9999, pg17 Aircraft hit bank when lost in haze near Llangraw Source: http://www.dehavilland.ukf.net/_DH%20full%20prodn%20list.txt Placename perhaps Llangian? C.SH295290
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Unmanned
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	19/03/2012

PRN	33761
NPRN	515777
Sitename	Aircraft Crash Site, Supermarine Spitfire V, Traeth Mawr
Serial number	W3700
NGR	SH580385
Period	Modern
Community	Porthmadog
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rough Grassland
Circumstances of crash	Aircraft struck a tree during a forced landing and crashed
Notes	The author notes that this Spitfire was one of 450 VAs and VBs delivered to the RAF between May and October 1941. It was assigned to 131 Squadron. The aircraft crashed during a forced landing 5 miles east of Criccieth on 18 April 1942. Source: Halley, J J, 1983, Royal Air Force Aircraft V1000-V9999, W1000 - W9999, pg62 The aircraft struck a tree whilst force-landing near Criccieth due to engine failure. Source: http://www.spitfires.ukf.net/_prodn%20list.txt
International rarity of aircraft	1-5% of total produced survive globally
Crew survival	Not known
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	19/03/2012

PRN	33762
NPRN	515802
Sitename	Aircraft Crash Site, Avro Anson MKI, Trewan Sands
Serial number	EG218
NGR	SH3275
Period	Modern
Community	Llanfaelog
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface; Scrub; Rough Grassland
Circumstances of crash	Aircraft bellylanded following engine failure
Notes	The author notes that this Anson I was one of 600 delivered to the RAF between July 1942 an January 1943 by Avro at Yeadon. It was assigned to 9 OAFU. When the engine cut, the aircraft bellylanded on Trewan Sands, Anglesey on 18 December 1944. Source: Halley, J, 1988, Royal Air Force Aircraft EA100 - EZ999, pg31
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Not known
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	19/03/2012

PRN	33763
NPRN	515808
Sitename	Aircraft Crash Site, Avro Anson MKI, Llanerch y Medd
Serial number	EG609
NGR	SH4184
Period	Modern
Community	Llanerch y Medd
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - grass?
Circumstances of crash	Aircraft flew into the ground
Notes	The author notes that this Anson I was one of 600 delivered to the RAF between July 1942 and January 1943 by Avro at Yeadon. Its service life included assignments to CNS/ 8OAFU. The aircraft flew into the ground out of cloud at Llanerchymedd on 29 January 1944. Source: Halley, J, 1988, Royal Air Force Aircraft EA100 - EZ999, pg33
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Not known
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	19/03/2012

PRN	33764
NPRN	515812
Sitename	Aircraft Crash Site, Supermarine Spitfire V, Penrhos
Serial number	EP182
NGR	SH320335
Period	Modern
Community	Buan
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - grass?
Circumstances of crash	Aircraft crash-landed when the engine cut out
Notes	The author notes that this Spitfire was one of 1655 VBs and VCs delivered to the RAF between April and December 1942 by Vickers-Armstrong at Castle Bromwich. Its service life included assignments to 81 and 52 OTU. The aircraft's engine cut out and it crashed landed 1 mile west of Penrhos on 2 October 1943. Source: Halley, J, 1988, Royal Air Force Aircraft EA100 - EZ999, pg69 The aircraft crashed 1 mile west of Penrhos when the engine failed. Http://www.spitfires.ukf.net/p037.htm
International rarity of aircraft	1-5% of total produced survive globally
Crew survival	Not known
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	19/03/2012

PRN	33765
NPRN	515818
Sitename	Aircraft Crash Site, Miles Martinet MKI, Gors Goch
Serial number	HP183
NGR	SH495812
Period	Modern
Community	Llanfair Mathafarn Eithaf
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rough Grassland; Marsh Reeds Or Saltmarsh
Circumstances of crash	Aircraft landed inverted following a collision with a Bofors gun
Notes	The author notes that this Martinet was one of 400 delivered to the RAF by Phillips & Powis, Woodley between August 1942 and April 1943. Its service life included assignments to 1606 Flight. The aircraft hit a Bofors gun and crashed at Gorsoch, Anglesey, on 8 February 1944. Source: Halley, J, 1989 Royal Air Force Aircraft HA100-HZ999, pg86 Aircraft was flying too low. It struck a Bofors gun which caused it to invert and crashed upside-down at Gors Goch. Source: Air Ministry Form 1180
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Some crew survived crash
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	19/03/2012

PRN	33766
NPRN	515820
Sitename	Aircraft Crash Site, Miles Martinet MKI, Abergwyngregyn
Serial number	HP219
NGR	SH650725
Period	Modern
Community	Abergwyngregyn
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - grass?
Circumstances of crash	Aircraft crashed during a forced landing
Notes	The author notes that this Martinet was one of 400 delivered to the RAF by Phillips & Powis, Woodley between August 1942 and April 1943. It was assigned to 3 AGS. The aircraft's engine cut and crashed during a forced landing at Aber, Caernarfon, on 26 February 1949. Source: Halley, J, 1989 Royal Air Force Aircraft HA100-HZ999, pg86
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Not known
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	19/03/2012

PRN	33767
NPRN	515834
Sitename	Aircraft Crash Site, Westland Wallace, Porth Meudwy
Serial number	K5116
NGR	SH163255
Period	Modern
Community	Aberdaron
Terrestrial/Intertidal	Intertidal
Crash site landscape	Foreshore; General surface
Circumstances of crash	Aircraft crashed - no further details
Notes	The author notes that this Westland Wallace was delivered in June 1935. It was assigned to AOS/5 ATC/9 BGS and crashed at Porth Meudwy, Aberdaron, on 18 June 1940. Source: Halley, J, 1976, Royal Air force Aircraft K1000 - K9999, pg40
International rarity of aircraft	1-5% of total produced survive globally
Crew survival	Not known
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	26/03/2012

PRN	33768
NPRN	515847
Sitename	Aircraft Crash Site, Hawker Hunter F.4, Malltraeth Sands
Serial number	XG185
NGR	SH3966
Period	Modern
Community	Rhosyr
Terrestrial/Intertidal	Intertidal
Crash site landscape	Foreshore; General surface
Circumstances of crash	Aircraft crashed unmanned following fire in the air
Notes	The author notes that this Hunter was one of 110 delivered between August 1956 and February 1957 by Hawkers at Kingston and Armstrong Whitworth, Bitteswell to contract 6/Acft/10345. This Hunter was built by Hawkers. Its service life included assignments to 19/CFE/4 FTS. The aircraft was abandoned after a fire in the wing at Maltraeth Sands on 21 April 1976. Source: Halley, J, 2001, Royal Air force Aircraft XA100 - XZ999, pg35 Aircraft crashed after fire in the air; pilot ejected safely. Written off 21st April 1976 Source: Griffin, D. J. 2007 Image of aircraft in 1973 at http://derbosoft.proboards.com/index.cgi?board=furtherafield&action=display&thread=4900&page=2 and http://www.flickr.com/photos/52467480@N08/6745110689/in/set-72157628988172395 Images of aircraft in 1964, 1967 and 1973 at http://www.abpic.co.uk/search.php?q=XG185&u=reg
International rarity of aircraft	Not known
Crew survival	Entire crew survived crash
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	26/03/2012

PRN	33769
NPRN	515849
Sitename	Aircraft Crash Site, Hawker Hunter F.6, Rhosneigr
Serial number	XG204
NGR	SH3273
Period	Modern
Community	Llanfaelog
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - grass?
Circumstances of crash	Aircraft flew into the ground following takeoff
Notes	The author notes that this Hunter was one of 110 delivered between August 1956 and February 1957 by Hawkers at Kingston and Armstrong Whitworth, Bitteswell to contract 6/Acft/10345. Its service life included assignments to FCS/DFCS/4 FTS. The aircraft flew into the ground after takeoff near Rhosneigr on 15 August 1969. Source: Halley, J, 2001, Royal Air force Aircraft XA100 - XZ999, pg35 Aircraft hit ground near Rhosneigr. Pilot killed. Aircraft written off 15/08/1969. Source: Griffin, D. J., 2007 Image of the aircraft in 1963 at http://www.radfanhunters.co.uk/Sharjah.htm
International rarity of aircraft	Not known
Crew survival	Entire crew died in crash
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	26/03/2012

PRN	33770
NPRN	515860
Sitename	Aircraft Crash Site, Hawker Hunter T.7, Blaen y Cwm
Serial number	XL622
NGR	SH7548
Period	Modern
Community	Bro Machno
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Rough Grassland
Circumstances of crash	Aircraft flew into hillside
Notes	The author notes that this Hunter was one of 55 delivered between December 1957and February 1958 by Hawkers at Kingston to 6/Acft/12626. Its service life included assignments to 95/SF Jever/SF Sylt/111/229 OCU/4 FTS. The aircraft flew into a hill in a low flying area and blew up at Glanaber 3 miles northeast of Blaenau Ffestiniog on 17 May 1971. Source: Halley, J, 2001, Royal Air force Aircraft XA100 - XZ999, pg56 Flew into hill near Blaenau Ffestiniog. Aircraft written off 17/05/1971 Source: Griffin, D. J. 2007 Image of the aircraft at http://www.flickr.com/photos/28731066@N03/4670740353/ The aircraft left RAF Valley on a training flight and was flying at low altitude over Cwm Penmachno in a narrowing valley that terminates at the cliffs of Blaen y Cwm. The aircraft was travelling too fast to turn and avoid the ridge. Both crew were killed. On the ridge there is a visible scar that must be the crash site although no remains of the aircraft were deemed to be present when the author visited in 2010. Source: http://www.flickr.com/photos/28731066@N03/4668937349/
International rarity of aircraft	Not known
Crew survival	Entire crew died in crash
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	26/03/2012

PRN	33771
NPRN	515863
Sitename	Aircraft Crash Site, Hawker Siddeley Gnat T.1, Valley
Serial number	XP508
NGR	SH3174
Period	Modern
Community	Llanfair yn Neubwll
Terrestrial/Intertidal	Intertidal
Crash site landscape	Foreshore; Rough grassland
Circumstances of crash	Aircraft was abandoned following a loss of power
Notes	The author notes that this Gnat was one of 30 delivered between November 1962 and July 1963 to contract KC/2B/05. It was assigned to 4 FTS. The aircraft's engine lost power on take-off from RAF Valley and it was abandoned 0.25 miles to the southwest. Source: Halley, J, 2001, Royal Air force Aircraft XA100 - XZ999, pg70 The aircraft lost power and crashed on 6th September 1973. Both crew ejected safely. Source: http://www.ejection-history.org.uk/Aircraft_by_Type/Folland_Gnat.htm
International rarity of aircraft	Not known
Crew survival	Entire crew survived crash
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	26/03/2012

PRN	33772
NPRN	515865
Sitename	Aircraft Crash Site, Hawker Siddeley Gnat T.1, Rhoscolyn
Serial number	XP512
NGR	SH290752
Period	Modern
Community	Rhoscolyn
Terrestrial/Intertidal	Intertidal
Crash site landscape	Foreshore; Heath; Scrub; Rough Grassland
Circumstances of crash	Aircraft crashed after being abandoned
Notes	The author notes that this Gnat was one of 30 delivered between November 1962 and July 1963 to contract KC/2B/05. It was assigned to 4 FTS. The aircraft was abandoned after tailplane control lost and crashed into beach at Rhoscolyn, 1mile south-southwest of Valley on 23 August 1967. Source: Halley, J, 2001, Royal Air force Aircraft XA100 - XZ999, pg70 Aircraft crashed after tailplane control lost and was damaged beyond repair. Pilot abandoned the aircraft prior to the crash. Source: http://www.airliners.net/photo/UK---Air/Hawker-Siddeley-Gnat/1590594/M/
International rarity of aircraft	Not known
Crew survival	Not known
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	26/03/2012

PRN	33773
NPRN	515866
Sitename	Aircraft Crash Site, Hawker Siddeley Gnat T.1, Brithdir
Serial number	XP536
NGR	SH765185
Period	Modern
Community	Brithdir and Llanfachreth
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - grass?
Circumstances of crash	Aircraft collided with another and fell to the ground
Notes	The author notes that this Gnat was one of 30 delivered between November 1962 and July 1963 to contract KC/2B/05. It was assigned to CFS/4 FTS/CFS/4 FTS. The aircraft was in collison with XR983 and crashed 3 miles east of Dolgellau on 30 April 1976. Source: Halley, J, 2001, Royal Air force Aircraft XA100 - XZ999, pg70 Gnat XP536 and XR983 were taking part in a formation to mark the retirement of an RAF Valley squadron commander. One of the crews reported that a Phantom aircraft was nearby and one of the Gnats, intent on seeing the Phantom, struck the underside of the other over Brithdir. Both crews were lost. Source: http://wrecksiteuk.blogspot.co.uk/2010/10/gnat-collision-xp536-and-xr983-30th.html
International rarity of aircraft	Not known
Crew survival	Entire crew died in crash
Object of flight	Formation flight
Record Origin	RCAHMW
Date of Compilation	28/03/2012

PRN	33774
NPRN	515873
Sitename	Aircraft Crash Site, Hawker Siddeley Gnat T.1, Rhosneigr
Serial number	XR976
NGR	SH3273
Period	Modern
Community	Llanfaelog
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - grass?
Circumstances of crash	Undercarriage broke off and aircraft hit ground
Notes	The author notes that this Gnat was one of 41 delivered between May and November 1963 to contract KC/2B/031 by HSA, Hamble. It was assigned to 4 FTS. The aircraft undershot a practice forced landing and its undercarriage broke off. The aircraft was abandoned over Rhosneigr on 12 October 1964. Source: Halley, J, 2001, Royal Air force Aircraft XA100 - XZ999, pg79 Undercarriage failure. Hit ground after overshoot at Rhosneigr. Crew Flt. Lt Mike Vickers and Lt Richard Sheridan ejected safely. Source: http://www.ejection-history.org.uk/Aircraft_by_Type/Folland_Gnat.htm
International rarity of aircraft	Not known
Crew survival	Entire crew survived crash
Object of flight	Training (General)
Record Origin	RCAHMW
Date of Compilation	28/03/2012

PRN	33775
NPRN	515876
Sitename	Aircraft Crash Site, Hawker Siddeley Gnat T.1, Llanrwst
Serial number	XS106
NGR	SH795635
Period	Modern
Community	Llanddoged and Maenan
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - grass?
Circumstances of crash	Abandoned aircraft crashed in a spin
Notes	The author notes that this Gnat was one of 41 delivered between May and November 1963 to contract KC/2B/031 by HSA, Hamble. It was assigned to 4 FTS/CFS/4 FTS. Control was lost of the aircraft in a spin and its crashed 1mile north of Llanrwst on 16 October 1975. Source: Halley, J, 2001, Royal Air force Aircraft XA100 - XZ999, pg79 Control of aircraft lost in a spin 1 mile north of Llanrwst. 2 crew including Sq. Ldr. I. C. Gibbs ejected safely. Source: http://www.ejection-history.org.uk/Aircraft_by_Type/Folland_Gnat.htm
International rarity of aircraft	Not known
Crew survival	Entire crew survived crash
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	28/03/2012

PRN	33776
NPRN	515886
Sitename	Aircraft Crash Site, Supermarine Spitfire MKI, Pwllheli
Serial number	X4279
NGR	SH369341
Period	Modern
Community	Pwllheli
Terrestrial/Intertidal	Intertidal
Crash site landscape	Foreshore; Rough grassland
Circumstances of crash	Aircraft crashed while low flying
Notes	The author notes that this Spitfire was one of 500 delivered between July 1940 and Feburary 1941. It was assigned to 19/7 OTU/72/Cv VB/AFDU/92/610/129/41. The aircraft crashed on the beach at Pwllheli whilst low flying on 1 February 1943. Source: Halley, J, 1984, Royal Air force Aircraft X1000 - X9999, Z1000 - Z9999, pg14 Crash-landed on beach West End Pwllheli Source: http://forum.12oclockhigh.net/showthread.php?t=28103
International rarity of aircraft	1-5% of total produced survive globally
Crew survival	Not known
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	28/03/2012

PRN	33777
NPRN	515904
Sitename	Aircraft Crash Site, Bristol Beaufighter MKVIF, Newborough Warren
Serial number	X8190
NGR	SH425630
Period	Modern
Community	Rhosyr
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - grass/dunes
Circumstances of crash	Aircraft crashed into sand dune at night and caught fire
Notes	The author notes that this Beaufighter VIF was one of 261 delivered between October 1941 and July 1942 by Bristols of Weston-super-Mare. The aircraft was assigned to 456 Squadron and crashed during a forced landing at Newborough Warren Q Site on 8 October 1942. Source: Halley, J, 1984, Royal Air force Aircraft X1000 - X9999, Z1000 - Z9999, pg28 The aircraft crashed on Q site in error and caught fire. The pilot failed to check his position and mistook the Q site for base. The pilot requested that the lights be turned on to assist landing and RAF Valley responded to say that they were on. By this time the aircraft was flying low with only one engine and struck an obstacle on Newborough Warren. Source: Air Ministry Form 1180 The aircraft collided with the top of a sand dune, bursting into flames and killing the pilot and observer. Source: Sloan, R. 1991
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew died in crash
Object of flight	Training (General)
Record Origin	RCAHMW
Date of Compilation	28/03/2012

PRN	33778
NPRN	515909
Sitename	Aircraft Crash Site, Hawker Hurricane MKII, Newborough
Serial number	Z2404
NGR	SH4464
Period	Modern
Community	Rhosyr
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - grass?
Circumstances of crash	Aircraft caught fire and crashed
Notes	The author notes that this Hurricane was one of 1000 delivered between August 1940 and July 1941 by Hawkers at Kingston, Brooklands and Langley. The aircraft was assigned to 238/401/402/615 Squadron. Caught fire and crashed 1.5 miles southeast of Newborough on 4 August 1941. Source: Halley, J, 1984, Royal Air force Aircraft X1000 - X9999, Z1000 - Z9999, pg46
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Not known
Object of flight	Not known
Record Origin	RCAHMW
Date of Compilation	28/03/2012

PRN	33779
NPRN	516175
Sitename	Aircraft Crash Site, De Havilland Vampire FB9, Holyhead
Serial number	WP993
NGR	SH2280
Period	Modern
Community	Trearddur
Terrestrial/Intertidal	Terrestrial
Crash site landscape	Heath; Scrub; Rock (Scattered)
Circumstances of crash	Aircraft lost control during formation flying and crashed
Notes	Entry 25. Lt (s) Lipscombe. Wing/Squadron/flight: 7 FTS. Ship/Station: HMS GOLDCREST. A/C Type: Vampire FB9. AC Number: WP993. Date of Death: 12/12/1957. Place of Death: Holyhead. Notes: HMS GOLDCREST Book of Remembrance. Aircraft crashed during formation flying and tail chase. Aircraft lent to RAF Valley for flying training. Source: Royal Fleet Air Arm Museum Database, RNAS Yeovilton, RCAHMW Digital Collections (faaroh.wales.htm) 12/12/1957 WP993 Vampire FB9 7 FTS Control was lost during a formation loop and it crashed at Capelboch, Anglesey Source: http://www.ukserials.com/
International rarity of aircraft	Not known
Crew survival	Entire crew died in crash
Object of flight	Formation flight
Record Origin	RCAHMW
Date of Compilation	28/03/2012

PRN	33780
NPRN	240139
Sitename	Aircraft Crash Site, Bristol Beaufighter MKVI, Cemaes Bay
Serial number	X8194
NGR	SH3693
Period	Modern
Community	Llanbadrig
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - grass?
Circumstances of crash	Aircraft landed wheels up in a field
Notes	10 January 1943, Bristol Beaufighter X8194, crashed Cemaes Bay, aircraft was from 456 squadron and crashed landed after hitting house during cine-gun attacks on ground targets, pilot unhurt. Source: Sloan, R, 2002, Anglesey Air Accidents during the 20th Century, pg 236 The author notes that this Beaufighter VIF was one of 261 delivered between October 1941 and July 1942 by Bristols of Weston-super-Mare. The aircraft was assigned to 456 Squadron and hit a house during practice low level attack at Cemaes Bay on 10 January 1943. Source: Halley, J, 1984, Royal Air force Aircraft X1000 - X9999, Z1000 - Z9999, pg28 Aircraft was making low-level cine-gun attacks on house, when pilot mis-judged the distance and struck the roof. The damage sustained caused the port engine to fail and the aircraft landed wheels up in a field. Source: Air Ministry Form 1180
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Entire crew survived crash
Object of flight	Training (General)
Record Origin	RCAHMW
Date of Compilation	28/03/2012

PRN	33781
NPRN	525722
Sitename	Aircraft Crash Site, Avro Anson MKI, Mona
Serial number	N9911
NGR	SH416758
Period	Modern
Community	Bodffordd
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - airfield
Circumstances of crash	Aircraft turned sharply, lost control and crashed
Notes	The pilot, landing in very bad weather, apparently used the beam until he broke cloud, then attempted to land visually. The aircraft crossed the end of 23 runway and in attempting to cut back to the runway in a steep turn, the pilot lost control and crashed. Source: Air Ministry Form 1180 Avro Anson N9911 of 9 OAFU (Observer Advanced Flying Unit) crashed at or near Mona 16/05/45 killing Harold Sorrell, RB Douglas and J Blair Source: http://www.ww2f.com/information-requests/19683-raf-squadrons.html 16th May 1945, 0130 hours: an Avro Anson (N9911) attempted to land at RAF Mona (inbound from RAF Llandwrog). Acting Flight Sgt SRB Douglas, F/Sgt H Sorrell, and Sgt J Blair were killed. Pilot Officer Carroll was seriously injured and F/Sgt ER Wilson was uninjured. The aircraft was on a Navigation Exercise over the North Sea, their unit was 9 OAFU from RAF Llandwrog. Source: http://boards.ancestry.co.uk/thread.aspx?mv=flat&m=240&p=localities.britisles.wales.agy.general
International rarity of aircraft	<1% of total produced survive globally
Crew survival	Some crew survived crash
Object of flight	Navigational training - night time
Record Origin	GAT
Date of Compilation	28/03/2012

PRN	33782
NPRN	525723
Sitename	Aircraft Crash Site, Hawker Siddeley Gnat T.1, Brithdir
Serial number	XR983
NGR	SH765185
Period	Modern
Community	Brithdir and Llanfachreth
Terrestrial/Intertidal	Terrestrial
Crash site landscape	General surface - grass?
Circumstances of crash	Aircraft collided with another and fell to the ground
Notes	The aircraft was in collison with XP536 and crashed 3 miles east of Dolgellau on 30 April 1976. Source: Halley, J, 2001, Royal Air force Aircraft XA100 - XZ999, pg70 Gnat XP536 and XR983 were taking part in a formation to mark the retirement of an RAF Valley squadron commander. One of the crews reported that a Phantom aircraft was nearby and one of the Gnats, intent on seeing the Phantom, struck the underside of the other over Brithdir. Both crews were lost. Source: http://wrecksiteuk.blogspot.co.uk/2010/10/gnat-collision-xp536-and-xr983-30th.html
International rarity of aircraft	Not known
Crew survival	Entire crew died in crash
Object of flight	Formation flight
Record Origin	GAT
Date of Compilation	29/03/2012

Appendix 2 - Data Standard for G2180b Military Aircraft Crash Sites database

The database is an amalgam of the RCAHMW database of downed aircraft and new tables created by Gwynedd Archaeological Trust. It should be read in conjunction with the 2010 GAT HER document *BM 3.2 MIDAS Heritage Compliance Profile.* When information is added to the HER further house-keeping fields will be added and some data mapped to additional fields in order to derive most benefit from the information. The data map has not been fully completed for RCAHMW-only records.

Table/field used in G2180b database	Field type	Size	Field Origin	Location of original field (tablename.field) where applicable	HER Destination (tablename.field)	MIDAS unit of information (group.unit)	Comments
GAT table							New table created to be added to HER – designed to provide standalone information for management purposes and visible through to MoD HER through the shared platform
PRN	Long Integer	4	GAT		her_crash_sites.prn	Monument.Primary Reference Number	The Trust's Primary Reference Number found throughout the HER
NPRN	Long Integer	4	RCAHMW		her_crash_sites.nprn; her_xref.xref	Monument.External Information System Primary Reference Number	The National Primary Reference Number used by the National Monuments Record held by the RCAHMW
Sitename	Text	255	GAT		her_crash_sites.sitename; her_core.name	Monument.Heritage Asset Name	Sitename to be included in both tables in order to provide a core record for the crash and allow the crash site table to stand alone
Principal NGR	Text	12	GAT		her_crash_sites.principal_ngr		Principal NGR. This may differ from that in the HER in order to protect potentially threatened sites
Serial number	Text	20	GAT		her_crash_sites.serial		Aircraft serial number, where known
Manner of loss	Text	50	RCAHMW	Attributes. Manner of Loss	her_crash_sites.manner_of_loss	Monument.Manner of Loss	Information copied from Attributes table to facilitate standalone table function

Min date loss	Date/Time	8	RCAHMW	Attributes. Min Date Loss	her_crash_sites.min_date_loss		Information copied from Attributes table to facilitate standalone table function
Max date loss	Date/Time	8	RCAHMW	Attributes. Max Date Loss	her_crash_sites.max_date_loss		Information copied from Attributes table to facilitate standalone table function
Unit	Text	30	RCAHMW	Attributes.Registration	her_crash_sites.unit	Monument.Registration Place	Information copied from Attributes table to facilitate standalone table function Content abbreviated and not necessarily standardised
Nationality	Text	30	RCAHMW	Attributes.Nationality	her_crash_sites.nationality		Information copied from Attributes table to facilitate standalone table function
Destination	Text	30	RCAHMW	Attributes.Destination	her_crash_sites.destination	Monument.Destination	Information copied from Attributes table to facilitate standalone table function Not necessarily reliably populated
Departure	Text	30	RCAHMW	Attributes.Departure	her_crash_sites.departure	Monument.Departure	Information copied from Attributes table to facilitate standalone table function Not necessarily reliably populated
Crash site landscape	Text	80	GAT		her_crash_sites.site_landscape		Landscape surrounding crash site. Data derived from OS Mastermap data
Circumstances of crash	Text	255	GAT		her_crash_sites.circumstances		The circumstances of the crash
Aircraft Weight	Text	50	GAT		her_crash_sites.craft_weight		The weight of the aircraft (informed by Vince Holyoak's Aircraft Tables)
Airframe Materials	Text	150	GAT		her_crash_sites.craft_materials	Monument.Material	The construction material of the airframe (informed by Vince Holyoak's Aircraft Tables)
Wreckage quantity on site	Text	50	GAT		her_crash_sites.wreck_quantity		Quantity of wreckage known to remain on site Controlled entry: Large percentage of aircraft remains on site Some wreckage remains on site No wreckage apparent on site

							Not known
Wreckage type on site	Text	50	GAT		her_crash_sites.wreck_type		Type of wreckage known to be on site Controlled entry: Large aircraft components Medium-sized fragments Small fragments only Not known
Nature of wreckage	Text	50	GAT		her_crash_sites.wreck_nature		The nature of the wreckage known to be on site Controlled entry: Surface wreckage scatter Buried wreckage with surface scatter Buried wreckage Not known
Distribution of wreckage	Text	50	GAT		her_crash_sites.wreck_dist		The extent of distribution of wreckage Controlled entry: Wreckage confined to small area Wreckage widely dispersed Multiple sites of wreckage identified Not known
Associated NGRs	Text	255	GAT		her_crash_sites.assoc_ngr		Any other National Grid References available for the site or its components
Apparent distribution by subsequent interference?	Yes/No	1	GAT		her_crash_sites.subsequent_dist		Have the fragments of wreckage been apparently distributed by subsequent human interference?
Details of subsequent distribution	Memo	-	GAT		her_crash_sites.subsequent_dist_details		Details of the interference that has distributed the wreckage
Evidence of tampering on site?	Yes/No	1	GAT		her_crash_sites.tampering		Is there evidence for tampering on site?
Details of tampering	Memo	-	GAT		her_crash_sites.tampering_detail		Details of tampering
Remaining wreckage well-preserved?	Yes/No	1	GAT		her_crash_sites.wreck_well_preserved		Is the remaining wreckage well-preserved?
Wreckage clearance	Text	70	GAT		her_crash_sites.wreck_clearance		Is the wreckage known to have been cleared from the site?

							Controlled entry: Wreckage cleared immediately after crash Wreckage cleared many years later No clearance reported Not known Partial clearance (not official) apparently undertaken Partial clearance immediately after crash Aircraft taken for repair
Removal of wreckage permitted by landowner	Yes/No	1	GAT		her_crash_sites.landowner_permission		Did the landowner permit the removal of wreckage from the crash site?
Licence granted for excavation on site	Yes/No	1	GAT		her_crash_sites.licence_granted		Has a licence been granted for recovery/excavation at the crash site?
Licenced excavation undertaken on site?	Yes/No	1	GAT		her_crash_sites.licenced_excavation		Has a licenced recovery/excavation taken place?
Year of licenced excavation	Text	12	GAT		her_crash_sites.licenced_excav_year		Year of licenced excavation
Details of licenced excavation	Memo	-	GAT		her_crash_sites.licenced_excav_details		Details of licenced excavation, where known
Unlicenced excavation on site?	Yes/No	1	GAT		her_crash_sites.unlicenced_excavation		Has an unlicenced recovery/excavation taken place?
Details of unlicenced excavation	Memo	-	GAT		her_crash_sites.unlicenced_excav_details		Details of unlicenced excavation, where known
International rarity of aircraft	Text	50	GAT		her_crash_sites.international_rarity		The international rarity of the aircraft (informed by Vince Holyoak's Aircraft Tables)
Rarity of aircraft - Welsh context	Text	255	GAT		her_crash_sites.welsh_rarity		The Welsh rarity of the aircraft (requires more research and input from the rest of Wales to populate)
Period of aircraft service	Text	15	GAT		her_crash_sites.period_of_service		The period of service of the aircraft (informed by Vince Holyoak's Aircraft Tables)
Connected to Welsh war experience	Yes/No	1	GAT		her_crash_sites.welsh_war_connection		Was the aircraft connected to the Welsh experience of War? (requires more research to define what the Welsh experience of War really was

							and input from the rest of Wales)
Connection details	Text	255	GAT		her_crash_sites.welsh_war_details		Description of the connection between the aircraft and the Welsh experience of War (requires more research to define what the Welsh experience of War really was and input from the rest of Wales)
Crew survival	Text	255	GAT		her_crash_sites.crew_survival		Did the air crew survive the crash? Controlled entry: Entire crew survived crash Entire crew died in crash Some crew survived crash Not known Unmanned
Memorial	Text	50	GAT		her_crash_sites.memorial		Is there a memorial to the aircrew? Controlled entry: Official memorial onsite Unofficial memorial onsite Unofficial memorial onsite Unofficial memorial elsewhere No memorial - crew survived No memorial - crew killed Not known
Associated personnel	Text	255	GAT		her_crash_sites.associated_personnel	Actor and Role.Person Name	Associated significant people (*e.g.* known fighter aces *etc.*)
Associated campaigns	Memo	-	GAT		her_crash_sites.associated_campaign		Campaigns the aircraft is associated with (*e.g.* 1942 Dieppe Raid)
Location of removed wreckage known?	Yes/No	1	GAT		her_crash_sites.wreckage_location_known		Where wreckage has been removed, is its location known?
Details of known wreckage location	Memo	-	GAT		her_crash_sites.wreckage_location_details		Details of the known location of removed wreckage
Airforce operating aircraft	Text	50	GAT		her_crash_sites.airforce		The airforce operating the aircraft at the time of the crash (*e.g.* RAF, USAAF etc)
Object of flight	Text	50	GAT		her_crash_sites.object_of_flight		The reason for the flight. Semi-controlled entry (*i.e.*

							some terms provided but not rigorously adhered to where other objective apparent): Bomber support Bombing Ferry flight Gunnery practice Navigational training - cross country Navigational training - night time Navigational training - night time cross country Navigational training (General) Not known Reconnaissance Training (General)
Identities/fates of aircrew	Memo	-	GAT		her_crash_sites.identity_fate_aircrew	Actor and Role.Description	The identities and fates of the aircrew, where known
Other notes	Memo	-	GAT		her_crash_sites.other_notes		Any other information relevant to the site
Terrestrial/Maritime/Intertidal	Text	15	GAT		her_crash_sites.m_t_i		Location of site in these zones Controlled entry: Maritime Terrestrial Intertidal Not known
WAT	Text	11	GAT		her_crash_sites.WAT		Area of Welsh Archaeological Trust in which the crash site is located Controlled entry: CPAT DAT GAT GGAT “IRISH SEA”
SSSI	Yes/No	1	GAT		her_crash_sites.SSSI		Is the site located within a Site of Special Scientific Interest?
NT	Yes/No	1	GAT		her_crash_sites.NT		Is the site located within National Trust Property boundaries?
National Park	Yes/No	1	GAT		her_crash_sites.NP		Is the site located within a

							national park?
known subject of SNPA clearance	Yes/No	1	GAT		her_crash_sites.SNPA_cleared		Is the site known to have been subject to clearance from Snowdonia National Park Authority?
Available supporting documentation	Text	70	GAT				Data for Cadw only – not transferred to HER
Group value	Yes/No	1	GAT				Data for Cadw only – not transferred to HER
Associated sites	Text	255	GAT				Data for Cadw only – not transferred to HER
Fragility/Vulnerability	Text	50	GAT				Data for Cadw only – not transferred to HER
Diversity	Text	50	GAT				Data for Cadw only – not transferred to HER
Potential	Text	50	GAT				Data for Cadw only – not transferred to HER
Condition	Text	20	GAT		her_condition.condition	Monument.Condition	
Condition rating	Text	15	GAT		her_condition.rating	Monument.Condition	
Category	Text	2	GAT		her_management_record.category		
Record Origin	Text	50	GAT		her_crash_sites.origin		
Record Compiled by (Individual)	Text	30	GAT		her_crash_sites.compiler	Monument.Compiler (Person)	
Record Compiled by (Organisation)	Text	4	GAT		her_crash_sites.compilero	Monument.Compiler (Organisation)	
Date of Compilation	Date/Time	8	GAT		her_crash_sites.compiledon	Monument.Date of Compilation	
Reason for proposal/Statement of Significance	Memo	-	GAT				Data for Cadw only – not transferred to HER
Owner details	Text	255	GAT				Data for Cadw only – not transferred to HER
Attributes table							Table created by RCAHMW and supplied to GAT. Several fields transferred to GAT table. Some updated with further information to be returned to RCAHMW
Attributes UID	Text	50	RCAHMW				Unique ID for Attribute record
NPRN	Long Integer	4	RCAHMW				The National Primary Reference Number used by the National Monuments

							Record held by the RCAHMW
Craft Type	Text	50	RCAHMW				Type of craft – derived from maritime database. Populated inconsistently using EH Historic Aircraft Thesaurus data
Craft Function	Text	255	RCAHMW				Function of craft – derived from maritime database. Populated inconsistently using EH Historic Aircraft Thesaurus data
Min Date Loss	Text	50	RCAHMW				Minimum date of loss – derived from maritime database
Max Date Loss	Text	50	RCAHMW				Maximum date of loss – derived from maritime database
Evidence	Text	50	RCAHMW				Evidence for site. Controlled entry: Wreckage Documentary Evidence Artefact Scatter Find
Registration Place	Text	50	RCAHMW				Place of Registration of craft – derived from maritime database
Nationality	Text	50	RCAHMW				Nationality of craft – derived from maritime database
Destination	Text	50	RCAHMW				Destination of craft – derived from maritime database
Departure	Text	50	RCAHMW				Point of departure of craft – derived from maritime database
Manner of Loss	Text	50	RCAHMW				Manner of loss of aircraft. Controlled entry: Collision Crashed due to technical causes Crashed due to operational accident Crashed due to enemy action Crashed due to friendly fire Not known
Buffer Metres	Long Integer	4	RCAHMW				?

Human Remains	Long Integer	4	RCAHMW				?Potential for human remains Controlled Entry: High Medium Low Undetermined
Audit Data table							Table created purely for use of RCAHMW when dataset is returned in order to manage updates to their data
NPRN	Long Integer	4	GAT				The National Primary Reference Number used by the National Monuments Record held by the RCAHMW
Date	Date/Time	8	GAT				Date of update
Organisation	Text	6	GAT				Organisation making update
Staff	Text	30	GAT				Person updating record
Table Updated	Text	20	GAT				RCAHMW table updated
Action	Text	255	GAT				What update has been made. Includes field and action
Bib UID	Text	20	GAT				Where a change is made in connection with a source record, the bib uid should be added
Other	Text	255	GAT				Any other relevant information
Biblink table							Table created by RCAHMW – data will need to be migrated to HERs in order to relate source material. Table updated by GAT during project work. In order to migrate information to HERs the WAT PRN will also need to be added to this table
BIB UID	Long Integer	4	RCAHMW		her_source1_link.source_id; her_source1.bib_unique	Archive and Bibliography.Primary Reference Number	Unique ID relating to the source used. Will require modification prior to HER inclusion

NPRN	Long Integer	4	RCAHMW		her_xrefs.xref	Monument.External Information System Primary Reference Number	The National Primary Reference Number used by the National Monuments Record held by the RCAHMW
Page Number	Text	50	RCAHMW		her_source1_link.page		Page number of the source referred to
Biblink ID	Long Integer	4	RCAHMW		her_source1_link.rowid		Unique ID number for the biblink entry. Will require modification prior to HER inclusion
Classification Table							New Table created for the WAT HERs in order to record multiple indexing terms for core records
PRN	Long Integer	4	GAT		her_classification.prn	Monument.Primary Reference Number	The Trust's Primary Reference Number found throughout the HER
Classification Schema	Text	50	GAT		her_classification.schema		The wordlist or thesaurus used to generate the term
Term	Text	50	GAT		her_classification.term		The term used to describe or index the site
Site type rank number	Long Integer	4	GAT		her_classification.site_type_rank		Different site types are recorded in the HER using ranking numbers. This will allow for the use of multiple indexing terms for multiple site types recorded for each record in the HER
NPRN	Long Integer	4	GAT				The National Primary Reference Number used by the National Monuments Record held by the RCAHMW – field not needed for HER
Event PRN	Long Integer	4	GAT		her_classification.eventprn	Investigative Activity.Primary Reference Number	The Trust's Primary Reference Number created to record Events throughout the HER
Date of entry	Date/Time	8	GAT		her_classification_date_of_entry		Date of entry for the classification term to allow changes to be tracked over time

Site table							The core table used by the RCAHMW. Updated as part of this project and updates will be returned to the RCAHMW
NPRN	Double	8	RCAHMW		her_xrefs.xref	Monument.External Information System Primary Reference Number	The National Primary Reference Number used by the National Monuments Record held by the RCAHMW
Map Sheet	Text	255	RCAHMW		geo_locations.map	Location.Map Sheet	OS 10K map sheet on which site is located eg SH55NW
KM Square	Text	255	RCAHMW				KM Square within which the site is located
NGR	Text	255	RCAHMW		geo_locations.ngr	Location.Grid Reference	National Grid Reference for the site
NGR Desc	Text	255	RCAHMW				Description of NGR in relation to site
Name	Text	255	RCAHMW				Site name
Broadclass	Text	255	RCAHMW		her_core_site_type.broadclass		Indexing Term to define the class of site eg Maritime, Defence, Civil etc
Class	Text	255	RCAHMW				?Maritime class
Type	Text	255	RCAHMW		her_core_site_type.type	Monument.Monument Type	Type of site
Period	Text	255	RCAHMW		her_core_site_type.period	Date and Period.Period	Period to which site belongs
Community	Text	255	RCAHMW		geo_locations.community	Location.Administrative Area Name; Location. Administrative Area Type	Community council area in which the site is located
Unitary Authority	Text	50	RCAHMW		geo_locations.unitary	Location.Administrative Area Name; Location. Administrative Area Type	Unitary Authority in which the site is located
Old County	Text	255	RCAHMW		geo_locations.pre74co		The old county in which the site is located (*i.e.* Caernarvonshire, Merionethshire; Anglesey)
Form	Text	255	RCAHMW		her_core.form	Monument.Evidence	The form of the site. Field to be filled in on upload of data to HER as controlled terminology pending revision

Origin	Text	255	RCAHMW				The origin of the record
Status	Text	255	RCAHMW				Site status, *e.g.* Protected Place under Protection of Military Remains Act 1986 ("PP PMRA" in RCAHMW database)
SMR Ref	Long Integer	4	RCAHMW		her_core.prn	Monument.Primary Reference Number	The Trust's Primary Reference Number found throughout the HER
SAM Ref	Text	255	RCAHMW				The reference number for sites that are designated as Scheduled Ancient Monuments
Listed Building Ref	Text	50	RCAHMW				The Listed Building Reference number
Entered On	Date/Time	8	RCAHMW				Date of entry of the record
Entered By	Text	10	RCAHMW				Compiler of the record
Updated On	Date/Time	8	RCAHMW				Date of update to record
Updated BY	Text	15	RCAHMW				Staff member updating record
check Lat	Double	8	RCAHMW				?latitude
check Long	Double	8	RCAHMW				?longitude
Site Description	Memo	-	RCAHMW				Description of site designed for inclusion on Coflein
Notes	Memo	-	RCAHMW		her_core.desc_1	Monument.Description	Compiled notes relating to crash sites, which are compiled from a variety of referenced sources.
BUB UID	Long Integer	4	RCAHMW				?
ObjectID	Long Integer	4	RCAHMW				?
East1	Long Integer	4	RCAHMW		geo_locations.east	Map Depiction.X Coordinate	Easting
Nrth1	Long Integer	4	RCAHMW		geo_locations.north	Map Depiction.Y Coordinate	Northing
Sources table							The table used by the RCAHMW to record bibliography/source material. Updated as part of this project and updates will be returned to the RCAHMW

BIB UID	Long Integer	4	RCAHMW		her_source1.bib_unique	Archive and Bibliography.Primary Reference Number	Unique source ID
Author	Text	255	RCAHMW		her_source1.author	Archive and Bibliography.Statement of Responsibility	Author of the source
Title	Text	255	RCAHMW		her_source1.title	Archive and Bibliography.Information Source Title	Title of the source material
Publication Date	Text	50	RCAHMW		her_source1.year	Archive and Bibliography.Date of Origination	Date of publication of the source material
Edition	Text	50	RCAHMW		her_source1.edition		Edition of the source material
Volume	Text	50	RCAHMW		her_source1.volume		Source material volume
Publisher	Text	255	RCAHMW		her_source1.publisher	Archive and Bibliography. Statement of Responsibility	Publisher of source material
Where Published	Text	50	RCAHMW		her_source1.placeofpub		Location of publisher of source material
ISBN	Text	50	RCAHMW		her_source1.isbn		ISBN
ISSN	Text	50	RCAHMW				ISSN
Editor	Text	50	RCAHMW		her_source1.editor	Archive and Bibliography.Statement of Responsibility	Editor of source material
Journal	Text	255	RCAHMW		her_source1.journal		Title of Journal in which source material is found
Series	Text	50	RCAHMW		her_source1.jseries		Series of Journal in which source material is found
Volume Date	Text	50	RCAHMW				Date of volume of source material
Part	Text	50	RCAHMW				?Part of edited work where source material is found
Collection Work	Text	50	RCAHMW				?Collection to which source material belongs
Page Numbers	Text	50	RCAHMW		her_source1.page		Page numbers where source material is in edited volume
Abstract Summary	Memo	-	RCAHMW				Summary of source material abstract
Description	Memo	-	RCAHMW				Description of source
Notes	Memo	-	RCAHMW				Any other information relating to source material
Acc No	Text	50	RCAHMW				Accession number of source

							material
Ref Recorded	Date/Time	8	RCAHMW		her_source1.compiledon	Archive and Bibliography.Date of Compilation	?Date on which source material was recorded
Intial	Text	50	RCAHMW				?
Suffix	Text	50	RCAHMW				?
Threats table							Information collected for the HER threats table during the course of the project
PRN	Long Integer	4	GAT		her_threat.prn		The Trust's Primary Reference Number found throughout the HER
Threat type	Text	30	GAT		her_threat.type		The type of threat
Threat significance	Text	20	GAT		her_threat.signif		The significance of the threat
Threat timescale	Text	20	GAT		her_threat.timescale		The timescale of the threat
Threat description	Text	255	GAT		her_threat.details		Description of the threat, where available
Event PRN	Long Integer	4	GAT		her_threat.eventprn		The Trust's Primary Reference Number created to record Events throughout the HER

Appendix 3 - Aircraft Tables created by Vince Holyoak, English Heritage, and modified by Gwynedd Archaeological Trust

Amendments made to these tables during the course of the GAT project are shown in red. Notes have been appended to the end of the document. Original references to the tables as appendices of the 2002 English Heritage Guidance Note *Military Aircraft Crash Sites: Archaeological guidance on their significance and management* have been retained in order to maintain their original use and referencing.

Appendix 1.1: Aircraft utilised by the RFC, RNAS, RAF and US Navy within the UK 1912-18

Manufacturer/Type	Period of Service	Role	Power Plant	Weight (Kg)	Airframe construction	Total Produced	Survivors: Global (UK)	Notes	1 %	Global %
AD Flying Boat	1917-	MR	Hispano-Suiza	1,512	Wooden hull and frame, linen covering	29	0 (0)	Two-seat patrol flying boat in RNAS service from 1917.	<1	0
Airco DH 1	1915-17	F	Renault	729	Wooden frame, linen covering	173	0 (0)	Escort and patrol fighter, single-seat pusher type. Used in UK in Home Defence role until superseded in 1917.	1	0
Airco DH 2	1915-17	F	Gnome	428	Wooden frame, linen covering	400	1 (1)	Pusher type which equipped RFC's first single-seat fighter squadron in 1916. Short term success in dealing with new Fokkers but was withdrawn from service in mid-1917.	4	<1
Airco DH 4	1917-19	B, Recon	RR Eagle or RAF 3a	913	Wooden frame, linen covering	1,449	0 (0)	Two-seat tractor biplane. The DH 4 was the first aircraft designed specifically for day bombing, and considered to be best single-engine day bomber of WWI. Served with both the RFC and the RNAS, in the case of the latter from Redcar and Yarmouth in the anti-Zeppelin role.	14	0
Airco DH 5	1917-18	F	Le Rhone	454	Wooden frame, linen covering	550	0 (0)	Attempt to give a tractor type fighter a good forward view. Unpleasant flying characteristics and short service career.	5	0
Airco DH 6	1916-19	T, MR	RAF 1a, Renault or Curtis OX-5	663	Wooden frame, linen covering	2,282	0 (0)	Designed as a trainer. From 1918 the Avro 504 became the standard training aircraft and the DH 6 was used to equip 34 RNAS flights around the UK's coast in the MR and anti-submarine role, although with little success.	22	0
Airco DH 9	1918-19	B	BHP or AS Puma	996	Wooden frame, linen covering	3,204	1 (1)	Development of the DH4 which suffered engine reliability problems, with consequent heavy losses. Utilised in the UK	32	<1

								by the RNAS and RAF for coastal patrols in the anti-submarine and anti-zeppelin roles.		
Armstrong Whitworth FK3	1915-16	T	RAF Ia	?	Wooden frame, linen covering	500	0 (0)	Under powered two-seat biplane which was primarily used for training in the UK.	5	0
Armstrong Whitworth FK 8	1916-19	B	Beardmore	764	Wooden frame, linen covering	588	0 (0)	Two-seat tractor which was the most widely used reconnaissance aircraft of 1917-18, equipping nine RFC squadrons.	5	0
Armstrong Whitworth FK 10	1916-1918	F, B	Le Rhone, Clerget	559	Wooden frame, linen covering	8	0 (0)	Two-seat quadruplane built for the RNAS, most of which had been scrapped by the end of the war.	<1	0
Avro 500	1913-15	T	Gnome	420	Wooden frame, linen covering	?	0 (0)	Two-seat tractor biplane produced in small numbers and used by RFC and RNAS as a trainer.	?	0
Avro 503	1913-14	T	Gnome	420	Wooden frame, linen covering	?	0 (0)	Two-seat training seaplane, a few of which delivered to RNAS before the war.	?	0
Avro 504	1914-33	F,T	Le Rhone, Clerget or Gnome	420	Wooden frame, linen covering	7,948	8 (5)	Important two-seat tractor biplane initially used by RFC for reconnaissance and by the RNAS as a bomber. First aircraft shot down by the Germans. Hurriedly converted to single-seat Home Defence fighter to counter Zeppelin raids. Later relegated to training.	79	<1
Beardmore WB III	1918-19	F	Le Rhone or Clerget	404	Wooden frame, linen covering	100	0 (0)	Single-seat carrier-based scout, a derivative of the Sopwith Pup. An early attempt to build an aircraft exclusively for carrier-borne operations. Had folding wings and retractable undercarriage for easier storage. By October 1918 55 were in service.	10	0
Blackburn Kangaroo	1918-19	B	2 x RR Falcon	2,401	Wooden frame, linen covering	16	0 (0)	Land-based biplane anti-submarine bomber with crew of four. Used with some success from August 1918 by 246 Sq RAF flying from Seaton Carew who destroyed one U-Boat and damaged four others.	<1	0
Bleriot XI / Parasol	1911-15	F	Gnome	348	Wooden frame, linen covering	?	0 (0)	The Type XI and a developed version known as the Bleriot Parasol, used in limited numbers by the RFC and by the RNAS.	?	0
Bristol Boxkite	1912-15	F	Gnome	522	Wooden frame, linen covering	66	0 (0)	Two-seat pusher biplane trainer in use with the RFC from 1912 and subsequently with the RNAS until mid-1915 at the Eastbourne, Eastchurch and Hendon. First design of the British and Colonial Aeroplane Company (Bristol), the prototype flew in July 1910.	<1	0

Bristol F2 Fighter	1917-32	FB	RR Falcon	877	Wooden frame, linen covering	4,470	5 (5)	Highly successful two-seat biplane fighter and reconnaissance aircraft, with both forward and rearward firing machine guns. Designed as a replacement for the BE 2, it entered front line service with the RFC in mid 1917 and remained with the RAF until 1932.	44	<1
Bristol Scout	1914-16	F	Le Rhone, Clerget or Gnome	340	Wooden frame, linen covering	371	2 (2)	Single-seat biplane fighter, in 1916 the Scout was the first British aircraft to be fitted with a synchronised forward firing machine gun to see action. However, it was already outclassed in terms of performance and reverted to experimental use. Utilised by both the RFC and the RNAS. Also the first aircraft with a wheeled undercarriage to take off from a carrier.	3	<1
Bristol TB 8	1914-16	F	Le Rhone or Gnome	699	Wooden frame, linen covering	51	0 (0)	Two-seat tractor biplane initially intended for the RFC but rejected by them and utilised instead by the RNAS for Home Defence duties during the early part of the war.	<1	0
Caudron GIII	1913-16	T	Le Rhone, Gnome or Anzani	850	Wooden frame, linen covering	?	0 (0)	Key French designed and manufactured two-seat sesquiplane which, together with subsequent developments, equipped 40 French units but which was used in the UK as a trainer by the RNAS (124 delivered), the RFC and the US Army Air Service (192 delivered).	?	0
Caudron GIV	1916-17	B	2 x Le Rhone or Anzani	850	Wooden frame, linen covering	?	0 (0)	Twin-engine, two-seat long range bomber, 55 of which were delivered to the RNAS for long range bombing duties, operating with 4 and 5 Wings at Petit Synthe. Replaced by the Handley Page 0/100.		
Curtiss H4	1914-18	MR	2 x Curtiss OX-5, Anzani or Clerget	1,360	Wooden hull and frame, linen covering	?	0 (0)	Twin-engine four-seat biplane flying boat, built under licence in the UK. Known as the `Small America' to distinguish it from the larger H12 later taken into service, 64 of this type were operated by the RNAS from Felixstowe and Killingholme. Suffered many problems, but made important contribution to flying boat development.	?	0
Curtiss H12	1917-19	MR	2 x RR Eagle	3,315	Wooden hull and frame, linen covering	?	0 (0)	Twin-engine four-seat biplane flying boat, development of the H4. Known as the `Large America', utilised by the RNAS for anti-submarine and anti-zeppelin patrols flying from Killingholme, Yarmouth and Felixstowe. Claimed first zeppelin shot down by a flying boat.	?	0
Curtiss H16	1918-19	MR	2 x RR Eagle	3,346	Wooden hull and frame, linen covering	?	0 (0)	Twin-engine four-seat biplane flying boat, larger developed version of the H12. Approximately 75 were ordered for the RAF, operating from Killingholme and Yarmouth in the anti-submarine role. A further 50 aircraft were flown in the UK by the US Navy, again operating from Killingholme.	?	0
Curtiss R2/R4	1915-18	T	Curtiss XV	?	Wooden frame, linen covering	?	0 (0)	Intended for use in the reconnaissance role, 100 were ordered for RNAS service in 1915. The aircraft proved to be under powered and was relegated to armament training.	?	0

Curtiss JN3	1915-18	T	Curtiss OX5	?	Wooden frame, linen covering	?	0 (0)	A total of 97 of this US aircraft were delivered to the RNAS for use in the training role.	?	0
Curtiss JN4	1917-18	T	Curtiss OX5	800	Wooden frame, linen covering	?	0 (?30)	The most famous US training aircraft of the war and inter-wars period, some 80 `Jennys' were delivered to the RNAS for training duties and 100 served with the RFC.	?	?
Fairey III	1918-35	F	Maori II or RR Eagle	1,476	Wooden frame, linen covering	486	1 (1)	Two-seat biplane reconnaissance aircraft (RAF IIIA land plane) and bomber (RNAS IIIB seaplane). Saw limited service before the end of WWI. Post war IIID had either wheels or floats and served with both the RAF and FAA, carrying out long endurance flights.	4	<1
Fairey Campania	1918-19	MR	RR I, IV or Maori	1,693	Wooden frame, linen covering	40	0 (0)	Two-seat coastal patrol or carrier-borne reconnaissance seaplane. First aeroplane designed for use on board a carrier. Operated from seaplane stations at Calshot, Dundee and Portland.	<1	0
Fairey Hamble Baby	1917-18	MR	Clerget	630	Wooden frame, linen covering	180	0 (0)	Single-seat anti-submarine patrol seaplane. Derivative of the Sopwith Baby, reworked by Fairey who introduced for the first time trailing edge flaps to increase wing lift. Used by RNAS during 1917-18 operating from coastal stations in the UK and abroad.	1	0
FBA Flying Boat	1914-18	T	?	?	Wooden hull and frame, linen covering	?	0 (0)	Small two-seat flying boat, 116 of which were delivered to the RNAS for training duties.	?	0
Felixstowe F2	1918-23	F, MR	2 x RR Eagle VIII	3,431	Wooden hull and frame, linen covering	249	1 (1)	Redesign of the US Curtis H4 which enjoyed immense success against U Boats and Zeppelins in the North Sea.	2	<1
Farman MF7 and MF11	1913-16	Recon , B, T	Renault or Lorraine	652	Wooden frame, linen covering	?	0 (0)	Introduced to RFC and RNAS service in 1913, the MF7 was known as the `Longhorn' because of its landing skids and the MF11 (Type 1914) as the `Shorthorn'. Used initially in the reconnaissance role, both were rapidly relegated to training.	?	0
Farman MF20	1914-1916	Recon , B, T	Gnome	372	Wooden frame, linen covering	?	0 (0)	A two-seat land or sea plane which equipped the RNAS in small numbers, flying from Eastchurch initially and then from Belgium and in the Dardanelles.	?	0
Farman F40	1915-16	F	Renault	?	Wooden frame, linen covering	?	0 (0)	A single-seat pusher, 50 of this type were delivered for RNAS service, some operating from coastal air stations in the UK.	?	0
Grahame-White XV	1914-16	T	Le Rhone or Gnome	?	Wooden frame, linen covering	80	0 (0)	Two-seat pusher biplane, 80 of which were used by the RNAS as a trainer during early part of war, mostly flying from	<1	0

								Chingford.		
Handley Page 0/100	1916-18	B	2 x RR Eagle	3,772	Wooden frame, linen covering	46	0 (0)	First successful night heavy bomber, having suffered initial heavy losses in daylight role. Three seat biplane with folding wings to enable it to fit into front line hangars. Served with the RNAS and later the RAF.	<1	0
Handley Page 0/400	1918-21	B	2 x RR Eagle	3,864	Wooden frame, linen covering	554	0 (0)	Development of 0/100, became standard equipment with the Independent Force, the strategic bombing arm of the newly-formed RAF.	5	0
Handley Page V/1500	1918-20	B	4 x RR Eagle	7, 368	Wooden frame, linen covering	90	0 (0)	Largest RAF night bomber of WWI, with a crew of up to 7. Aircraft of 166 Sq Bircham Newton were waiting to take off to bomb Berlin when the Armistice was signed.	<1	0
Martinsyde G.100 / G.102 Elephant	1916-18	F, B	Beardmore	815	Wooden frame, linen covering	271	0 (0)	Initially conceived as long range single-seat biplane fighter. Weight and poor manoeuvrability saw the G.100 (of which 100 were built) relegated to use as light bomber and ground attack aircraft. Subsequent development, the G.102 `Elephant' (of which 171 built) used in similar role, and as long range escort.	2	0
Martinsyde F1	1917	F	RR	?	Wooden frame, linen covering	?	0 (0)	Two-seat biplane fighter used experimentally as a Home Defence fighter by the RFC mounting twin machine guns. Stable and with good performance, it did not go into production.	?	0
Martinsyde F3	1918	F	Hispano-Suiza	?	Wooden frame, linen covering	6	0 (0)	Single-seat biplane fighter, 4 of 6 produced serving in Home Defence role in 1918. Rapidly developed into the F4 Buzzard.	<1	0
Martinsyde F4 Buzzard	1918-19	F, Comms	Hispano-Suiza	?	Wooden frame, linen covering	65	0 (0)	Single-seat biplane, fastest Allied fighter of WWI, although reached squadrons too late to see active service. Used as high speed communications aircraft, the Sopwith Snipe becoming instead the standard post-war fighter.	<1	0
Martinsyde S1 Scout	1915-16	F	Gnome	?	Wooden frame, linen covering	60	0 (0)	Single-seat tractor type biplane, saw approximately 6 months service on Western Front with RFC before being relegated to training duties. Initially intended for use in Home Defence role, it was also found inadequate for these duties.	<1	0
Morane Saulnier N	1914-15	F	Le Rhone	444	Wooden frame, linen covering	49	0 (0)	Single-seat monoplane fighter which equipped four squadrons of the RFC.	<1	0
Nieuport 12 Two-seat	1915-16	F, Recon, B	Clerget or Beardmore	550	Wooden frame, linen covering	?	0 (0)	Two-seat biplane, initially purchased from the French but then subsequently manufactured under licence in the UK. Equipped both the RNAS and the RFC.	?	0
Nieuport 11/17/24	1915-17	F	Le Rhone	375	Wooden frame, linen	?	3 (1)	French-built Single-seat fighting scouts, successive types of	?	?

Scouts					covering			which equipped the RNAS, mostly operating on the Western Front, but also in small numbers from Eastchurch.		
Norman Thompson NT 2B	1917-19	T	Hispano-Suiza, Beardmore or Sunbeam Arab	1,200	Wooden frame and hull, linen covering	79+	0 (0)	Two-seat flying boat trainer which operated with the RNAS from Calshot, Lee-on-Solent and Felixstowe. Still in service at the end of the war.	<1	0
Norman Thompson NT 4	1916-18	MR	2 x Hispano-Suiza	2,078	Wooden frame and hull, linen covering	50	0 (0)	Four-seat anti-submarine flying boat used by the RNAS, operating from Calshot, Cattewater, Dundee, Felixstowe, Invergordon, Killingholme and Scapa Flow.	<1	0
Parnall Hamble Baby	1915-17?	T	?	?	Wooden frame, linen covering	?	0 (0)	Land plane conversion of the Hamble Baby seaplane, 74 of which were used b the RNAS in the training role.	?	0
Royal Aircraft Factory BE2	1914-19	Recon	Renault or RAF Ia	579	Wooden frame, linen covering	3,241	1 (1)	Mainstay RFC two-seat tractor type, the first to see mass production. Used from outbreak of WWI. Used as night fighters by RFC Home Defence units against the Zeppelin.	32	<1
Royal Aircraft Factory BE8	1913-16	B, Recon	Gnome	?	Wooden frame, linen covering	55	0 (0)	Two-seat tractor type, initially used as a scout and subsequently as a trainer, and in the Spring of 1915 as a light bomber. Known as `The Bloater'.	<1	0
Royal Aircraft Factory BE 12	1916-18	FB	RAF 4a	740	Wooden frame, linen covering	468	0 (0)	Adaptation of BE2, single-seat fighter which saw limited service in 1916 before being relegated to the role of light bomber.	4	0
Royal Aircraft Factory FE 2	1914-18	FB	Beardmore or RR Eagle	936	Wooden frame, linen covering	2,190	1 (1)	Highly successful two-seat pusher type which saw front line service in France between 1915-18, first as a fighter and later in the night bomber and ground attack role.	21	<1
Royal Aircraft Factory FE 8	1915-17	F	Gnome	405	Wooden frame, linen covering	182	0 (0)	Single-seat pusher type, outdated on entry to front line service and soon relegated.	1	0
RE 5	1914-15	B, Recon	Austro-Daimler or Beardmore	?	Wooden frame, linen covering	24	0 (0)	Two-seat tractor type, first of the RE (Reconnaissance Experimental) types to reach full production. Served almost exclusively with the RFC.	<1	0
RE 7	1915-16	B, Recon	Beardmore	1,038	Wooden frame, linen covering	250	0 (0)	Two-seat tractor type, conceived as day bomber. Served with the RFC, although weak defensive armament saw it quickly superseded.	2	0
RE 8	1916-20	B, Recon	RAF 4a	819	Wooden frame, linen covering	4,077	1 (1)	Mainstay two-seat tractor type of the second half of WWI, equipping 19 Squadrons in France.	40	<1

SE 5	1917-20	F	Hispano-Suiza or Wolseley Viper	630	Wooden frame, linen covering	5,205	3 (3)	Extremely successful late WWI single-seat fighter which entered front line service in April 1917.	52	3
Short Bomber	1915-17	B	RR Eagle or Sunbeam	2,272	Wooden frame, linen covering	83	0 (0)	Two-seat tractor type biplane. Development of Short 184 seaplane, delivered to 3 Wing RNAS spring 1916 and also to 7 Sq RNAS late in the year. Took part in `strategic' operations as night bomber with 3 Wing from late 1916 but withdrawn from service April 1917.	<1	0
Short 74	1914-15	MR	Gnome	954	Wooden frame, linen covering	18	0 (0)	Two-seat ship-borne float plane used by RNAS. Chiefly known for Cuxhaven raid.	<1	0
Short 184 / 320	1915-21	TB, Recon , B	Sunbeam, Renault or RR Eagle	1,683	Wooden frame, linen covering	300	1 (1)	Highly successful RNAS two-seat biplane seaplane which became the first aircraft to sink a ship with a torpedo and was stationed at coastal bases around the UK. Later converted as a night bomber. Improved 320 variant (1918-19) used for anti-submarine and reconnaissance. Other sources suggest as many as 900 were built.	3	<1
Short 827 / 830	1914-18	B, Recon	Sunbeam or Salmson	1,545	Wooden frame, linen covering	120	0 (0)	Two-seat reconnaissance/bomber seaplane, operated with RNAS from coastal air stations, seaplane carriers and armed merchantmen.	1	0
Sopwith Baby	1914-18	B and Recon	Gnome or Clerget	557	Wooden frame, linen covering	456	0 (0)	Single-seat twin-float seaplane development of the pre-war Schneider Trophy winning aircraft. Employed with little success by RNAS in anti-Zeppelin role over North Sea.	4	0
Sopwith Camel	1917-19	F	Clerget	422	Wooden frame, linen covering	5,490	2 (2)	Most successful British fighter of WWI in terms of combat kills, used by both RFC and RNAS. Also used in ground attack role. 2F1 variant developed for ship-board use.	54	<1
Sopwith T1 Cuckoo	1918-23	TB	Wolseley Viper or Sunbeam Arab	999	Wooden frame, linen covering	150	0 (0)	Developed from 1916, RNAS land plane which could carry a single torpedo. Entered service too late to see action in WWI.	1	<1
Sopwith Dolphin	1918-19	F	Hispano-Suiza	709	Wooden frame, linen covering	1,500	0 (0)	Fighter and ground attack aircraft that saw service from early 1918.	15	0
Sopwith Pup	1916-18	F	Le Rhone	357	Wooden frame, linen covering	1,770	2 (2)	Single-seat tractor, entered service with RFC in mid 1916. 290 served with RNAS and type carried out first deck landing on a moving ship. Also used in Home Defence role.	17	2

Sopwith Salamander	1918-19	FB	Bentley BR 2	1,139	Wooden frame, linen covering	882	0 (0)	Ground attack aircraft which entered service right at the end of WWI.	8	0
Sopwith Sneider	1915-18	F	Gnome	?	Wooden frame, linen covering	160	0 (0)	Seaplane version of the Tabloid which operated from RNAS coastal stations around the UK.	1	0
Sopwith Snipe	1918-26	F	Bentley BR 2	916	Wooden frame, linen covering	1,100	0 (0)	Development of the Camel, entered service right at the end of WWI and became the first mainstay fighter of the peacetime RAF.		
Sopwith 1½ Strutter	1916-18	FB, Recon	Clerget	572	Wooden frame, linen covering	1,315	0 (0)	Used by both RFC and RNAS, a single or two-seat tractor type. Outclassed as a fighter by late 1916 and relegated to the bombing role. From early 1918 served as a trainer.	13	0
Sopwith Tabloid	1914-16	FB	Gnome	303	Wooden frame, linen covering	39	0 (0)	Single-seat Scout and light bomber, development of pre-war racer. Served with RFC and RNAS and carried out first raid on Germany	<1	0
Sopwith Triplane	1917	F	Clerget	500	Wooden frame, linen covering	140	1 (1)	A single-seat triplane used exclusively by RNAS, highly manoeuvrable and with a good rate of climb but soon outclassed and replaced by the Camel.	1	1
Spad Scout (VII)	1916-18	F	Hispano Suiza	500	Wooden frame, linen covering	?	0 (0)	A highly successful French designed single-seat tractor biplane, built in limited numbers under licence in the UK for the RNAS and subsequently used on the Western Front by the RFC.	?	0
Vickers FB4 / FB 5 / FB 9 Gunbus	1914-16	F, Recon , T	Gnome	554	Wooden frame, linen covering	150?	0 (0)	Pusher type biplane scout (fighter), first 50 of which developed and built on Vickers' private initiative. Saw service with both the RFC and RNAS in France before reverting to Home Defence role. The last development, the FB 9 was used within the UK as a trainer.	1	0
Vickers FB 19	1916-17	F	Clerget or Le Rhone	407	Wooden frame, linen covering	36	0 (0)	Used primarily in UK in the Home Defence and training role.	<1	0
White and Thompson No.3	1915-16	MR	Beardmore	c.1,000	Wooden hull and frame.	8	0 (0)	Two-seat anti-submarine biplane flying boat used in extremely limited fashion by the RNAS.	<1	0
White and Thompson `Bognor Bloater'	1915-16	MR	Renault	?	Wooden monocoque fuselage.	10	0 (0)	Two-seat coastal patrol biplane used in extremely limited fashion by the RNAS, operating from the coastal air stations at Eastbourne, Great Yarmouth and Killingholme.	<1	0

Wight 840	1915-17	TB	Sunbeam	c.2,000	Wooden frame, linen covering	70	0 (0)	Two-seat torpedo seaplane used by the RNAS. Operated from Felixstowe in the anti-submarine role.	<1	0
Wight Pusher	1914-16	Recon	Salmson	c.1,500	Wooden frame, linen covering	11	0 (0)	Two/three-seat reconnaissance seaplane with folding five-bay wings. Two on board Ark Royal in the Dardanelles, remainder at coastal stations.	<1	0
Wight `converted' Seaplane	1917-?	MR	RR Eagle or Sunbeam Maori	1,708	Wooden frame, linen covering	37	0 (0)	Two-seat biplane used by the RNAS in the anti-submarine role from early 1917, flying from Calshot, Dover and Portland.	<1	0

Appendix 1.2: Aircraft utilised by the Imperial German Military Air Service and the Imperial Navy Service within the UK 1914-1918

Manufacturer / Type	Period of Service	Role	Power Plant	Weight (Kg)	Airframe Construction	Total Produced	Survivors: Global (UK)	Notes	1 %	Global %
Friedrichshafen FF 29	1914-15	B	Mercedes D II	?	?	?	0 (0)	Single engine biplane Float-plane with a crew of two which was utilised by the German navy in small-scale nuisance raids against UK shipping and coastal targets.	?	0
Gotha G.IV and V	1916-18	B	2 x Mercedes D IVa	2,391	Plywood frame with canvas covering	232	0 (0)	Long range bomber with crew of three. By late 1916 the effectiveness of Zeppelins had been neutralised by incendiary bullets and improved defences, so a special unit (Kampgeschwader 3) equipped with GIVs was established in order to bomb London, which it did from 1917 onwards.	2	0
Zeppelin (Staaken) R. VI	1917-18	B	4 x Maybach or Mercedes D IVa	11,462	?	18	0 (0)	Heavy bomber with crew of seven and endurance of between seven and eight hours. Known as the `Giant', it took part in raids on France and the UK from 1917 onwards.	<1	0

Appendix 1.3: Aircraft utilised by the RAF and Fleet Air Arm within the UK 1919-1936

Manufacturer/Type	Period of Service	Role	Power Plant	Weight (Kg)	Airframe construction	Total Produced	Survivors: Global (UK)	Notes	1 %	Global %
Armstrong Whitworth Atlas	1927-35	AC, Comms, T	AS Jaguar IVc	1,159	Tubular metal frame, linen covering	446	0 (0)	Two-seat general purpose biplane, the first to be specifically designed for Army co operation work, it became operational in late 1927, remaining in service for six years, finally as a communications aircraft and advanced trainer.	4	0
Armstrong Whitworth Siskin	1924-32	F	AS Jaguar	828	Tubular metal frame, linen covering	534	0 (0)	Important early inter-war period RAF single-seat day fighter which was highly successful and exported.	5	0
Avro Aldershot	1924-25	B	RR Condor III	?	Wooden frame, linen covering	15	0 (0)	A heavy, day, long range bomber with crew of 5. Equipped only 99 Sq RAF.	<1	0
Avro Anson	1936-68	MR,T	2x AS Cheetah	2,440	Tubular steel with spruce and plywood covering and Bakelite plywood wings	11,000	30 (16)	Introduced as GR aircraft, later adopted as principal trainer. Only one wartime military version (Mk I) survives. First RAF aircraft with retractable undercarriage.	110	<1
Avro Bison	1922-29	Recon, MR	Napier Lion	1,892	Wooden frame, linen covering	63	0 (0)	A biplane reconnaissance aircraft with a crew of 3 to 4 which equipped 3 and 22 Sq RAF before passing to FAA, who operated it with 4 UK based flights. Produced in two main variants and superseded by the Fairey IIIF in 1929.	<1	0
Avro Tutor/Prefect	1935-39	T	AS Lynx	?	Tubular metal frame, linen covering	795	3 (1)	Two-seat trainer chosen to replace the Avro 504, 380 of which were in RAF service, many coming on to the civilian market at the end of their careers. Also used extensively abroad.	7	<1
Blackburn Baffin	1934-36	TB	Bristol Pegasus	1,900	Composite wood and metal frame, linen covering	77	0 (0)	Two-seat carrier borne torpedo bomber. Succeeded the Ripon as the FAA's principal strike aircraft. Served with three FAA squadrons. 62 of the production run were actually converted Ripons.	<1	0
Blackburn Blackburn	1923-33	MR	2 x Napier Lion IIB or V	1,833	Composite wood and metal frame, linen covering	50-70	0 (0)	Single engine biplane reconnaissance aircraft used by the FAA, either from carriers or from land bases. Replaced by the Fairey IIIF. Equipped two UK based flights.	<1	0
Blackburn Dart	1922-33	TB	Napier Lion	1,746	Composite wood and metal frame, linen covering	70	0 (0)	Single-seat carrier torpedo bomber which equipped three UK based flights of the FAA. Made the first night landing upon a carrier and a twin float seaplane version also equipped four RAF Reserve Training Schools.	<1	0
Blackburn 14/24	1930-32	MR	3 x RR	?	Wooden hull and	8	0 (0)	Large reconnaissance seaplane, five versions of which	<1	0

Iris			Condor		frame and linen covering.			were built and which carried out many long distance flights.		
Blackburn 20/32 Perth	1934	MR	3 x RR Buzzard	?	Metal hull and frame, linen airframe covering	4	0 (0)	Triple engine flying boat which saw limited service.	<1	0
Blackburn Ripon	1929-34	TB, MR	Napier Lion XIA	1,934	Composite wood and metal frame, linen covering or all metal	92	0 (0)	Two-seat carrier-borne torpedo bomber biplane which superseded the Dart in FAA service. Could also be converted for use in the long range reconnaissance role.	<1	0
Blackburn Shark	1935-38	TB	AS Tiger VI	1,969	Metal structure, with Alclad monocoque fuselage and fabric covered wings	200	0 (0)	Two or three-seat biplane torpedo bomber which served with three FAA squadrons before being relegated to the training role from Lee on Solent.	2	0
Boulton Paul Overstrand	1935-38	B	2 x Bristol Pegasus	3,607	Tubular metal frame, linen covering	24	0 (0)	Uprated version of the Sidestrand, became the first RAF aircraft to mount a power operated turret, entering service with 101 Sq in early 1935.	<1	0
Boulton Paul Sidestrand	1929	B	2 x Bristol Jupiter VIII	2,731	Tubular metal frame, linen covering	18	0 (0)	Large twin engine high performance biplane replacement for the DH 10 daylight medium bomber. Carried crew of 3-5 and equipped 101 Sq RAF at Bircham Newton.	<1	0
Bristol Bulldog	1929-37	F	Bristol Jupiter	951	Tubular metal frame, linen covering	500	1 (1)	Single-seat biplane fighter, one of the last open cockpit types to see widespread service with the RAF, equipping 10 Squadrons and at one point equipping 70% of the home defence fighter force.	5	<1
De Havilland Tiger Moth	1931-47	T	De Haviland Gypsy	525	Tubular steel and Spruce with Plywood and fabric covering	8,565	400+ (42)	Principal biplane elementary flying trainer in UK and Commonwealth training schools. Adaptation of a civilian design. Many survive.	85	c. 5
Fairey Fawn	1924-29	B, AC	Lion II	?	Wooden frame, linen covering	48	0 (0)	Two-seat biplane designed to replace the DH 9 in the day bomber, reconnaissance and Army co operation role.	<1	0
Fairey Flycatcher	1923-34	F	AS Jaguar III or IV or Bristol Mercury II	923	Wooden wings with linen covering, composite wood and metal fuselage, metal and fabric covered	195	0 (0)	The only British fighter in FAA service between 1924 and 1932 and both highly successful and highly significant. Land based and carrier borne variants.	1	0
Fairey Fox	1926-31	B	Curtis D12	?	Wooden frame, linen covering	35	0 (0)	Technically innovative replacement for the Fawn day bomber which included water cooled engine, metal propellor, retractable radiator and high efficiency wing aerofoils. Later models (the Mk II) was all metal in construction.	<1	0
Fairey Gordon /	1931-34	B,	AS Panther	1,590	Tubular metal frame,	270	0 (0)	A two-seat daylight bomber and reconnaissance aircraft	2	0

Seal		Recon	IIA		linen covering			designed to replace the Fairey III, with which it shared many design similarities. Used predominantly by the RAF but also by the FAA who renamed their variant the Seal.		
Fairey Hendon	1936-39	B	2 x RR Kestrel	5,805	Tubular steel and light alloy frame, linen covering	14	0 (0)	Highly innovative in design: first RAF cantilever monoplane heavy bomber. Carried crew of 5 and equipped 38 Sq RAF. Plans to produce a further 60 aircraft were dropped in favour of other newer designs.	<1	0
Fairey Seafox	1937-40	MR	Napier Rapier	1,729	All metal with monocoque fuselage and fabric covered wings	64	0 (0)	Two-seat reconnaissance biplane and spotter seaplane used by the FAA. Equipped a number of cruisers and catapult flights on the outbreak of WWII, and took part in the successful action against the Graf Spee.	<1	0
Gloster Gamecock	1926-31	F	Bristol Jupiter VI	874	Wooden frame, linen covering	90	0 (0)	Single-seat day fighter which entered service with five RAF squadrons in 1926. The last all wooden RAF fighter to enter service.	<1	0
Gloster Gauntlet	1934-40	F	Bristol Mercury	1,257	Tubular metal frame, linen covering	228	0 (0)	Single-seat biplane fighter, already largely obsolete by its introduction to service. Last open cockpit fighter in RAF service, which equipped 15 squadrons.	2	0
Gloster Grebe	1923-29	F	Bristol Jupiter IV	779	Wooden frame, linen covering	129	0 (0)	Successful single-seat day fighter which served with 6 RAF squadrons before being replaced by the Siskin.	1	0
Handley Page Heyford	1930-39	B	2 x RR Kestrel or Tiger	4,181	Tubular metal frame, linen covering	254	0 (0)	Four seat biplane heavy night bomber, the last biplane heavy bomber to enter RAF service, equipping 99 Sq from July 1933.	2	0
Handley Page Hinaidi	1929-35	B	Jupiter, AS Jaguar, RR Buzzard or RR Kestrel	1,386	Wooden frame, linen covering	52	0 (0)	Four seat biplane heavy night bomber. Developed version of the Hyderabad which could carry an extra 350 lb in bombs, equipping 99 Sq RAF from late 1929.	<1	0
Handley Page Hyderabad	1925-34	B	2 x Lion	4,050	Wooden frame, linen covering	45	0 (0)	Twin engine heavy night bomber which saw service with 4 UK based squadrons, starting with 99 Sq at Bircham Newton. The RAF's last all wooden bomber.	<1	0
Hawker Audax	1932-41	AC, T	RR Kestrel	?	Tubular metal frame, canvas and metal covering.	650	1 (1)	Two-seat biplane close support and reconnaissance aircraft for Army co operation work. Replaced the AW Atlas and eventually became a trainer, in which role it served until 1941.	6	<1
Hawker Demon	1931-39	F	RR Kestrel	?	Tubular metal frame, canvas and metal covering.	234	1 (1)	Two-seat biplane fighter, adaptation of the Hart bomber with uprated performance and armament. A later variant had a hydraulically operated turret installed in the rear cockpit.	2	<1

Hawker Fury / Nimrod	1931-39	F	RR Kestrel	1,188	Tubular and high tensile rolled steel frame, canvas and metal covering.	230	3 (3)	Single-seat biplane selected as the standard fighter for the RAF, entering service with 43 Sq in 1931. Converted by the FAA for use on aircraft carriers as the Nimrod. Incorporated hydraulically operated brakes.	12	<1
Hawker Hardy	1935-43	B, GR, Tug	RR Kestrel	1,452	Tubular metal frame, canvas and metal covering.	47	0 (0)	Two-seat biplane light bomber which competed in terms of performance with contemporary fighters. It entered service with 3 overseas squadrons in 1935 but was quickly relegated to home service with the Auxiliary Air Force and then became a tug.	<1	0
Hawker Hart / Osprey	1930-43	B, MR, Tug	RR Kestrel	1,150	Tubular steel frame, canvas and metal covering.	969	2 (2)	Two-seat biplane light bomber which entered RAF service in 1930 and eventually equipped seven UK-based squadrons as the Hart. Fitted with folding wings and flotation gear and renamed the Osprey, it also equipped FAA from 1932 onwards.	9	<1
Hawker Hind	1935-40	B	RR Kestrel	1,477	Tubular metal frame, canvas and metal covering.	692	2 (2)	Two-seat biplane day bomber replacement for the Hawker Hart, with which it shared many design characteristics.	6	<1
Hawker Horsley	1926-35	B, TB	RR Condor or AS Leopard	2,163	Mk I all wooden, Mk II composites, Mk III all metal.	38	0 (0)	Single engine biplane day bomber with crew of 2, later developed as a land plane torpedo bomber (Mk III). The Mk I was the last all wooden aircraft to be constructed by Hawkers.	<1	0
Hawker Woodcock	1925-28	F	AS Jaguar II or Bristol Jupiter IV	638 (Mk I) 943 (Mk II)	Wooden frame, linen covering	63	0 (0)	The first fighter aircraft built in Britain following the end of WWI. Single-seat which followed conventional lines and was superseded by the Gamecock.	<1	0
Miles Nighthawk	1937-38	T	DH Gipsy Six	?	?	?	0 (0)	Trainer.	?	0
Nieuport Nighthawk	1919-23	F	AS Jaguar or Bristol Jupiter	?	Wooden frame, linen covering	70	0 (0)	French designed fighter manufactured under licence in the UK for use as RAF fighter in the immediate inter-war period.	<1	0
Nieuport Nightjar	1922-23	F	Bentley BR 2	984	Wooden frame, linen covering	18	0 (0)	Single-seat carrier-borne fighter, a conversion of surplus Night Hawks, which saw use with the FAA.	<1	0
Parnall Panther	1920-23	F, Recon	Bentley BR 2	603	Wooden frame, linen covering	150	0 (0)	Two-seat day fighter and reconnaissance aircraft, one of the first to be designed specifically to operate from a carrier, which saw use with the FAA in the early inter-war period.	1	0
Saro Cloud	1933-36	T	2 x AS Serval	?	All metal	17	0 (0)	Amphibious flying boat trainer which saw limited service with 48 Sq RAF at Manston and the Seaplane Training Squadron at Calshot.	<1	0

Saro London	1934-44	MR	2 x Bristol Pegasus	?	All metal	33	0 (0)	Flying boat.	<1	0
Short Rangoon	1931-36	MR	3 x Bristol Jupiter	?	Alloy hull and frame, linen covering	6	0 (0)	Triple engine biplane amphibious flying boat used in limited fashion in UK by 210 Sq at Pembroke Dock before being sold to Imperial Airways.	<1	0
Supermarine Southampton	1925-36	MR	2 x Napier Lion V	?	Alloy hull , wooden frame, linen covering	66	1 (1)	Twin engine biplane flying boat which served both in the UK and Far East, achieving fame for long distance flight.	<1	<1
Vickers Vildebeest	1933-40	TB	Bristol Perseus or Pegasus	2,147	Tubular steel frame with fabric covering and metal panels.	152	0 (0)	Two (later three) seater biplane torpedo bomber, one of the most prominent utilised by the RAF between the wars but which was eventually replaced in UK service by the Beaufort..	1	0
Vickers Vimy	1919-28	B	2 x RR Eagle or Hispano Suiza	2,463	Wooden frame, linen covering	221	1 (1)	Twin engine, biplane heavy bomber with crew of three. Entered service immediately after WWI. Converted civilian example was the first aircraft to fly the Atlantic non-stop.	2	<1
Vickers Virginia	1924-38	B	2 x Napier Lion V	4,386	Wooden frame, linen covering	260	0 (0)	Twin engine biplane bomber with crew of four which equipped several RAF Squadrons.	2	0
Westland Wallace	1933-36	B	Bristol Pegasus	1,490	Tubular steel frame with fabric covering and metal panels	174	1 (1)	Development of the Wapiti. Two-seat biplane, the Mk II models had canopies covering both cockpits. Three UK based squadrons operated the aircraft.	1	1
Westland Walrus	1921-25	MR	Napier Lion III	2,270	Wooden frame, linen covering	36	0 (0)	Three-seat biplane spotter, first equipped 3 Squadron RAF at Leuchars before joining FAA Fleet Spotter Flights at Gosport.	<1	0
Westland Wapiti	1927-39	B, AC, T	Bristol Jupiter VI	1,490	Wooden wings and rear fuselage. Duralumin front fuselage frame. Canvas and metal panel covering.	516	0 (0)	General purpose two-seat biplane employing first of new construction techniques and materials. Extremely reliable, it served in the UK and abroad until 1939.	5	0

Appendix 1.4: British Manufactured Aircraft utilised by the RAF and Fleet Air Arm within the UK 1937-45

Manufacturer/Type	Period of Service	Role	Power Plant	Weight (Kg)	Airframe construction	Total Produced	Survivors: Global (UK)	Notes	1 %	Global %
Airspeed Horsa	1942-45	Trans, TC	-	3,800	Spruce, plywood covered.	3,655	0 (0)	Principal British assault glider of WW2. Used in Sicily, D-Day, Arnhem and the Rhine Crossing. No complete survivors but several smaller sections.	36	0
Airspeed Oxford	1937-54	T	2x AS Cheetah	2,085	Semi-monocoque fuselage, spruce and birch wings, plywood covering.	4,411	6 (2)	Advanced pilot trainer; also utilised on a smaller scale for bombing and gunnery training.	44	<1
Armstrong Whitworth Albemarle	1941-44	Trans, Tug	2x Bristol Hercules	10,260	Tubular steel frame with spruce and plywood covering	602	0 (0)	First British military aircraft with tricycle undercarriage. Constructed in wood and steel to save on alloys. Used in Sicilian and D-Day airborne campaigns.	6	0
Armstrong Whitworth Whitley	1937-44	B, MR, Trans	2x AS Tiger or RR Merlin	8,800	Metal monocoque fuselage, fabric covered wings	1,466	0 (0)	First full production RAF heavy bomber, equipped 4 Group RAF Bomber Command until replaced by Halifax from 1941. Impressed into MR role for the Battle of the Atlantic and later as a glider tug and paratrooper transport.	14	0
Avro Manchester	1940-42	B,T	2x RR Vulture	14,150	Metal monocoque fuselage. All metal.	209	0 (0)	First of new generation of RAF heavy bombers to enter service. Revolutionary engines and extensive use of hydraulics caused constant problems. Important precursor to the Lancaster. Relegated to training June 1942.	2	0
Avro Lancaster	1942-58	B,MR, ASR	4x RR Merlin or 4x Bristol Hercules (Mk II)	16,750	Metal monocoque fuselage. All metal.	7,377	18 (4)	Principal RAF Heavy Bomber 1942-45. Took part in 1,000 bomber raids, Battles of the Ruhr, Hamburg, Berlin and the raids on Augsburg, the Dams, Peenemunde and Dresden. Relegated to MR and ASR duties postwar. No Mk IIs survive.	73	<1
Avro York	1943-51	Trans	4x RR Merlin	?	All metal	208	2 (2)	Transport version of the Lancaster. Used extensively post war in the Berlin airlift.	2	1
Blackburn Botha	1940-42	TB, GR, T	2x Bristol Perseus	?	All metal	580	0 (0)	Chosen as main torpedo bomber for RAF Coastal Command in 1939. Numerous problems with suitability and handling. Rapidly relegated to training duties.	5	0
Blackburn Firebrand	1945-53	F,TB	Bristol Centaurus	5,379	All metal stressed skin	300	0 (0)	FAA carrier based fighter and torpedo attack aircraft. Superseded by the Westland Wyvern in 1953.	3	0
Blackburn Skua/Roc	1938-42	F, FB, Tug	Bristol Perseus	2,490	All metal stressed skin	326	1 (1)	First FAA monoplane to enter service. A two-seat dive bomber (Skua) of which 190 were built shot down the first German	3	<1

								aircraft in WWII. The two-seat fighter version (Roc) of which 136 produced was the first FAA aircraft to be equipped with a power operated turret. Both relegated to target tug and training duties by 1941.		
Boulton Paul Defiant	1939-45	F,NF, Tug, ASR	RR Merlin	2,722	All metal	267	1 (1)	Battle of France/Battle of Britain fighter with hydraulic gun turret became most significant night fighter in the Blitz, prior to development of AI and GCI. Later became target tug and undertook ASR.	2	<1
Bristol Beaufort	1938-46	B	2x Bristol Taurus or 2x PW Twin Wasp	5,957	Duralumin, hiduminium and Alclad monocoque fuselage and wings.	2,129	4 (1)	RAF Coastal Command bomber used on shipping strikes 1939-43. Relegated to the Mediterranean 1944 and then the Pacific theatre in 1945.	21	<1
Bristol Beaufighter	1940-60	F,NF	2x Bristol Hercules or 2x RR Merlins	7,100	All metal monocoque fuselage and wings.	5,928	6 (4)	First purpose-built night fighter; mainstay of night defence 1941-42 and for anti-shipping operations 1942-45. Merlin powered variant very rare.	59	<1
Bristol Blenheim	1937-44	B,F	2x Bristol Mercury	4,450	All metal	6,260	20 (3)	Night fighter and bomber version used from UK early in war. Suffered heavy losses in France and in the use of 2 Group RAF 1941-42. No fighter versions extant.	62	<1
De Havilland Don	1937-40	T, Comms	Gipsy King	?	Tubular metal frame, linen covering	50	0 (0)	Single engine monoplane trainer and communications aircraft used in small numbers up to the outbreak of WWII.	<1	0
De Havilland Mosquito	1941-50	F,B, NF	2x RR Merlin	6,394	Spruce with Plywood and fabric covering	7,781	20 (6)	Significant bomber and multi-role aircraft from 1942. Took part in many famous raids such as attacks on Amiens prison, Gestapo headquarters in Bergen.	77	<1
Fairey Albacore	1940-45	B	Bristol Taurus II or XII	3,272	Metal monocoque fuselage, fabric covered metal wings.	803	1 (1)	FAA biplane torpedo bomber, operating from aircraft carriers. Intended to replace the Swordfish but superseded by the Barracuda.	8	<1
Fairey Barracuda	1944-53	B	RR Merlin	3,954	All metal. Steel cockpit frame and engine mounts, remainder alloy monocoque.	2,541	1 (1)	First FAA monoplane torpedo bomber. Replaced Swordfish. Took part in Tirpitz strike.	25	<1
Fairey Battle	1937-45	B	RR Merlin	3,015	All metal.	2,419	3 (1)	RAF light bomber. Suffered heavy losses in Battle of France. Relegated to training 1940.	24	<1
Fairey Firefly	1943-55	B, MR	RR Griffon	4,422	Alclad monocoque fuselage, stressed skin light alloy wings	1,638	10+ (4)	FAA (mostly carrier borne) two-seat reconnaissance/bomber. Took part in attacks on Tirpitz and Norwegian coast 1944 and in 1945 moved to Pacific theatre.	16	<1

Fairey Fulmar	1940-44	F	RR Merlin	3,182	All metal stressed skin	600	1 (1)	FAA two-seat carrier borne fighter, first to have eight machine guns. Rapidly outclassed due to lack of speed.	6	<1
Fairey Swordfish	1936-45	B	Bristol Pegasus	2,406	Tubular steel with canvas an aluminium covering.	2,391	7 (3)	FAA carrier based biplane torpedo bomber. Took part in the attack on Taranto, the sinking of the Bismarck and the Channel Dash.	23	<1
General Aircraft Ltd Hamilcar	1942-45	Trans	2x Bristol Mercury	8,350 11,580	Spruce with plywood and fabric covering.	432	1 (1)	Principal heavy lift transport glider (only 20 produced with engines) used in the D-Day and Arnhem campaigns.	4	<1
General Aircraft Ltd Hotspur	1941-45	T	-	1,375	Spruce with plywood covering.	1,061	0 (0)	Principal glider pilot trainer, tandem seats with room in fuselage for troops. Used purely in training by the Army air Corps.	10	0
Gloster Gladiator	1937-41	F	Bristol Mercury	1,565	Tubular steel with canvas and aluminium covering.	767	5 (3)	Last RAF biplane fighter. Single-seat with enclosed cockpit. Took part in Norwegian campaign, saw limited use in the BoB. Relegated to service in North Africa and the Mediterranean 1941.	7	<1
Gloster Meteor	1944-61	F	2x RR Welland or 2x RR Derwent	3,995	All metal stressed skin.	3,875	47+ (42)	First RAF jet fighter to enter service (July 1944) to counter the V-1 flying bomb. Used extensively post war. Wartime versions are rare.	38	c.1.5
Handley Page Halifax	1940-47	B, Trans	4x RR Merlin or 4x Bristol Hercules	15,340	Light alloy monocoque fuselage.	6,176	2 (1)	Significant heavy bomber from 1941-45. Equipped 4 and 6 Groups RAF Bomber Command in Yorkshire. Successive improvements. Earlier variants relegated to Coastal Command and transport. Took part in all major Bomber Command raids.	61	<1
Handley Page Hampden / Hereford	1938-44	B, TB	2x Bristol Pegasus or 2x Napier Dagger	5,340	All metal.	1,680	1 (1)	The Hampden and the few Dagger powered Herefords (100) to reach service saw significant use with 5 and 6 Groups Bomber Command in the early war period. Relegated to Coastal Command from 1942-44 as a torpedo bomber.	16	<1
Handley Page Harrow	1937-45	Trans	2x Bristol Pegasus	?	?	100	0 (0)	Transport aircraft, which whilst hurriedly impressed in the Middle East as a bomber, saw limited use in the UK as a transport and communications aircraft.	1	0
Hawker Hector	1937-42	AC, Tug	Napier Dagger	1,694	Tubular steel frame,plywood and canvas covering.	178	0 (0)	Interim two-seat biplane replacement for the Audax, last biplane to enter RAF service (with 4 Sq RAF in early 1937). Remained with Auxiliary squadrons until 1940 with a handful of aircraft carrying out dive bomber attacks against Germans in that year. Relegated for use as glider tug within the UK.	1	0
Hawker Henley	1938-	Tug	RR Merlin	?	Tubular steel frame, plywood and canvas covering.	200	0 (0)	Initially conceived as a light bomber but on delivery was immediately relegated as a target tug working with Air Firing and Anti-Aircraft Co-operation units.	2	0

Hawker Hurricane	1937-45	F,FB	RR Merlin	2,118	Tubular steel and aluminium alloy fuselage frame with light wooden formers and canvas covering. Steel and stressed aluminium alloy wings.	14,533	45+ (29)	Most numerous RAF fighter in Battle of Britain, from 1941 relegated to Mediterranean and Far East in fighter bomber and anti-shipping roles. Also adapted as a convoy protection fighter on Russian and Atlantic routes, launched from Merchantmen. Served on 17 battlefronts including Battle of France, Norway, Battle of Britain, Malta, North Africa, Sicily, Adriatic and Burma campaigns.	145	<1
Hawker Tempest	1944-48	F,FB	Napier Sabre	4,128	All metal.	1,401	20+ (5)	Late war RAF fighter, one of the last with a piston engine. Took part in the V1 campaign and saw combat against German jets.	14	c.2
Hawker Typhoon	1941-45	F,FB	Napier Sabre	3,992	All metal.	3,330	1 (1)	Principal RAF fighter-bomber from 1943-45. Played major tactical role in the NW Europe ground campaign from the invasion of Normandy until the end of the war.	33	<1
Miles Magister	1937-45	T	DH Gypsy	?	Spruce and plywood.	1,227	14 (8)	Training and communications aircraft.	12	c.1
Miles Master / Martinet	1939-50	T	Bristol Mercury or PW 1535	1,950	Spruce and Plywood covering.	4,835	1 (1)	Advanced pilot trainer which equipped secondary flying training schools and also saw limited use as a target tug for gunnery practice.	48	<1
Percival Petrel	1939	Comms	2 x DH Gipsy Six	?	Tubular metal frame, canvas and metal covering	8	0 (0)	Twin engine communications aircraft which saw limited use with 24 Sq RAF.		
Percival Proctor	1939-50	T, Comms	DH Gipsy Queen	1,076	Spruce and plywood, fabric covered.	912	13 (6)	Communications aircraft.	9	c.1.5
Saunders Roe Lerwick	1939-42	MR	2x Bristol Hercules	?	All metal.	21	0 (0)	Flying boat used in limited fashion by Coastal Command.	<1	0
Short Stirling	1941-46	B, Trans RCM	4x Bristol Hercules	17,659	All metal.	2,374	0 (0)	The first of the RAF's four engine heavy bombers to enter service. By mid 1943 it had been relegated from the primary bombing role due to its limited service ceiling and heavy losses. Reused as a transport, glider tug and by 100 Group RAF in the Radio Counter Measures or electronic warfare role.	23	0
Short Stranraer	1935-41	MR	2x Bristol Pegasus	?	Metal and fabric covering.	17	1 (1)	Pre-war flying boat. Some use by Coastal Command at outbreak of war.	<1	0
Short Sunderland	1938-56	MR	4x Bristol Pegasus or 4x PW R 1830	15,663	All metal.	739	8 (4)	Flying boat. Principal maritime reconnaissance and anti-submarine aircraft in use with RAF Coastal Command. Operated in all theatres but particularly successful in the battle of the Atlantic due to its heavy armament and long endurance.	7	c.1

Supermarine Spitfire/Seafire	1938-50	F	RR Merlin or RR Griffon	2,545	All aluminium monocoque fuselage and wings.	22,928	300+ (59)	Principal RAF day fighter from early 1941 until the end of the war. Operated in all theatres and in all major campaigns and also adapted for use on aircraft carriers as the Seafire.	229	c.1.5
Supermarine Walrus/Sea Otter	1939-45	ASR	Bristol Pegasus	2,220	Spruce and plywood covering.	740	3 (3)	Flying boat. Principal air sea rescue aircraft. Saved at least 6,000 aircrew.	7	<1
Vickers Warwick	1943-46	MR, ASR Trans	2x Bristol Centaurus	12,700	Aluminium and steel geodetic structure with fabric covering.	700	0 (0)	Intended replacement for the Wellington. Used mainly by RAF Coastal Command for ASR and MR duties, also subsequently as a transport.	7	0
Vickers Wellington	1937-53	B,T, MR	2x Bristol Hercules	8,400 - 12,000	Aluminium and steel geodetic structure with fabric covering.	11,461	2 (2)	Principal RAF heavy bomber 1939-42, prior to advent of the four- engine heavies. Relegated to Mediterranean and Operational Training Units 1941-44. Limited use by Coastal Command. Took part in the first bombing raid of the war.	114	<1
Westland Lysander	1938-47	AC	Bristol Perseus	1,840	Metal and fabric covering.	1,898	9 (4)	Used in the Army co-operation role and subsequently for operations with the Resistance and SOE in France.	18	<1
Westland Whirlwind	1940-43	FB	2x RR Peregrine	3,699	All metal.	112	0 (0)	Innovative fighter-bomber. Suffered engine problems and only ever equipped two squadrons, used in support of bombing operations and for attacks on France.	1	0

Appendix 1.5: US Manufactured Aircraft utilised by the RAF and FAA within the UK 1939-45

Manufacturer/Type	Period of Service	Role	Power Plant	Weight (Kg)	Airframe construction	Total Produced	Survivors: Global (UK)	Notes	1 %	Global %
Bell Aircobra	1941-42	F	Allison V12	2,540	Stressed aluminium	9,588	10 (0)	Innovative mid-engine fighter aircraft with tricycle undercarriage, approximately 50 of which entered RAF service with 601 Sq.	95	<1
Boeing Fortress	1941-46	B, MR, RCM	4x Wright R-1820	14,855	All metal semi-monocoque fuselage	12,731	23 (3)	220 of various versions delivered for RAF use. Initially operated 1940-41 in daylight bombing tests, subsequently used by Coastal Command and 100 Group Bomber Command in early RCM role.	127	<1
Brewster Bermuda	1943-45	Tug	Wright Cyclone	4,440	All metal.	1,000+	0 (0)	Ordered as a land-based dive-bomber, 950 were delivered for RAF service, most of which are believed to have served in the UK as target tugs and none are known to have flown	c. 10	0

								operationally.		
Brewster Buffalo	1941-42	F	Wright Cyclone	2,100	All metal.	447	5 (0)	Pre-war USAAC fighter. 209 delivered to RAF/FAA, of which only 28 are believed to have operated in UK, the remainder going to the Far East.	4	c.1
Chance Vought Corsair	1943-45	F	Pratt and Whitney Double Wasp	4,025	All metal.	12,571	60 (4)	Carrier-based fighter, 2,012 of which were supplied for FAA use. Mostly saw action in the Pacific and Far East, but a few operated within the UK.	125	<1
Consolidated Catalina	1941-45	MR,ASR	2x PW R1830	9,938	All metal.	4,000+	69 (3)	Long-range flying boat, 771 of which were delivered to the RAF/RCAF/RAAF/RNZAF. Equipped 9 UK-based Squadrons of RAF Coastal Command in the anti-U Boat and reconnaissance role.	c. 40	c.1.5
Consolidated Liberator	1941-47	B, MR	4x PW R1830	16,556	All metal except fabric covered control surfaces.	19,203	15 (2)	1,865 delivered for RAF use (mostly in Far East). Used in the UK by RAF Coastal Command in the maritime reconnaissance/anti-submarine role.	192	<1
Curtiss Kittyhawk	1941-42	F, AC	RR Merlin or Allison V1710	3,039	All metal.	13,738	20 (2)	Approximately 902 were used by the RAF in the European Theatre, mostly for Army co-operation work as fighter-bombers.	137	<1
Curtiss Seamew	1941-44	T	Ranger SGV	1,869	All metal stressed skin.	800	0 (0)	Two-seat single engine reconnaissance aircraft. Approximately 250 scheduled for delivery to the FAA on lend lease, but only approximately 100 actually received. Saw no operational service and from 1943 operated in the training role, some serving with training squadrons at Worthy Down, Hants.	8	0
Curtiss Tomahawk	1941-43	T, AC	Allison V1710	2,636	All metal.	1,400	10 (0)	Approximately 1,180 taken on strength by RAF, RAAF and SAAF for use in North Africa and Far East. Used in limited capacity in UK.	14	<1
Douglas Boston/Havoc	1940-46	B, NF	2x Pratt and Whitney Twin Wasps or 2x Wright R2600	5,172	All metal.	7,385	14 (1)	A total of 1,250 Boston light bombers were delivered to the RAF (used in UK with 2 Group and later 2 Tactical Air Force). Also 100 night fighter versions (Havoc) used by RAF.	73	<1
Douglas Dakota	1942-50	Tug, Trans, TC	2x PW R1830	7,657	All metal.	10,691	550 (16)	Conversion of pre-war civilian airliner type. A total of 1,920 delivered for RAF use and became the principal transport aircraft. Took part in the D-Day and Arnhem campaigns and saw action in all theatres.	106	c.5
Grumman Avenger	1943-46	TB	Wright R2600	?	All metal. Semi monocoque fuselage.	9,836	60 (3)	Three seat carrier based torpedo bomber. From 1943 onwards 957 delivered to FAA (initially known as Tarpon), of	98	<1

								which it equipped 9 squadrons. Use in all theatres.		
Grumman Hellcat		F	Pratt and Whitney Double Wasp	4,101	All metal.	12,275	22 (3)	1,262 supplied to FAA as replacement carrier borne fighter under lend-lease. Initially called the Gannet. Served 1943-45. Served in all theatres.	122	<1
Grumman Martlet/Wildcat	1940-45	F	Wright Cyclone	2,011	All metal.	7,316	35 (4)	531 supplied to FAA as carrier borne fighter, (known initially as Martlet). Served 1940-44. Took part in Norwegian campaign with great success.	73	<1
Lockheed Hudson	1939-46	MR, ASR	2x Wright Cylcone or 2x PW Twin Wasp	5,262	All metal.	2,500+	16 (1)	2,695 delivered for RAF service, operating within the UK with Coastal Command in the anti submarine and maritime reconnaissance role. Also used in the Mediterranean and Far East.	c. 25	<1
Lockheed Ventura	1942-44	B, MR	2x PW Double Wasp	7,836	All metal.	2,070+	15 (1)	781 delivered for RAF service, initially with Bomber Command as daylight medium bombers. After heavy losses relegated to Coastal Command.	c. 20	<1
North American Harvard	1942-56	T	PW Wasp or A1340	2,549	Steel frame fuselage, fabric and ply, later alloy covered.	9,577+	400 (23)	5,125 delivered for RAF and commonwealth usage as trainers. Equipped many Flying Training Schools in the UK and abroad.	c. 95	c.4
North American Mitchell	1942-45	B	2x wright Cyclone	9,208	All metal.	9,816	45 (5)	Total of 837 delivered to RAF. Used in the UK by 4 Squadrons of 2 Group RAF as medium tactical bomber and later by the 2 TAF.	98	<1
North American Mustang	1942-47	FB, AC	Allison 1710 or RR Merlin	2,858	All metal.	15,586	257 (8)	2,517 delivered for RAF use. Initially ordered as a fighter, mostly used by 2 TAF in the fighter bomber/Army Co-operation role.	155	c.1.5
Stinson Reliant	1944-45	T	Lycoming R680	1,276	Tubular steel and duralumin frame, duralumin and canvas covering.	?	10 (0)	High-wing monoplane which first appeared in 1933, with 500 delivered to FAA for use as navigation trainers and communications aircraft under the lend-lease arrangement.	?	0
Vought Sikorsky Chesapeake	1941-44	T	PW R1835 Twin Wasp Junior	2,256	Tubular metal fuselage with canvas covering, metal wings.	165	1 (0)	50 delivered for FAA use within the UK, flying from Lee-on-Solent and Arbroath. Tried operationally, quickly relegated to training with little significant use.	1	1
Vultee Vengeance	1941-47	Tug	Wright Cyclone	4,672	All metal.	1,000	2 (0)	Intended as a dive-bomber 1,362 delivered to the RAF. Found inadequate for European theatre and the 500 within the UK subsequently used as target tugs.	10	<1
Waco CG4A Hadrian	1942-45	Trans, TC	-	1,721	Tubular steel fuselage, wooden wings, fabric covering.	13,909	3 (1)	US designed assault glider, 1,095 of which were delivered for use by British Airborne forces.	139	<1

Appendix 1.6: USAAF and USN Aircraft operating within the UK 1939-45

Manufacturer / Type	Period of Service	Role	Power Plant	Weight (Kg)	Airframe Construction	Total Produced	Survivors: Global (UK)	Notes	1 %	Global %
Bell P39 Aircobra	1942-43	F	Allison V1710	2,545	All metal.	9,588	10 (0)	Unusual mid-engine fighter which saw extremely limited use with the VIII AAF. Used mostly in the Pacific.	95	<1
Boeing B17 Fortress	1942-45	B	4x Wright R1820	15,422	All metal semi-monococque fuselage	12,731	23 (3)	Mainstay daylight high-altitude heavy bomber used by 1st and 3rd Air Divisions of the VIII AAF 1942-45. Took part in all major raids.	127	<1
Consolidated B24 Liberator	1941-45	B	4x PW R1830	16,556	All metal except fabric covered control surfaces.	19,203	15 (2)	Daylight high-altitude heavy bomber used by the 2nd Air Division, VIII AAF 1942-45. Also limited night use dropping agents, supplies etc and with the USN.	192	<1
Douglas A20 Havoc	1942-45	B, Tug	2x Wright R2600	6,727	All metal.	7,385	14(1)	Light bomber used in extremely limited fashion by VIII AAF. Took part in the first US raids of the war from UK. Subsequently equipped three groups of IX AAF in UK.	73	<1
Douglas A26 Invader	1944-45	B	2x PW R2800	10,365	All metal.	?	25 (0)	Medium bomber replacement for A20 and B26 from late 1944. Saw limited actual use in the UK, mostly equipping IX AAF units in mainland Europe.	?	?
Douglas C47 Skytrain	1942-45	Trans, Tug, TC	2x PW R1830	7,698	All metal.	10,691	550 (16)	Principal US transport and troop carrier. Operated by the IX AAF during the D-Day and Operation Market Garden campaigns.	106	c.5
Lockheed P38 Lightning	1942-44	F	2x Allison V1710	5,563	All metal.	8,300	18 (0)	Twin boom, twin-engine fighter aircraft, principal long-range escort July 1942 until the intro of the P47 (1942) and the P51 (1943). Withdrawn Sept 1944.	83	<1
Martin B26 Marauder	1942-46	B	2x PW R2800	10,152	All metal.	4,500	5 (0)	Medium (and medium level) bomber operated successively by the US VIII and IX AAFs in the tactical role.	45	<1
Noorduyn UC64 Norseman	1944-45	Comms	PW R1340	1,928	Metal frame with fabric covering.	?	25 (0)	Communications aircraft, converted from civilian model. Chiefly famous for being the type in which Glen Miller went missing late 1944.	?	?
North American P51 Mustang	1942-45	F	Allison 1710 or RR Merlin	2,858	All metal.	15,586	257 (8)	Principal USAAF fighter, equipping VIII and IX AAF from winter of 1943-44. VIII AAF operated as a long range escort, IX AAF in the tactical role.	155	c.1.5
Republic P47 Thunderbolt	1942-45	F, FB	PW Double Wasp	4,087	All metal	15,660	150 (2)	Important fighter with VIII and IX AAF from Dec 1942 until the end of the war. Initially used as an escort, increasingly fulfilled fighter-bomber role.	156	c.1

Waco CG4A	1942-45	Trans, TC	-	1,721	Tubular steel fuselage, wooden wings, fabric covering.	13,909	3 (1)	Principal US transport and troop-carrying glider, used in the Sicilian, D-Day and Market Garden airborne campaigns.	139	<1

Appendix 1.7: Luftwaffe and Regia Aeronautica Aircraft operating over the UK 1939-45

Manufacturer / Type	Period of Service	Role	Power Plant	Weight (Kg)	Airframe Construction	Total Produced	Survivors : Global (UK)	Notes	1 %	Global %
Bf 109 (Messerschmitt)	1937-45	F,FB	DB601 or 605	2,354	All metal.	35,000	45 (8)	Most significant fighter used over southern England during the Battle of Britain. From 1942-43 replaced by the FW190.	350	<1
BF 110 (Messerschmitt)	1938-45	F, NF	2x DB605	5,094	All metal.	6,050	6 (1)	Significant twin-engine heavy fighter aircraft in the Battle of Britain. Operated over the West Country, southern England and east coast as far north as the Shetlands.	60	<1
Dornier 17/215	1937-42	B	2x BF	5,210	All metal.	1,700	0 (0)	Significant medium bomber in the Battle of Britain and early Blitz period.	17	0
Dornier 18	1935-41	MR	2x JJ 205	5,850	All metal.	100	0 (0)	Operated in UK coastal waters, some lost on operations.	1	0
Dornier 217	1941-44	B	2x DB 603	9,065	All metal.	1,905	0 (0)	Significant later war bomber operating over UK.	19	0
Focke Wulf 190	1941-45	F, FB	BMW 801	3,470	All metal.	20,051	7 (2)	Used as a fighter-bomber in so-called `sneak raids' over the southern coast 1942-44.	200	<1
FZG 76	1944-45	-	Argus 109.014	2,180	Sheet steel, light alloy and plywood.	5,000+	16 (8)	Pilotless bomb, commonly known as the V1. Used in campaign against Britain June 1944 to March 1945. Carried 850kg warhead of HE. Ground and air launched.	c. 50	<1
Heinkel 111	1936-45	B	2x JJ 211 or 2x DB 601	8,680	All metal.	7,300	3 (1)	Main medium/heavy bomber from Spanish Civil War until end of WW2. From mid 1944 used to launch V1s.	73	<1
Heinkel 177	1944-45	B, MR	2x DB 610	16,800	All metal.	1,169	0 (0)	Heavy bomber, made debut over England in January 1944 during the `Little Blitz'. Novel engine layout and unreliability caused constant problems.	11	0

Messerschmitt 210/410	1941-45	F,FB	2x DB 603	6,148	All metal.	352/ 1,121	1 (1)	Intended replacement for Me110, under-powered as day fighter and operated as night fighter over England 1943-45.	3/ 11	<1
Heinkel 115	1936-45	ASR	2x BMW 312	6,700	All metal.	400+	1 (0)	Operated in MR and ASR role in UK coastal waters.	c. 4	<1
Junkers 86	1936-42	B, GR	2x JJ 207	6,700	All metal.	810-1,000	0 (0)	High altitude GR and B versions operated over southern England 1941-42.	8-10	0
Junkers 87	1937-45	B	JJ 211	3,900	All metal.	5,709	4 (1)	Dive-bomber. Successful in Poland and France, heavy losses in Battle of Britain. Withdrawn from NW Europe 1941 for use in Russia and Mediterranean.	57	<1
Junkers 88	1939-45	B,NF	2x JJ213	11,000	All metal.	14,980	3 (1)	Multi-role aircraft. Used as bomber and dive-bomber in the Battle of Britain and became night fighter later in war.	14 9	<1
Junkers 188	1943-45	B	2x JJ 213 or 2x BMW 801	?	All metal.	1,100	0 (0)	Operated over UK 1944 onwards as a night intruder.	11	0

Key to Appendices

Period of Service: total period of service with respective air force (as opposed to period of usage over the UK - see Notes column).

Role: the military role in which the aircraft was utilised (often not the role for which it was designed). AC=Army Co-operation, ASR=Air Sea Rescue, B=Bomber, Comms=Communications, F=Fighter, FB=Fighter Bomber, GR=General Reconnaissance, MR= Maritime Reconnaissance, NF=Night Fighter, RCM=Radio Countermeasures, TB= Torpedo Bomber, T=Trainer, TC=Troop Carrier, Trans=Transport, Tug=Glider/Target Tug

Power plant: AS=Armstrong Siddely, BF=Bramo Fafnir, DB=Daimler Benz, DH=De Haviland, JJ=Junkers Jumo,PW= Pratt and Whitney , RR=Rolls Royce

Weight: Total weight of airframe and engines, unloaded. Intended to give general indication of relative size.

Airframe Construction: Basic data on construction and major materials, where known.

Numbers: (1)=Total Produced, (2)=Number of complete airframes (ie. more than 66% intact) known to survive globally (inclusive of UK), figure in brackets = number surviving within UK. Global figures represent estimates, UK figures accurate and based upon 16th edition of Wrecks and Relics (Ellis 1998).

Notes: General information on background, importance and currency (ie. use within UK). In the case of British and Luftwaffe aircraft, intended to provide basis for the Scope Notes attached to NMR Thesaurus of Monument Types.

1%: Number of aircraft constituting 1% of total produced. Rounded down to nearest full number.

Global %: Estimated percentage of global survivors based on previous columns. Rounded to nearest full/half percentage as appropriate.

Appendix 4 – Ministry of Defence Project Design Proforma

The below project design was created by the MoD archaeologists. It is supplied to licence applicants who are required to produce an archaeological project design by local archaeological officers.

Simple guidelines for aircraft excavation groups for writing a Project Design for submission to Local Council Archaeologist/SMR officer.

Project Design for Proposed Excavation of [aircraft type and serial]

Name of author, group and date written

Background

- Details of the aircraft – make, model, serial
- Location of crash - National Grid Reference (to as many figures as you can) and Address (if appropriate) and map if you have it
- Date and time of crash
- Fate of crew, if they died where are they buried
- Soil type and topography – is it clay or thin soil over chalk for example, is it hilly or flat,
- Other background information which may fill in the story, why the crash was important for instance, was the pilot well known, did the aircraft fly in Battle of Britain or 1000 bomber raids on Berlin or D-day.

Permissions

- Details of the licence from JCCC
- Confirm that you have consent of landowner
- Other consents (if in these were required; SSSI or national park etc)
- Checks with Sites and Monuments Record (SMR) for other archaeology in the vicinity of the crash site

Aims and Objectives

Research aims

For example you may want to find out

- At what depth are the remains?

- What condition the remains are in
- To establish cause of crash if that information is not known.
- Opportunity to research the suitability of geophysical methods to identify aircraft crash sites

Previous work on this site

- Note if site has previously been partially excavated
- Whether you have competed metal detector/magnetometer searches (give details of the equipment used)
- Whether any field walking has been done
- Contact with eye witnesses/crash crews

Methodology

- What area to you propose to clear?
- What equipment will you be using (eg. Digger – type size)?
- Health and Safety factors
    - does the group have public liability insurance?
    - nominated watchman for the digger
    - hard hats/high visibility vests
    - if the trench is to be very deep it may need to be widened at top or stepped to prevent collapse
- What recording will take place?
    - Photographs (usually some general site photos and of identifiable items with scale)
    - Notes on types of finds (a requirement of the license already)
    - Plans – as appropriate to the crash
    - Report
- Strategy for dealing with the possibility of human remains – can just be a note that as per licence stop work immediately and contact the coroner
- Strategy for dealing with other archaeology – how will you make a record, do you have someone you can contact for advice,
- How will the site be restored after the dig?
- Note on how finds will be conserved if at all.

Date(s) of proposed excavation

Archive

- A note on where the finds and the report will be held
- Publication (if any) – a leaflet for the public, a summary in a local journal etc

A copy of the report to be deposited with the SMR

Appendix 5 - Abbreviations used within the report

ALGAO	Association of Local Government Archaeological Officers
BAAC	British Aviation Archaeological Council
CBA	Council for British Archaeology
CLA	Country Land and Business Association (formerly the Country Landowners Association)
CPAT	Clwyd-Powys Archaeological Trust
DAT	Dyfed Archaeological Trust
EH	English Heritage
GAT	Gwynedd Archaeological Trust
GGAT	Glamorgan-Gwent Archaeological Trust
HER	Historic Environment Record
HERs	Historic Environment Records
IfA	Institute for Archaeologists
JCCC	Joint Casualty and Compassionate Centre
MARG	Midland Aircraft Recovery Group
MoD	Ministry of Defence
NPRN	National Primary Reference Number
NGR	National Grid Reference
NMR	National Monuments Record
NT	National Trust
PRN	Primary Reference Number
RAF	Royal Air Force
RAFM	Royal Air Force Museum
RCAHMW	Royal Commission on the Ancient and Historical Monuments of Wales
SAM	Scheduled Ancient Monument

SMR	Sites and Monuments Record
SNPA	Snowdonia National Park Authority
USAAF	United States Army Air Force
WARG	Wartime Aircraft Recovery Group
WAT	Welsh Archaeological Trust
WATs	Welsh Archaeological Trusts

Gwynedd Archaeological Trust
Ymddiriedolaeth Archaeolegol Gwynedd

Craig Beuno, Ffordd y Garth, Bangor, Gwynedd. LL57 2RT
Ffon: 01248 352535. Ffacs: 01248 370925. email:gat@heneb.co.uk