

At War, but Far From the Front: Crashes, Disasters, and the Newfoundland Airport

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Abstract

The Newfoundland Airport, in what became Gander, Newfoundland and Labrador, was an area of both conflict and logistics during the Second World War. The airbase served roles as both a stopping point for aircraft to be ferried from production facilities in North America to the war theatre overseas, for convoy escorts and U-boat hunting, as well as mundane deliveries of people and equipment from Canada and the United States. During the war, the airbase was very active, with thousands of aircraft using the runways, and there were aircraft lost, which remain on the landscape around Gander. For those serving at the Newfoundland Airport, the war may have been ever-present, but at the same time distant; there was no active battle at the airbase, but there were casualties of war. Those who died were filling combat and logistical roles, and post-war rebuilding efforts. Accidents occurred due to mechanical malfunctions, the weather, and human error. Using historical records and archaeological site inventories, this paper will examine the role of this non-combatant space and advocate that the material culture of aircraft crash sites be conceptualized within the larger context of aviation infrastructure. The result will expand our understanding of the

impact and tragedy of war for the airbase at Gander, and for Newfoundland and Labrador.

Introduction

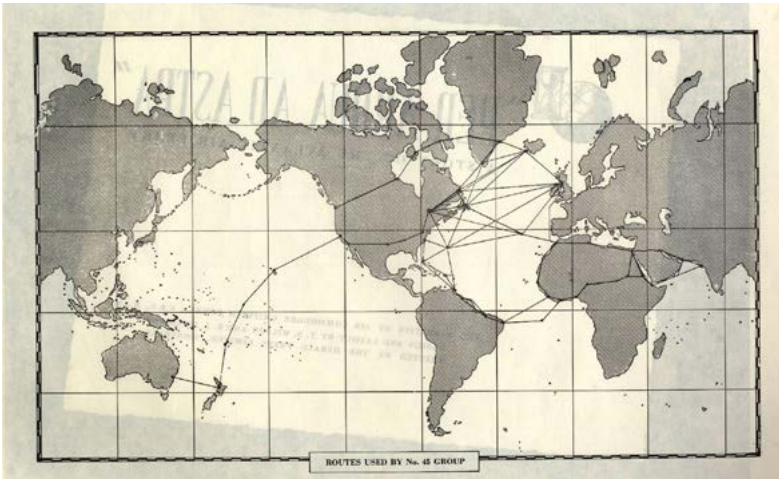
When researching airplane archaeology, it is easy to wreckchase: record and catalogue individual airplane crash sites as isolated events. Sites do need to be recorded separately, and sometimes individual sites in an area may be visited over the course of years; the specifics for the creation of each site will differ, with crashes caused by human and mechanical error, weather conditions, and other unknown factors. The airplane crew members for each wreck, whether they survived or died in the incident, can be the focus regarding the individual event, and sharing the information later is often done on a wreck-by-wreck basis. With all these factors keeping airplane incidents compartmentalized, it is imperative that archaeologists and researchers view all the individual sites as a whole in relation to the greater conflict and war efforts. As part of a PhD project, the author looked at The Newfoundland Airport, later the Gander Airport, as a focal point for numerous wrecks around Newfoundland and Labrador, putting these individual incidents within the context of the war; they all exist on the landscape because of their connection to the airbase.

Within the greater context of the war, what specific roles did Gander play? It was a space for logistics as well as combat, though direct combat did not happen at the base. Aircraft left Gander to ferry aircraft, crew, and supplies overseas, as well as to protect convoys and occasionally hunt U-boats.¹ The effects of the war can be seen on the landscape and at the Commonwealth War Graves site that was established after it was clear that there would be casualties associated with the wartime activities at Gander. Most of the staff and crews at Gander never saw combat, but the effects of the war and the tragedy of airplane crashes were felt throughout, including in the immediate aftermath as civilians moved into the area while others moved to various parts of Newfoundland to help with post-war rebuilding.

The following is a summary of wartime aviation disaster that impacted Newfoundland and Labrador, with a focus on the airbase/airport in Gander. The paper examines some of the aviation archaeology conducted at and around the former base, including the excavation of parts of the Globe Theatre on the Canadian side of the base, a wartime site of leisure. This overview is followed by a discussion that contextualizes the archaeological findings and interpretation within the field of conflict archaeology, specifically that pertaining to Second World War sites and the presence of death surrounding wartime Gander. The objective of the paper is to advocate for research that looks beyond simply wreck-chasing individual crash sites and to consider a broader perspective which encompasses all aspects of aviation infrastructure (both wartime military and immediate post-war civilian aviation activities) when interpreting the impact of wartime activity and the daily lives of those who lived through it, and some of the post-war use of, and risks to, these sites.

The Newfoundland Airport and Other Wartime Activities

The Newfoundland Airport, later the Gander Airport and now the Gander International Airport Authority, began as an airstrip in 1935 to shorten mail delivery times.² With the start of the Second World War, the purpose of the airfield shifted to aid the war effort. The Newfoundland Airport, and later the Royal Canadian Air Force (RCAF) base in Goose Bay, were important refueling points for the delivery of aircraft to the war theatre, and a branch of Eastern Air Command, whose purpose was to protect the convoys crossing the ocean (Map 1). While Newfoundland and Labrador were active war zones, they saw little in the way of combat, but danger was still present. In the waters around Newfoundland, for example, there was U-boat activity, including the sinking of multiple ore ships off the coast of Bell Island in 1942 and the sinking of the passenger ferry, the *SS Caribou*, on 13 October 1942.³



Map 1: Second World War aerial route. From Powell, Griffith. 1945. "Per ardua ad astra": A Story of the Atlantic Ferry. Herald Press Ltd., Montreal.

The Gander Airport was far from the front, but an important part of the international conflict nonetheless. The RCAF, United States Army Air Force (USAAF), and the Royal Air Force (RAF) all had a presence at the base. In early 1940, the RCAF took over the airfield and expanded the runway and continued construction. In the fall of that year, the Atlantic Ferry Organization (ATFERO) ferried aircraft from Gander overseas. The RAF took over for ATFERO, and when the US entered the war in 1941, they began transport and ferrying operations in Gander. By 1948, most of the military personnel had been phased out, and many of the buildings were turned over to the Newfoundland government. A small military presence continued for occasional military flights using the airfield. By 1950, Gander's operations were mostly commercial.⁴

Other military bases in Newfoundland were established either through negotiations with the Canadian Government (i.e. Torbay and Goose Bay), or on lands granted to the United States through the Anglo-American Leased Bases Agreement, so the US did not have to negotiate with individual countries but were granted whatever they

needed in Newfoundland, Bermuda, British Guiana, Trinidad, St. Lucia, Antigua, and Jamaica in exchange for fifty aged four-stack destroyers to aid British defence.⁵ Argentina, Fort Pepperrell in St. John's, and Fort Harmon in Stephenville all fell under this agreement while Gander remained the property of Newfoundland, then run by a Commission Government.⁶ That said, in the rapid expansion of the airbase to accommodate a greater war effort, the visiting countries sometimes neglected to confirm land expansion with the local government.⁷ Expansions and many of the daily operations, from working the Postal Exchange to maintenance, were performed by civilian Newfoundlanders, creating a mix of civilian and military workers from multiple countries in an isolated part of Central Newfoundland. The only official access to the base was by rail, and the train only stopped at Gander with special permission; it was not a regular stop and only those with clearance could disembark. Of course, the forested areas around Gander were known to many hunters and trappers, and in some cases, locals would visit the base (for example, a trapper helped locate a missing crash site in 1945⁸ and in 1946, trappers helped the survivors of the Sabena crash until they could be rescued⁹). Officially, there were borders between the countries on base, and the Newfoundlanders were regulated; in reality, there was much more mixing between the groups. Notably, Newfoundland's first premier, Joseph R. Smallwood, a then civilian who ran a piggery near the RAF part of the base, participated in debating events along with Canadians, Americans, and British soldiers.¹⁰

Aviation Archaeology in NL: The Gander Airbase and Beyond

Aviation archaeology in Newfoundland and Labrador initially began by looking solely at aircraft crash sites and recording the material culture that remained for the purpose of site recording and preservation. This methodology resulted in the creation of an inventory of aviation material culture on the landscape of the province, allowing for better monitoring of sites as well as the ability to compare the physical remains of

was available about the site is also discussed. With this information along with the archaeological findings, analyses of the Second World War conflict and aviation sites are possible within the context of aviation disaster in Newfoundland and Labrador.

Table 1: Conflict archaeology sites associated with Gander discussed within this paper.

Site Name	Aircraft Number	Date of Crash	Borden	References cited
RCAF Digby	742	25 July 1941	DfAp-10	Heakes 1941; Walker 2012
RAF Ventura	AJ471	18 November 1942	DfAo-01	Anthony Jarvis, pers. comm.; RAF Forum 2011
RAF Hudson	S/N FK 690	6 December 1942	DfAp-11	Christie 1995; RAAF 1942
RCAF Canso	98107	5 May 1943	DfAp-07	Mulvihill 1943b
RCAF Lodestar	557	8 May 1943	DfAp-15	Mulvihill 1943a
USAAF A-20		27 October 1943	DfAp-13	McGlade & Wilkins 1943
RCAF Hurricane	5496	27 October 1943	DfAp-16	McGlade & Wilkins 1943; Walker 2012
USAAF B-17 TCH	42-97493	29 December 1944	DfAp-09	Bollis et al. 1944
USAAF B-17 THDF	44-6344	4 August 1944	DfAp-08	Blackeslee 1944
RAF B-25	KF584	29 August 1944	DfAp-14	Christie 1995; RAF Forum 2011
USAAF B-24 - Dolan	44-41169	14 February 1945	DgAo-01	Hillier 2017
American Overseas Airlines	NC90904	03 October 1946	DbBo-02	Fagan and Fitzpatrick 1946; Landiss et al. 1947; Wilkins 1946
The Globe Theatre			DfAp-12	Daly 2014

Below, I examine WWII-era crash sites, including details on each event, a description of the archaeological work conducted, interpretations, site use, and current conditions. Other sites outside of Gander

were also discussed as part of my PhD research, specifically the commercial crash of American Overseas Airlines NC90904 near Stephenville on 03 October 1946 (DbBo-02). With this information and looking at how other researchers are analysing Second World War conflict sites and aviation sites, the broader context of aviation disasters in Newfoundland and Labrador is highlighted.

RCAF Digby 742 (DfAp-10)

RCAF Douglas Digby 742¹² left Gander at 1856 GMT on 24 July 1941 for the patrol of Convoy WH 140. At 2320 GMT, the weather began to deteriorate and Digby 742 and 756 were recalled. Digby 742 did not respond immediately. The recall notice was repeated four times by Gander Station and twice from RCAF Station, Sydney. At 0030 GMT, the recall was acknowledged and at 0151 GMT, the aircraft were in range of the Gander airbase. By this time, the ceiling had deteriorated to 200 feet with rain and increased wind, including cloud blowing across the runway. As Digby 742 arrived, Digby 756 was attempting to land, so 742 was instructed to circle. Digby 756 landed at 0219 GMT. About 20 minutes later, Digby 742 was back in communication range, and was instructed to proceed to Dartmouth for better weather conditions. Captain Tomsett stated he would attempt to land at Gander and would proceed to Dartmouth if the landing was unsuccessful. At 0310 GMT, a loud explosion was heard and there were no further communications with the aircraft. The aircraft had come in too low, and a wing had struck the bog, resulting in the crash. The altimeter setting had been passed on to the aircraft more than once, but Digby 742 never acknowledged receipt.

By morning, the weather had improved, and two aircraft were dispatched to search for Digby 742. The wreck was located almost immediately, and a ground party was dispatched. Flight Lieutenant MacLennan, Medical Officer at the RCAF Station Hospital, was assigned to assess the injuries of the crew. Bodies were located throughout the site, one thrown 240 feet from the main wreckage. MacLennan

determined that all had extensive injuries and died instantly, except one who died shortly after.

Due to high winds and an unstable landscape during the site visit in 2010, measurements for the wreck were taken directly from the stadia rod using a surveyor's level. In some cases, the distance of artifacts had to be estimated as the ground was too unstable to reach the objects, particularly in areas that appeared to have been damaged in the initial crash and have not yet recovered. Where the wing struck the bog is still visible. Most of the wreck was recovered soon after the crash, but the nature of the bog meant that some of the heavier elements from the aircraft that normally would have been uncovered are under the bog, including engines and possibly depth charges¹³ as indicated by the incident report. An interesting feature of the site is the amount of graffiti on parts of the aircraft, in particular that which is scratched into the yellow paint used to indicate that the aircraft is a known crash. The graffiti that is dated was all created before the establishment of the nearby Circularly Disposed Antenna Array (CDAA) in 1968, and during a period when operations were reduced and a secondary antenna (the easiest point to access the site) was inactive from 1983 to 1999.¹⁴ When the antenna is active, access to the site is more difficult and likely prevented additional visitation.

RAF Ventura AJ471 (DfAo-01)

This aircraft rests in an open, dry bog between Gander and Benton, near Soulis Pond. As it is an RAF crash, there does not seem to be an incident report available about Ventura AJ471,¹⁵ but information has been sourced from base diaries and operational logs.¹⁶ The aircraft crashed on 18 November 1942 when it ran out of fuel after being diverted from Goose Bay to Gander, and the crew survived. It was a relatively gentle crash, skimming the treetops before landing in the bog, with much of the fuselage left intact after the incident. The Ventura was soon located through an aerial search, and emergency containers with food and sleeping bags were dropped to the site. A rescue crew

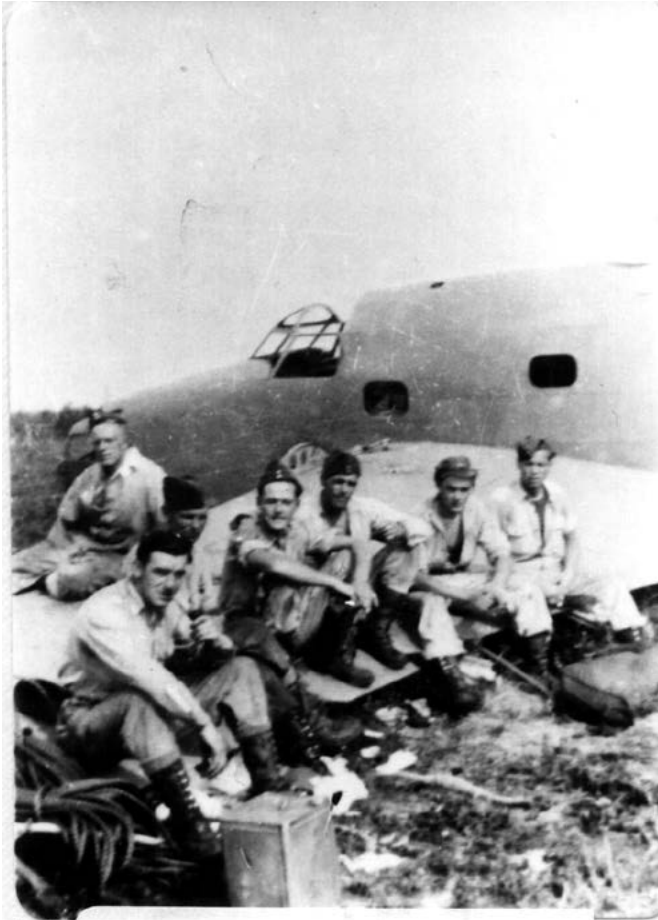
arrived on site the next day and guided the survivors to nearby Home Pond where they were flown to Gander. A picture of the Rescue and Salvage crew would also suggest (based on the language used; Figure 1) that there was no recovery of crew necessary. The Ventura Memorial Flight Association had conducted interviews around this incident and have in their archives a picture of the crash site from 1974 that shows the aircraft to be much more intact, with the nose and most of the tail still connected to the aircraft. Much of this has since been detached, and one section of the fuselage moved away from the main site.

This site was relatively easy to record, and given the conditions was suitable to be searched with a Fisher Labs CZ-21 Deep Search Land and Underwater Target I.D. Metal-Detector. Numerous small pieces were recovered just under a layer of moss. The benefit of a metal detector at crash sites is clear as 25 of the 91 measurements taken on site were metal detector finds, representing a significant amount of information on the nature of the crash site/debris field. However, the locations and terrain of many sites are such that the use of metal detectors are difficult. The Ventura crash site also had clear evidence of secondary use. Inside the fuselage, graffiti indicated that the site was often used during the winter months and is believed to be on an informal snowmobile trail. As well, Canadian Forces Base 9 Wing Gander had helicopter rotors on the site and used the area for training.

RAF Hudson S/N FK 690 (DfAp-11)

The full crash report is not available for this incident, although some documents can be found in archival records from the Royal Australian Air Force (RAAF) as two of the crew were from the RAAF. The crash of RAF Hudson S/N FK 690¹⁷ occurred at 0351 GMT on 06 December 1942, one minute after takeoff from Gander. It was an RAF Ferry Command delivery flight to the United Kingdom, but crashed and burned on takeoff, killing all four crew.

According to residents, the Trans-Canada Highway (TCH) was supposed to pass over this crash site and people were encouraged to



Ventura Mk.II AJ 471 at
Soulies Pond, Nfld., 1944
The Rescue and Salvage
Team is L to R: Chris
Brennan, unknown, Hugh
McEachern, F/S Cliff
Pederson, Eldon Callahan
LAC Constable. Photo by
Hugh McEachern.

Figure 1: Recovery and Salvage team for Ventura AJ471, DfAo-01. Courtesy of the Ventura Memorial Flight Association.

take pieces of the aircraft as souvenirs or scrap. Two such pieces belonging to Bryan Connors of Gander were photographed at his home. The TCH may pass over some of the wreckage as small pieces of non-diagnostic metal were found close to the highway ditch during the survey of this site, and the small road leading to the Commonwealth War Graves Commission cemetery likely also passes over some wreckage. Informants suggested that some larger wreckage could be found on the east side of the small road but it could not be located during site visits. The RAF Hudson wreck was inventoried using a compass and measuring tape to avoid having to cut any trees. There was so little remaining to the site that the use of more accurate recording devices would not have added further information. Some fragments were found using a metal detector, but so were objects not associated with the site, likely garbage thrown from the highway.

RCAF Canso 9807 (DfAp-07)

Requested for urgent operational duties and convoy coverage, RCAF Canso 9807¹⁸ departed Gander in radio silence on 05 May 1943 at 0631 GMT from runway 15. It crashed a minute later, killing six of the seven crew on board. The survivor had been in the bunk compartment, and while seriously injured, did survive. This crash was concluded to have been due to a stall when the aircraft climbed at a critical angle in rough air, but it was a difficult conclusion as there were conflicting witness reports. The aircraft passed over the USAAF side of the base before crashing in a wooded area. There were numerous witnesses of this crash, from both the RCAF and USAAF sides of the base, and the initial rescue response was attempted by many from both sides. The lone survivor had been thrown from the wreckage in the crash, and the aircraft burned too hot for rescuers to get close enough to search for other potential survivors. While multiple people were at the scene of the accident, one of the depth charges the aircraft had been carrying exploded. There were no long-term injuries because of the explosion, just short-term hearing damage. The scar from the exploded depth charge is still visible today.

This site is very close to the airport, and relatively accessible. Therefore, it is surprising how much material culture remains. One factor may be its proximity to the airport, as it is technically on airport land, though outside of the fence line. Signs on the site indicate that it is protected by the Gander International Airport Association, which may also help to discourage looting. The site is scattered over an area of 40x80m and includes large pieces of fuselage and wings and a pond created when one of the depth charges exploded after the crash. The site was recorded with a surveyor's level, and some trees and brush had to be cut to create clear sight lines. In 2019, filmmakers for a German documentary company, Gruppe 5 Filmproduckton GmbH,¹⁹ were told by Gander International Airport Authority that the site had been destroyed and nothing remained, but other residents in Gander, including the Gander Heritage Trails, who share periodic images from sites in the area, confirmed the site is still relatively intact.

RCAF Lodestar 557 (DfAp-15)

On a cargo transport flight, RCAF Lodestar 557²⁰ left Moncton, NB at 2345 GMT on 07 May 1942 on route to Gander. At 0313 GMT, the aircraft contacted Aerodrome Control Office at Gander Station requesting clearance to land. Given permission, the aircraft was heard passing over the airfield. By this point, the ceiling had unexpectedly fallen to 700 feet. Lodestar contacted the Control Officer to say they had missed the airfield and were going to try again. The message was acknowledged. Transfer of communications was then passed to Trans Canada Airlines (TCA) as the aircraft was carrying cargo under TCA operational control. Instructions for proper landing procedure at Gander were given and acknowledged. The aircraft broke through the ceiling and was advised to circle and approach runway 27. In the official crash report, the TCA representative claimed they told Lodestar 557 to make one more attempt before proceeding to Sydney. The Control Officer, who was listening to the conversation, said it was the Lodestar 557 crew who suggested they would try for one more landing before

departing for Sydney and TCA agreed. The aircraft approached but was lined up with the wrong runway and was told to circle and try again. The Control Officer turned off the runway lights for any runway but 27. On the second attempt, the aircraft had not turned enough and was told they would not make it and to try again. On the third attempt, the pilot was advised to pull up two or three times by TCA, but the aircraft was in a stall and losing altitude. The crash happened at 0340 GMT and was seen as a flash followed by a second, brighter flash. All crew were killed and found still in their seats.

The Lodestar crash site was relatively concentrated and recorded using a surveyor's level and a measuring tape. Only a couple of pieces had to be measured directly from the stadia rod. The burnt area on the site was contaminated with fuel, so safety was foremost while searching and examining that area. Additional photographs were taken to have a clearer idea of the artifact distribution for the pieces that could not be safely lifted from the water. Where possible, during recording, artifacts would be turned over to be able to record all sides; in some cases, this would reveal identifying features.

USAAF A-20 (DfAp-13)

This aircraft²¹ and RCAF Hurricane 5496²² were involved in a mid-air collision. A few days before the incident, the two pilots involved discussed aerial practice fighting. On 27 October 1943, the USAAF A-20 with a crew of four and the RCAF Hurricane with only a pilot took off from Gander just before 1700 GMT. During their practice fight a few kilometres southwest of the airbase, the aircraft collided, clipping each other's right wings. The Hurricane went into a tight spin and the pilot abandoned the aircraft and parachuted to safety. The A-20 continued a slow right turn before turning into a steep dive and exploded upon impact. All four crew members died. The collision was determined to be pilot error, as the pilots had not agreed on visual signals before the exercise.

On the edge of a bog, the wreckage of USAAF A-20 is mostly inside a dense patch of trees. The concentration of debris around the

engine was measured with a compass and line while the rest of the site was measured with a handheld GPS. The site seemed to have been relatively untouched since the crash, as there was still a large amount of aluminum present.

RCAF Hurricane 5496 (DfAp-16)

The location of the remains of RCAF Hurricane 5496 is based on informant information and a comparison of the landscape from a 1943 investigation photograph. A search with the metal detector gave no confirmation that there had once been a plane crash in the area, but the site was salvaged after the crash.²³ As well, the area may have been further cleared of remaining debris when the nearby pond was drained in 1971 to lengthen the runway.

USAAF B-17 42-97493 (DfAp-09)

On 29 December 1943 at 2303 GMT, B-17 42-97493²⁴ took off in a steep climb. During the climb, the aircraft started to bank to the left when the nose dropped suddenly, and the plane crashed. One witness said that one of the engines was exhausting yellow flame, but overall did not seem to be in trouble. The aircraft caught fire immediately when it crashed, skidded several hundred feet, then exploded, killing all ten crew and passengers on board.

As this site is now part of the Thomas Howe Demonstration Forest, the permission granted to record the site did include the limitation that the wreck site and surrounding forest be disturbed as little as possible. In some cases, that meant a clear line of site was not possible and some measurements had to be estimated with the surveyor's level and measuring tape. The inventory for the site was given to the Thomas Howe Demonstration Forest as an added tool for them to use to monitor the site. Follow-up communications with staff indicated they had been using the historical data as part of the site interpretation.

USAAF B-17 44-6344 (DfAp-08)

The USAAF aircraft²⁵ made a normal takeoff from runway 23 on 04 August 1944 at 0218 GMT. It rose in a steep climb before the left wing dropped and the aircraft went into a diving turn that, according to witnesses, resembled a stall. The aircraft crashed, left wing first, and exploded. All ten crew and passengers were killed. The cause of the crash was believed to be an engine stall.

Very little remains of the wreck, and the highest areas of concentration are in a dense patch of alders and in a patch of water caused by the modern airport's runoff system. The rest of the debris is scattered throughout dense trees. Two separate datums were set up for the two areas of debris concentration and were recorded using a measuring tape and compass.

RAF B-25 KF584 (DfAp-14)

As with other RAF crashes, the full report is not available. This RAF B-25²⁶ crashed during a night takeoff on 29 August 1944 at 0342 GMT and all crew were killed in the crash.

This site was mostly contained in a dense patch of trees offering no clear lines of sight. Some areas were dense enough that photography was challenging. It was recorded using a handheld GPS.

USAAF B-24 44-41169 (DgAo-01)

Referred to by archaeologists working on the site as the Dolan crash,²⁷ for the pilot Colonel William Dolan, this aircraft was carrying top secret cargo: a radar system code-named Eagle that could see through cloud cover. The B-24 was also carrying a replacement crew overseas, as well as ferrying the aircraft. First approaching Gander at 0108 GMT in a snowstorm, Col. Dolan was recommended to divert to Presque Isle as an alternate landing, but insisted on attempting to land in Gander and pulled a Green Instrument Card to allow him to do so.

The aircraft lost contact at 0156 GMT and soon after a C-54 transport saw an explosion. There was no further radio contact. Aircraft around Gander were advised to look for the crash, but the site was not found until about a month later when a local trapper came across the wreckage and walked to the airbase to tell the authorities. A dogsled team was dispatched to the site to recover human remains and important equipment, but snow was still heavy, so a second team was sent after the thaw. Even with the recovery efforts, three of the ten crew were not identified and are still listed as missing in action.

Spread over an area of 150x180m, this is the largest site examined around Gander. Over the course of two weeks, followed by a weekend excavation, the site was recorded using a surveyor's level. As the site was accessible, a chainsaw was used to clear sight lines. This investigation did find that the site was not recovered as efficiently as the others around Gander. While the cockpit seemed to have been destroyed, parts of the radar were found throughout the site. That said, there is a chance that the recovery crew did not know about the radar. In a memoir from the leader of the dogsled team, no mention is made of top-secret equipment.

American Overseas Airlines NC90904 (DbBo-02)

This commercial American Overseas Airlines (AOA)²⁸ flight was en-route from LaGuardia, New York to Berlin, Germany with stops scheduled in Gander, NL and Shannon, Ireland. Many of the passengers on the flight were businessmen who were to help with the rebuilding of Berlin, their families, and families going to meet those already in Germany. While it is not an official war-era crash, many of the passengers were on the flight due to the post-war efforts being undertaken in Berlin. Due to thick fog around Gander, the DC-4 was diverted to Harmon Airfield in Stephenville. A replacement crew were at Gander, but there was no replacement crew available at Stephenville, so the crew and passengers were bussed to a hotel to rest. The following morning, on 03 October 1946 at 0833 GMT, the aircraft took off after

a last-minute runway change due to a shift in the wind. The aircraft hit the side of Hare Hill about two and a half minutes after takeoff. The explosion could be seen from the airport. At first light, the site was checked for survivors by passing aircraft, but none identified. All eight crew and 31 passengers (including six children) were killed in the crash. There is some variation in the stories about what happened later. There may have been an initial plan to blast the hill above the wreckage to bury the site, but it was decided to create one, or possibly multiple blasted areas to create mass graves.

The main goal of the archaeological investigation was to locate the actual crash site. Hare Hill, renamed Crash Hill sometime after the incident, was known as the location of the crash, but not specifically where on the hill. Local outdoorspeople could not confirm the location of the crash, and most believed the area had been blasted and the site either covered or destroyed. Using a photograph from the Our Lady of Mercy



Figure 2: An image of the crash site and memorial cemetery, date unknown. Photographer unknown, used with permission of the Our Lady of Mercy Heritage Church and Complex.

Heritage Church and Complex on the Port au Port Peninsula and satellite images, a location was hypothesized and confirmed the following day (Figure 2).²⁹ When the site was successfully located, it was found to be on the face of the steep hill. What could be seen and recorded of this site was completed using a handheld GPS. The isolation of the site, plus the steepness of the incline and the loose rock throughout, would make a detailed excavation extremely difficult, possibly even hazardous. There is more to the site that has not been recorded.

The Globe Theatre (DfAp-12)

The Globe Theatre was an entertainment space on the Canadian or RCAF side of the Newfoundland Airport. It was built during the war and used in the interim period between when the war ended and civilians lived on the RCAF side, and when the new town of Gander was built. Much of the information about the theatre comes from the RCAF publication *The Gander*, a magazine written by and for the servicepeople who worked in Gander and designed to also be sent back home to provide updates to family, and memoirs recorded by the town of Gander. Most of the memoirs are from residents who were children in post-war Gander, so content focused more on the later use of the site, from a child's perspective rather than the service men and women who frequented the building.

Part of the reason for excavating portions of the Globe Theatre was to better understand the lives of those residing on the Gander airbase, broadening the scope of the project beyond wreck sites where people often died. In addition, archaeologists were limited in where they could search at the time of the study, with the Gander International Airport Authority expressing concerns over contaminated soils, and the fact that Gander is still an active airport. That limited researchers in 2011 to only parts of the Canadian side of the airbase.

The Globe Theatre site was excavated after a walkover indicated some visible remains of foundations. Trenches were excavated along the foundation of the building, and excavation units were opened in

an area of high concentration of artifacts along one part of the trench, the front of the building where the entrance was reported to be, and in the middle of the building where trenches were not dug. The excavation uncovered significant amounts of bottle glass, some from identifiable brands, building material, and plate glass (Table 2).

Table 2: Overview of artifacts excavated from The Globe Theatre, DfAp-12. From Daly 2014.

Artifacts excavated at The Globe Theatre on the RCAF Side of the Newfoundland Airport	
Coins	5
Glass bottles (soda, alcohol, unidentified bottle glass)	125
Ceramic	9
Bullet casing	4
Other glass (window, mirror, melted, unidentified)	128
Household items	8
Building material and infrastructure	63
Film and projector	10
Other artifacts	18
Total	370

Archaeology of the Second World War

The field of conflict archaeology started with a strong focus on battle-field archaeology, shipwrecks, and airplane crash sites. Battlefield archaeology in particular has been used to track movements across a site and better determine how a battle took place and how the material culture may offer a different interpretation than that of popular narrative. Excavations of the trenches and battlefields of the First World War have offered insight into the actions of individuals, in particular the study of trench art and other means for soldiers at the front to pass the time between battles.³⁰ More modern conflict, such as the Cold War, has left a significant amount of built heritage, which has also been a source of study. Second World War conflict archaeology is still

considered to be an emerging field, and approaches can vary as is discussed below. The very idea of what constitutes a conflict site has shifted the focus of studies. Battlefields are generally considered sites of conflict, but the definition of conflict archaeology now considers built heritage created in conflict areas or to support conflict, structures built during war to house prisoners of war or to kill captured non-combatants, and the material culture of aircraft and shipwrecks when the vessels were created to be part of or aid in the conflict, regardless of whether they were actively in combat. Such a broadened perspective has allowed for a greater understanding of what constitutes a conflict site, and how diverse Second World War sites can be. Gander is a prime example of this as it consists of buildings, runways, aircraft wrecks, a dump, a cemetery, and early commercial aviation aircraft and infrastructure that built upon what was created to aid in the Second World War conflict. The airbase at Gander worked as a logistics space, ferrying aircraft, supplies, and people overseas, as well as serving a protection/combat role, with aircraft flying from Gander to offer protection to convoys crossing the Atlantic as well as the occasional hunting of U-boats.

A notable study of Cold War built heritage in England has been compiled by Schofield et al.³¹ More recently, work is being undertaken to survey and investigate the remains of many different types of conflict sites for the Second World War. Like Cold War built heritage, the Second World War had numerous structures and spaces associated with the war but far from the fighting, yet vital to the war effort.³² Tunwell et al.,³³ for example, undertook a significant investigation of the nearly 900 earthwork bunkers, buildings, foundations, trenches, and other features associated with German munitions and logistics depots. These are found in isolated areas throughout forested settings and give a greater view of the extent of and variation of the bunkers and structures used. Similarly, Seitsonen et al.³⁴ examined a German base in northern Finland, excavating around the buildings and finding evidence of combat-related activities on site, such as shell casings and possible practice shooting. Using information gathered from historical records and talking to the local population who could mostly inform about reuse

after the Germans left, researchers created a fuller understanding of how the area was used. Isolated outposts can have many different functions, and they can be relatively close to populated areas, but still far enough away to be isolated, as Owen and James demonstrated with their survey of the 105 Radar Station on the Cox Peninsula near Darwin, Australia.³⁵ This was a defensive radar station, and the layout was known from an unofficial map and confirmed through archaeology. Hobbins³⁶ takes such research further by linking the Australian sites to the aviation technologies and material culture, stressing the importance of looking at sites within the greater context of interpreting airspace.

Like the work conducted by Seitsonen et al.,³⁷ bullet casings were also found during the Globe Theatre excavation. Obviously, The Globe was not a location where people were firing guns, but their presence suggests that there was likely somewhere nearby for people to shoot or that people picked up and brought casings with them as they traveled to Gander.

Other work has been done on destroyed built heritage, but unlike spaces like The Globe, they are areas of suffering. Pollock and Bernbeck³⁸ excavated the Second World War Nazi-run labour camp at Tempelhof airfield and found a few personal items, though it was often difficult to determine if the items were from the limited pieces of personal possessions the labourers may have been able to hide, or the Americans who occupied the site immediately after the war. Myers's thesis³⁹ on a POW camp at Riding Mountain Camp in Manitoba explores what he calls formal and informal middens. The formal middens were sanctioned by the camp, and contained the expected refuse produced by prisoners and staff, consisting of things provided by the camp, while the informal middens contained more contraband. In particular, the informal middens were in opportunistic locations, such as at the edge of a pond or in a wooded area behind a building, and contained evidence of personal artifacts likely purchased at the canteen and of alcohol consumption in the camp.

The excavation of destroyed buildings also draws some parallels between how both buildings and personal effects were used. A major

similarity is the lack of personal effects, but for very different reasons. Abandoning Gander was a planned event as a new town was being built so people would have had ample opportunity to remove anything personal. A theatre may not contain many personal items, but the Globe was not just for movies; it was for performances as well, with change rooms under the stage, as reported by residents who attended the venue. An excavation unit was opened at this part of the site, but no personal items were found. Things that were likely more personal, such as bullet casings, were found near the front entrance as well as some coins, which suggest they may have fallen out of pockets when people entered the building. That said, excavation of the residential areas of the RCAF side of Gander may have very different results, though likely skewed to the post-war era as people lived in the same buildings for several years after the war.

The excavation of the Globe, like other excavations of destroyed Second World War sites, mostly yielded construction material, not all of which was collected as some consisted of large pieces of concrete. All other materials, such as glass, were collected and catalogued. Plate glass was found throughout the site, both window glass (indicated by being painted black, either for blackout conditions or to keep the space dark for films) and mirror glass (Figure 3). The major indicators for the function of the building were pieces of the film projector and fragments of film (Figure 4). The amount of bottle glass, including identifiable brands of soda such as Coke, Pepsi, and local Keep Kool drinks, without any other sort of beverage or food-related artifacts, implies social activities in or around the building. This differs greatly from other investigated Second World War sites; there is a lightness of atmosphere at Gander, rather than the extreme isolation of some of the German outposts or the horror of labour and concentration camps. Gander certainly stands out as a very different kind of war-related site, being so far from the front and having opportunities, from movies and dances to picnics on the banks of Gander Lake, that may not have been experienced in the bases closer to the war, and were absolutely foreign to the suffering of prison, labour, and concentration camps



Figure 3: An example of plate glass with black paint that was found throughout the site DfAp-12. Photo by Courtney Merner.



Figure 4: An example of movie reel found at The Globe, DfAp-12. Photo by Courtney Merner.

where whatever small personal items people managed to find or create were likely hidden and treasured. An exception is the Riding Mountain Camp in Manitoba where evidence indicates POWs were able to escape the camp, sometimes for short periods to go into the nearby communities, without fear of being shot by prison guards. Prisoners also had access to leisure activities, such as canoeing on a nearby lake, personal grooming products, such as hair products, and, like at Gander and all American bases during the war, Coca-Cola.⁴⁰ While it was a site of conflict, like Gander, Riding Mountain Camp was far removed from the actual fighting, and seemed to be a little more informal when compared to European camps.

Death in Gander

Death was not constant around Gander, but it was not uncommon. Of the eleven crash sites examined around Gander from the Second World War, nine involved fatalities. In many cases, if there were fatalities, it included all on board; cases like RCAF Canso 98107 (DfAp-07) were a rarity with some fatalities and one survivor. It should also be noted that the sites discussed are only a sample of the crashes around and associated with Gander. Crashes that occurred close to the airbase were often recovered, and there are still others that were not visited as part of this research due to time constraints or because they are largely inaccessible. Similar to those examined, the locations of the unrecorded sites are known, and are a mix of wrecks with and without fatalities. Many aircraft were also lost over the ocean or other bodies of water (see the recent discovery of the location of RCAF B-24 589D in Gander Lake⁴¹), their locations unknown.

The first airplane crash that involved fatalities was the Hudson T9449 near Musgrave Harbour. Sir Frederick Banting, the co-discoverer of insulin, decided that he was better suited to work closer to the front-line for his work and research to help the war effort. Banting was a passenger with a Ferry Command crew consisting of Captain Joseph C. Mackey, radio officer William Snailham, and Pilot Officer William

Bird. After being delayed in Gander due to weather, the forecast cleared on 20 February 1941, and that evening, at 0030 GMT, the Hudson left, the last of the five flights scheduled to leave at the time. When they were about 25 miles over the ocean, the left engine failed and Mackey turned back toward the airport, requesting magnetic reciprocal bearings. Before reaching the airport, the aircraft crashed by first hitting trees, but Mackey attempted to control the crash. The Hudson stopped by Seven Mile Pond near Musgrave Harbour. Captain Mackey and Frederick Banting were the only survivors, with Banting seriously injured. Over the next few hours and into the night, Mackey had to keep Banting calm and safe. The next morning, Banting finally slept, and Mackey left to find help, knowing that Banting needed medical attention. Mackey travelled about two miles in the snow before turning back as his own injuries made movement difficult. When he returned, Banting was dead, about 25 feet from the plane reclining in the brush.⁴²

Poor weather prevented a search for the aircraft. It was four days after the crash before Mackey was found and rescued (see Mullaly-Moulton and Doyle, this volume). He was transferred to a hospital in Montreal. The remains of Banting were returned to Toronto for a public funeral. Snailham and Bird were sent to Halifax for burial; Snailham was from Nova Scotia while Bird was from the United Kingdom.⁴³

A few months later, RCAF Digby 742 (DfAp-10) crashed and killed all six Canadian airmen on board. At the time of the incident, the Canadian Deputy Minister of National Defense (Air), Sydney L. de Carteret, was in Gander and he, with other decision makers, determined that more fatalities were inevitable as more aircraft flew through Gander. De Carteret and Squadron Leader Harold A.L. Pattinson, RAF, decided on an area of land near the airbase to be designated as the Gander cemetery, and later was designated by the Commonwealth War Graves Commission.⁴⁴ Flight Lieutenant Martin Edward Tomsett, Pilot Officer William Hume Mather, Pilot Officer Allan Gower Pratt, Sergeant Mervyn Samuel Hunt, Sergeant Ronald Laird McDavid, and Aircraftman 1st Class Thomas James Larmour Crawford were the first to be buried at the new cemetery.

Over the course of the war, there were about 100 Gander related casualties, including non-Ferry Command passengers and crews buried elsewhere before the cemetery opened. 64 airmen were also lost over the ocean. After the war, some 55 Americans were repatriated, leaving gaps throughout the cemetery.⁴⁵ Indeed, death was not persistent around Gander, but it was common enough to need the Commonwealth War Graves, and the publication *Gander* put out by the RCAF had a memorial section in the magazine.

After the war, as much of the military was leaving Gander and civilians were moving in for work, the cemetery site was not immediately used. The first post-war fatalities happened on 25 August 1946 when a group of RAF Lancasters were returning to England after a goodwill tour of the United States. As the last aircraft was leaving, one of the earlier departures developed engine troubles and hurriedly returned to Gander. Civilians would often cross the runway between the Canadian and American side, and those crossing did not hear the plane return nor see the red lights that indicated it was unsafe to cross.⁴⁶ Four civilians were killed; Cyril W. Brazil, Allan R. Parsons, and Phillip S. Rideout were all from St. John's while Isola Clarke was from Carbonear. Perhaps because they had stronger ties to other communities or due to family wishes, each were buried in their hometowns.⁴⁷ The first civilian buried in the cemetery was the infant daughter of David and Marion Heath, who was born on 16 January 1947 and died two days later. The next to be buried was Anthony Holland Robertson, from Kirkcudbright, Scotland, who died on 30 May 1947.⁴⁸ Perhaps he was buried in Gander as it was easier than sending him overseas, or no one knew who to contact to try to repatriate his remains.

After the repatriation of the Americans from the cemetery, some of the empty spaces were reused (Figure 5). This may not have been purposeful, as most of the civilian burials are relatively far from the Commonwealth War Graves monument. The reuse of the formerly occupied burial spaces was discovered when the son of Colonel William Dolan, pilot of USAAF B-24 44-44169 (DgAo-01), came to Gander to learn about where his father died and to find closure. While



Figure 5: View of the Commonwealth War Graves in Gander taken in 2014. Note the spacing of the headstones where American servicemen were removed and repatriated. Photo by Lisa M. Daly.

there in 2010, the author and other research team members (Dr. Michael Deal, Nelson Sherren, and Darrell Hillier) brought William Dolan Jr. to where his father had been buried before being repatriated. We were all surprised to find that a civilian was buried in about the same spot where Col. Dolan had been. This was likely an honest mistake as residents likely would not have had access to the locations of where American servicemen had been buried.

Post-War Aviation Disasters

Commercial crashes also occurred at Gander. In 1946, Newfoundland saw two of the worst commercial aviation disasters in the world up to that time. On 18 September 1946, CBG Sabena crashed on approach to Gander, killing 27 passengers and crew. The radio communication at the time was directional, and the Sabena was slightly off course after

making initial contact with Gander. The crash landed deep in the forest on approach to Gander, and the official cause of the accident was determined to be a failure of the pilot to carry out proper instrument approach procedure while attempting to land in poor weather conditions.⁴⁹ The DC-4 crashed and was recovered, survivors were rescued, and a cemetery was built at the site for the victims, but the area has not been formally recorded by archaeologists. Two weeks later, the AOA NC90904 (DbBo-02), detailed above, crashed attempting to depart Stephenville, killing all 39 passengers and crew.

Both the Sabena and the AOA were commercial disasters where the victims of the crashes were buried in individual graves while those who could not be identified were buried in a mass grave near the crash. At least one identified individual was repatriated from the Sabena site. At the AOA crash, all were buried on site though it is unclear if there was one or multiple mass graves, and a graveyard containing no human remains was created at the top of Hare Hill/Crash Hill to symbolize a resting place for the dead.⁵⁰

Unlike military crashes, there were no compelling reasons to recover the wreckage from commercial crash sites. Military recoveries and salvages were conducted to recover or destroy sensitive/top secret materials and equipment, and to reuse anything that could potentially be salvaged during wartime shortages. Human remains were also recovered, and servicemen had to be accounted for (there are currently two sites in Newfoundland with servicemen listed as missing in action, DgAo-01 and the newly located B-24 in Gander Lake).

Wreckchasing and the Greater Context

While death was present at Gander, so was life. In studying the material culture remains of the Second World War in Gander, it is easy to fall into the trap of wreckchasing. With so many plane crashes still present on the landscape, archaeological surveys can easily focus on the recording of what remains and the site distribution. There are times when information can be gleaned from this type of survey work,

but in many cases, such as USAAF B-17 42-97493 (DfAp-09), USAAF B-17 44-6344 (DfAp-08), and RAF Hudson S/N FK 690 (DfAp-11), all of which are close to what is now the town of Gander, material culture research is more about what gets removed from accessible sites rather than what remains. USAAF A-20 (DfAp-13) and RAF B-25 (DfAp-14), both poorly accessible and rarely visited, are examples of the latter.

The first three aircraft have very little remaining. USAAF B-17 42-97493 is in the Thomas Howe Demonstration Forest and is now somewhat protected due to the fact that it is in the park; however, park employees believe that items from the crash are still moved around the site or likely removed. Recording was more about creating a site inventory so that staff could better monitor the remaining material culture. The nearby USAAF B-17 44-6344 crash site, while technically on land under the protection of Forestry, is not on the park trail system. Over the years, everything that could be salvaged or sold for scrap has been removed. The only piece remaining that was likely missed by salvagers was a rubber gasket found away from the main concentration of debris and covered under a layer of leaf litter. RAF Hudson S/N FK 690 is near the road that was built to link the Trans-Canada Highway to the Commonwealth War Graves. According to people around Gander, the highway was supposed to pass directly over the crash site, and locals were asked to remove what they wanted from the site. The highway did not pass over the whole site, but very little material culture remains, and some may be under both the highway and the adjacent roadway.

By comparison, USAAF A-20 is deep on the airport property. There is an airport access road in the area, but it is not maintained and finding the site still involved some hiking. There was evidence of people using the land around the airport, such as a fire pit and garbage, but not near the crash site itself. Similarly, RAF B-25 is also deep on airport property, and there are no nearby roads. There was evidence for the clearance of trees somewhat near the site; the growth and age of the tree stumps suggests they were cut years ago, although no record

of when could be found. Of note is the amount of aluminum on these two sites compared to the others discussed above. Aluminum can be sold for scrap, although local scrappers have been told they should not accept aluminum that comes from aircraft wrecks. In many cases, the damage was likely done long before the province of Newfoundland and Labrador started looking at aircraft as archaeological resources to be protected. Rubber, such as from the tires, would also be recovered to be used as sealant, and other metals, such as copper, could be removed to be sold. There was also little evidence for later activity near these sites. As mentioned, there was a campfire near USAAF A-20, but not at the wreck site. Compare this to USAAF B-17 44-6344 where there is evidence for a campfire next to the landing gear.

Wreck sites should not be examined in a vacuum. When looking at sites province wide, those that are easily accessible tend to have comparable material culture. Being able to view multiple sites also helps determine the level of human activity over time. For example, a 1994 news article by Frank Gale⁵¹ expressed concern about the remains of USAAF C-54A (DcBt-01) which crashed on the Port-au-Port Peninsula. Gale worried that plans to extend a highway would provide easier access to the crash site. When visited in 2013, there was a trail and a sign that indicated the location of the site, and it was only a short walk to access it.⁵² Very little remained of USAAF C-54A compared to the poor-quality photograph seen in the 1994 article (Figures 6 and 7). There were benches, campfires, no aluminum, and pieces of porcelain were lined up along the landing gear.

A broader comparison of sites enables determinations of the frequency of site visits. Graffiti is a strong indicator of site visitation, and in some cases, helpfully, graffiti is dated. Some sites show high levels of visitation, such as the RAF Ventura between Gander and Benton, the United States Air Force RB-45C BE-032 that crashed in 1947 near Goose Bay (FhCd-01),⁵³ and the RCAF Digby 742 in Gander. All three have significant amounts of graffiti, but are isolated enough, or difficult enough to access, that the material culture is mostly intact (Figure 8). The Ventura is on a snowmobile trail, and most of the graffiti



Figure 6: An image from *The Western Star* showing a great deal of wreckage still on site at DcBt-01 in 1994. Gale 1994.



Figure 7: The highest concentration of artifacts at DcBt-01 in 2013. Photo by Lisa M. Daly.

dates to the winter months. There has been some damage to the site, notably the removal of the nose and a large section of fuselage which was transported away from the site, then left in a nearby tangle of alders. The RB-45C is isolated and challenging to access but is now made easier since a road was put in on the other side of the Churchill River to access Gull Island. It would be a difficult task to remove larger material from the site, but small pieces can certainly be removed (small artifacts were recovered in the 2008 visit). RCAF Digby 742 is a little different. The site is easier to access, but rests atop a large, unstable bog, which makes getting to many of the pieces difficult. Near this crash is the Circularly Disposed Antenna Array (locally known as the Turkey Farm). This military installation does have restricted access, and while the RCAF Digby 742 is accessible from the old railway bed, that access point is significantly longer.

Expanding beyond aircraft crash sites in the context of others to better understand the level of post-war activity on these sites, it is likewise important to look at the air bases with which they were affiliated. Early in the archaeological study of aviation material culture, Deal et al. (2015) examined individual sites within the framework of actor-network theory to connect crash sites and relevant air bases.⁵⁴ These bases were all in Newfoundland and Labrador due to its location which provided the shortest distance for overseas flights, in a time when aircraft had shorter capable flight distances; Newfoundland to Ireland was at the edge of that capacity. Also, as Newfoundland was a colony of the United Kingdom at the time, the lands could be granted by the UK to the United States as part of the Anglo-American Leased Bases Agreement, so the US did not have to negotiate with individual countries. The Newfoundland Commission Government at the time had no say in this agreement, and potentially this lack of consultation is why the Commission Government put forward strong negotiations with the Canadian Government for RCAF Torbay and RCAF Goose Bay, and pushed back whenever the airbase in Gander was expanded without due consultation. The American bases had full control of their own people and the lands that they leased, moving residents and destroying their homes around



Figure 8: Graffiti at FhCd-01 taken in 2008. Photo by Lisa M. Daly.

Stephenville, Argentia, and Pleasantville in St. John's. Laws broken by American servicemen fell under the justice systems of the base, and it was difficult for Newfoundland to prosecute any crimes, even if they happened off base. Similarly, the US did not have to pay taxes or tariffs, reducing potential incomes to the Commission Government.⁵⁵

What this all comes down to is that if the material culture of air-plane crash sites is not examined within the greater context of the politics of war, then they are simply recordings of material culture with a limited opportunity to draw new information about the crash itself and the relationships between the various actors operating within war time Gander. By integrating war-time activities, politics, and geography into the study of crash sites that remain on the landscape of Newfoundland and Labrador, it leads to a much greater understanding of the impacts of the existence of air bases on those who resided there, as well as the civilians who worked on the bases and later used the material left behind. Stories have been told of people using parachute material to make sails for their boats, children finding firearms and using them as toys (given the gun by their father in this case), and even using the metal from the tip of a propeller blade to make needles for spinning wheels. These examples of reuse add to the story surrounding a crash site, as does the collection of scrap metal to sell, even if it is seen in a more negative light. Even now, stories surrounding these crash sites and built aviation heritage continue to be told and shared through living and secondary memory as important events to communities and to Newfoundland and Labrador as a whole.

Conclusion

One of the challenges of contextualizing aviation archaeology in Newfoundland and Labrador within the broader field of conflict archaeology is that areas such as Gander are combat-related, but not active in combat. Aircraft leaving the airbase would sometimes take on a combat role, such as protecting convoys and hunting U-boats, but much of the work being done in Gander was logistical in nature, such as ferrying

aircraft, people, and supplies. While there have been periodic rumours of sabotage and spies in Gander, particularly surrounding the crash of RAF Hudson T9449 that killed Sir Frederick Banting, there has been little supporting evidence.⁵⁶ A great deal of conflict archaeology, especially the archaeology of non-combatants, focuses on other aspects of the Second World War, such as isolated German outposts, Concentration Camps, and labour camps. These sites are areas important for understanding the degree of intrusion and the extreme suffering that was rarely recorded or rarely survived the purge of documents after the war. In the case of an airfield like Gander, there were fatalities, but they were not comparable to the atrocities of war camps. In fact, documents indicate many opportunities for leisure and learning on and near the base, including travel to nearby towns, St. John's, and the USO in Corner Brook. The sites are connected through their links to the greater conflict of WWII, but at the same time difficult to compare as they served very different functions with very different goals.

Overall, this paper examines aviation sites in Newfoundland and Labrador associated with the Second World War, with particular reference to Gander. There were no battles here on the lands or in the skies, but sacrifices were still made even after the war officially ended. Airplane crashes, many beyond those listed here, littered the landscape, and many are still found in the forests, bogs, and barrens of the province. The airbases saw residents moved from their homes, many of whom discovered new means to make a living while surrounded by people from other countries and cultures. Newfoundland and Labrador was far from the fighting, but nonetheless was still at war, and the land and culture were forever changed.

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