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Boeing Fortress Mk. IIA (B-17E)  
FK.186 of No. 220 Squadron of R.A.F. Benbecula, in 1943

## THE LAST FLIGHT OF:

## FORTRESS FA.698

A narrative of the last flight of Boeing B-17 Fortress, FA.698, which crashed at Luscott Barton, near Braunton on 26 March 1943, killing three air crew.

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## **The Last Flight of Consolidated Fortress FA.698**

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# Contents

<u>Chapter</u>	<u>Pages</u>
Introduction	3
The Boeing B-17 Fortress	3 – 4
Operational Service	5 – 7
No. 59 Squadron at R.A.F. Chivenor	7 – 12
Circumstances of the Crash	12 – 13
Court of Inquiry	14
Accidents Investigation Branch	14
Beam Approach Beacon System	14 – 18
The Air Crew	18 – 24
43285 F/L J. L. HERON, R.A.F.	18 – 19
1370313 Sgt A. KENNEY, R.A.F.V.R.	19 – 20
J/16692 P/O D. H. McLEAN, R.C.A.F.	20
R/82680 F/Sgt R. S. SANDELIN, R.C.A.F.	21 – 22
1128327 Sgt J. F. CLARK, R.A.F.V.R.	22 – 23
1172715 Sgt J. FAGE, R.A.F.V.R.	23
141755 P/O D. M. DUNN, R.A.F.V.R.	23 – 24
Conclusions	24 – 25
In Memoriam	26
Map of Crash Site	27 – 28
Photographs	29 – 31
Bibliography and Sources	32

## Introduction

Most literature on the Second World War tends to focus on the act of fighting, describing battles and campaigns, and the role of individual members of the armed forces. Yet warfare is a broader event in history, and Total War as pursued by the United Kingdom from 1939 onwards, involves all aspects of a country's economy and society. It requires the financial means to prosecute the war, including affecting the fiscal and monetary policy of that country. The expenditure of the U.K. Government rose from £919,000,000 in 1937/38, to £6,179,000,000 in 1944/45. Revenue rose from £948,700,000 in 1937/38 to 3,354,700,000 in 1944/45. The Current Account Deficit rose from almost zero in 1937/38, to £3,000,000,000 in 1941 and 1942. In June 1939, the U.K.'s overseas debt stood at £0.5 billion, in 1945 it was £3.4 billion. By the end of the war, the U.K. owed the U.S.A. about \$21 billion resulting from Lend-Lease arrangements.

In addition, a Total War is as much about science and technology as it is about fighting. The members of the armed forces can only fight with the weapons and equipment that they are provided. All new equipment has to be designed, evaluated, manufactured and delivered to where it is needed. In addition, the men and women using the equipment need to know how to do so to achieve the best outcome from that new equipment, i.e. through training.

Coastal Command of the Royal Air Force was at the forefront of Operational Research during the Second World War, having a Section dedicated to that role under Professor WADDINGTON. This unit played a key role in the defeat of the U-boat in the Battle of Atlantic, and in the increasingly effective campaign against surface vessels supplying the German war economy. The Operational Research Section (O.R.S.) had to balance competing interests and demands, and this constraint was present throughout the British war economy. On occasions, British manufacturing was unable to supply the equipment required by the British and Allied armed forces in the timeframe requested, or with the necessary quality or on the required quantity. Of course, all this impacted eventually on the men and women on the front-line.

The story of the loss of Fortress FA.698, in conditions of poor visibility, as it returned from a long patrol out over the North Atlantic, has to be seen in the context of the prosecution of a Total War economy by the U.K., because central to this accident is the development of airborne radar, and a beam approach landing system at R.A.F. airfields. The seven men involved, three of whom died on that fateful day in March 1943, were in a situation where external factors had a major role in the eventual crash near Braunton, North Devon. This is their story.

## The Boeing B-17 Fortress

The Consolidated Liberator and the Boeing Fortress were the two major U.S. strategic bombers of the Second World War. The concept of the Fortress dated from 1934, with the Liberator being a more modern design, dating from a U.S. Army specification of 1939.

The Boeing Fortress made its maiden flight on 28 July 1935, and by 1941, over one-hundred had been delivered to the U.S. Army Air Corps. The Fortress B-17D saw active service from the entry of the U.S.A. into the Second World War, but prior to that, twenty B-17C versions were flown to the U.K. for service with the R.A.F. following appropriate modifications.

In May 1941, the Boeing Fortress Mk. I entered service with No. 90 Squadron at R.A.F. West Raynham, and flew its first operational sortie from R.A.F. Polebrook on 8 July 1941. Flying in daylight, at heights up to 30,000 feet, the R.A.F. Fortress had little success. In fifty-one sorties, twenty-six were aborted. R.A.F. Bomber Command dropped the use of the Fortress to concentrate on British designed aircraft in night-time bombing raids. No. 90 Squadron sent four of its Fortresses to the Middle East as part of a detachment from the main squadron. They undertook sorties over Libya and against shipping, until withdrawn in May 1942. Personnel operated from R.A.F. Shallufa in Egypt to fly the remaining Fortresses until their withdrawal from operations.

In the meantime, Boeing had developed the B-17E, which made its maiden flight in September 1941. This version had an enlarged fin, enlarged tail plane, and improved armament. The B-17F was similar to the B-17E, but featured a modified nose arrangement, a different engine model, and modified propellers. Both marks were supplied to the R.A.F., where the B-17E was known as the Mark IIA, and the B-17F as the Mk. II. The Mk. IIA and Mk. II were allocated to Coastal Command, where they equipped two anti-submarine and general reconnaissance squadrons (No. 220 and No. 206 Squadron). For a short period, they were issued to a third squadron in place of Consolidated Liberators (No. 59 Squadron). Fortress aircraft were later allocated to three metrological squadrons of Coastal Command, and some Mk. III aircraft (B-17G) were issued to two special duties squadrons of Bomber Command, and three were issued to No. 220 Squadron for anti-submarine operations from the Azores.

The Fortress Mk. IIA and Mk. II were used as long-range aircraft, equipped with Air-to-Surface Vessel (A.S.V.) radar, and depth charges to locate and attack U-boats. They could carry up to fourteen 250 lb depth charges, a significant bomb load compared to the British aircraft in Coastal Command, although an additional fuel tank fitted in the bomb bay from October 1942 onwards reduced the number carried to seven. The Fortress was used by the R.A.F. in a general reconnaissance anti-submarine role, or for special duties, with an air crew of seven or eight. It was built of an all metal, stressed-skin construction, and fitted with four Wright Cyclone GR-1820-97 engines, each developing 1,200 horsepower. The wing span was 103' 9", its length was 73', and its height was 15' 6". Empty, it weighed 35,800 pounds, and fully loaded weighed 64,000 pounds. The maximum speed of the aircraft was 280 miles per hours, at 20,000 feet, with a normal range of 1,140 miles, and a maximum range of 2,740 miles. The Fortress Mk. II was fitted with twin 0.50 machine guns in the dorsal and tail turrets, with one 0.50 machine gun on each side of the waist position, and one in the nose. The Fortress was fitted with a ventral ball turret, underneath the fuselage, although this was removed by October 1943 by the time of their deployment to the Azores. The maximum bomb load was 12,800 lbs.

## Operational Service

### No. 220 Squadron

This squadron was reformed on 17 August 1936, at R.A.F. Bircham Newton in Norfolk. It was equipped with Avro Anson aircraft, and was under Coastal Command as a maritime general reconnaissance unit. In August 1939, the squadron moved to R.A.F. Thornaby in Yorkshire, and in the following month, it began to receive Lockheed Hudson aircraft to replace the Ansons. The last Ansons left the unit in December, as the squadron undertook operational patrols over the North Sea. In February 1940, an aircraft from the squadron located the German ship 'Altmark' sheltering in Norwegian waters. This led to the famous operation by the Royal Navy to free captured merchant seamen who had been detained by the German pocket-battleship 'Graf Spee'.

In April and May 1940, the squadron was busy during the Norwegian campaign, flying sorties into Norwegian waters. In November 1940, the squadron sent a detachment to R.A.F. St. Eval in Cornwall to provide cover over the Western Approaches and Irish Sea. Now operating the Hudson Mk. I, III and VI aircraft, the squadron provided a detachment that operated from R.A.F. Wick in Scotland in March 1941. In April 1941, both the detachments at R.A.F. St. Eval and R.A.F. Wick ceased, with the whole squadron concentrated back at R.A.F. Thornaby.

In December 1941, the squadron took control of the detachment of personnel at R.A.F. Shallufa in Egypt to fly the remaining Boeing Fortress aircraft that had been allocated to No. 90 Squadron. In April 1942, the two remaining aircraft were flown to India, where the No. 220 Squadron detachment operated until the withdrawal of the aircraft. In January, the squadron moved to R.A.F. Nutts Corner in Northern Ireland and began conversion to the Fortress. The first aircraft were Fortress Mk. I versions, and the first convoy escort sortie was flown on 9 May 1942. In July, shortly after the squadron had moved to R.A.F. Ballykelly, the first Mk. IIA aircraft began to arrive with the squadron.

No. 220 Squadron had become operational with the Boeing Fortress Mk. I on 29 April 1942, making it the first unit in Coastal Command to use these aircraft on sorties. On 3 February 1943, a Mk. IIA aircraft from the squadron attacked U-265 south of Iceland, on 7 February, U-624 was sunk by P/O G. ROBERTSON, and on 13 March 1944, U-575 was sunk jointly by this squadron, No. 172 Squadron, No. 206 Squadron and naval warships. By July 1942, the squadron was equipped with the Mk. IIA version of the Fortress (and from April 1943 with the Mk. II version), and in February 1943, it moved the short distance to R.A.F. Aldergrove. It was only there for a month, moving to R.A.F. Benbecula in the Outer Hebrides. Seven months later, the squadron was posted overseas, to R.A.F. Lagens on the Azores. It was to remain here for twenty months, during which period two U-boats were sunk by aircraft from the squadron; U-707 on 9 November 1943, and U-871 on 26 September 1944.

In December 1944, the squadron began to receive Consolidated Liberator Mk. V and Mk. VI aircraft in place of the Fortresses. The last Fortress Mk. III flew with the squadron in April 1945, having arrived with the squadron in July 1944. In May 1945, with the end of the Second World War in Europe, the squadron was posted back to the U.K., and was based at R.A.F. St. David's in Pembrokeshire. In July 1945, the squadron received some Liberator Mk. VIII aircraft. In September 1945, it moved to R.A.F. Waterbeach, and undertook transport duties, in particular, carrying troops to and from India. No. 220 Squadron disbanded on 25 May 1946.

### **No. 206 Squadron**

No. 206 Squadron was formed on 15 June 1936 from a flight of No. 48 Squadron. It was equipped with the Avro Anson, as a maritime general reconnaissance squadron within Coastal Command, and was based at R.A.F. Bircham Newton in Norfolk. In March 1940, the squadron began converted to Lockheed Hudson aircraft, and undertook patrols over the German coast and Friesian Islands. The last Anson left the squadron in June 1940. In May 1941, the squadron moved to R.A.F. St. Eval in Cornwall, where it continued to fly anti-submarine and anti-shipping sorties. In August 1941, No. 206 Squadron moved to Northern Ireland, to be based at R.A.F. Aldergrove, County Antrim. In June 1942, the squadron was transferred to R.A.F. Benbecula on the Outer Hebrides islands in Scotland. On 27 October 1941, the squadron claimed the sinking of U-627. During this period, the squadron flew the Mk. I, II, III, IV and V versions of the Hudson.

In August 1942, the squadron began converting to the Boeing Fortress Mk. IIA aircraft, at R.A.F. Benbecula, and once considered operational, it began sorties over the North Atlantic. In October 1943, the squadron moved to R.A.F. Lagens on the Azores Islands, having begun to receive Mk. II aircraft in April 1943. It was to remain based here until March 1944, and during the period in which No. 206 Squadron flew the Fortress aircraft, it claimed the sinking of five U-boats. These were: U-627 on 27 October 1942 south-west of Iceland; U-337 on 16 January 1943 in the North Atlantic; U-469 of 25 March 1943 west of the Faroe Island; U-169 on 27 March 1943, south of Iceland; U-710 on 24 April 1943 south-east of Iceland; and U-417 on 11 June 1943 north-west of the Faroe Islands.

In April 1944, the squadron began conversion to the Consolidated Liberator Mk. VI, having moved to R.A.F. Davidstow Moor in Cornwall in the previous month. In April 1944, the squadron moved to R.A.F. St. Eval, also in Cornwall, but in July 1944, it moved northwards to R.A.F. Leuchars in Fife, Scotland. The squadron remained based here until the end of the Second World War in Europe, being credited with the destruction of U-319 on 15 July 1944 in the Norwegian Sea. In April 1945, the squadron commenced receiving Liberator Mk. VIII aircraft, which saw service until the squadron was disbanded. The end of hostilities meant the end of anti-submarine operations, so the squadron was used for transport duties, in particular, ferrying troops to and from the U.K.. For this purpose, it moved to R.A.F. Oakington in Cambridgeshire in August 1945, and it was here that it disbanded on 25 April 1946.



## No. 59 Squadron

At the commencement of the Second World War, No. 59 Squadron was based at R.A.F. Andover in Hampshire, and equipped with the Bristol Blenheim Mk. IV light bomber. It moved to Poix in France in October 1939, and flew reconnaissance sorties during the Phoney War, and following the German invasion in May 1940. With the rapid German advance, the squadron returned to the U.K. on 20 May 1940. It was initially based at Lympne, but soon moved to R.A.F. Andover in Hampshire. It moved again a month later, to R.A.F. Odiham, also in Hampshire, and then in July 1940, to R.A.F. Thorney Island, again in Hampshire. The squadron continued to fly reconnaissance sorties, but this expanded to include attacks on French and Belgian ports being used to moor barges for a possible invasion.

On 1 April 1941, No. 59 Squadron became a general maritime reconnaissance squadron conducting anti-shipping sorties using the Bristol Blenheim Mk. IV. In July 1941, the squadron began to receive Lockheed Hudson Mk. III aircraft, which replaced the Blenheims by September of that year. It later used the Mk. V and Mk. VI versions of the Hudson. A large detachment of air crew and aircraft left for the Far East in December 1941, and until March 1942, the squadron was non-operational while new crews were assimilated into the unit, having moved to R.A.F. North Coates in January 1942. In August 1942, the squadron moved to R.A.F. Thorney Island in Hampshire, to commence the conversion to Consolidated Liberator Mk. III aircraft.

Although some operational sorties were flown with the Liberator, as the number arriving in the U.K. was low, in December the squadron converted to fly the Boeing Fortress Mk. IIA. In late January 1943, the first air crew and aircraft transferred to R.A.F. Chivenor in North Devon with operations commencing on 23 January 1943. The move to Chivenor was completed on 6 February, and in that month, the squadron received its first Mk. II aircraft. By the end of March, the squadron returned to R.A.F. Thorney Island to relinquish the Fortresses, and begin using the Liberators again, although this time the Mk. V. In May 1943, the squadron moved to R.A.F. Aldergrove in County Antrim to start operations over the North Atlantic. In September of that year, it moved to R.A.F. Ballykelly in County Londonderry, where it remained until disbanded on 15 June 1946. After the end of hostilities, as with the other Liberator squadrons, it was used to ferry troops around the British Empire using Liberator Mk. VIII aircraft until its disbandment.

## No. 59 Squadron at R.A.F. Chivenor

No. 59 Squadron, was a Hudson equipped unit within Coastal Command moved from R.A.F. Thorney Island in Hampshire, to R.A.F. Chivenor in North Devon in early February 1943. The move was completed by 6 February, but had commenced in mid-January. On 21 January 1943, the first Fortress left R.A.F. Thorney Island to fly to R.A.F. Chivenor. This was Fortress Mk. IIA, B/59 (FK.205), captained by J/15293 F/O A. R. NEILSON, R.C.A.F..



The sight of the big American Fortress coming in to land at the North Devon airfield probably caused some interest amongst R.A.F. personnel and civilians alike. At 04.52 hours on 23 January 1943, B/59 took off from R.A.F. Chivenor on the squadron's first operational sortie flying the Fortress. The aircraft carried fourteen 250 lb Amatol filled depth charges. The air crew carried out the patrol in good weather, reaching a position out in the North Atlantic of 43° 18' N, 09° 00' W. At 07.25 hours, they investigated a S/E (Special Equipment) contact about three and a half miles ahead of the aircraft.<sup>1</sup> The aircraft circled the position, but found nothing of interest. A narrow oil streak was observed at 12.35 hours, and a similar but longer one was seen at 13.00 hours running north-west by south-east. B/59 landed safely at 14.52 hours, with the air crew reporting that the S/E had worked well.

On **22 January** 1943, a second air crew made it to R.A.F. Chivenor, the Captain being F/O Howard Arthur Leslie MORAN, R.A.A.F.. They flew their first sortie on 24 January, using B/59 again. The aircraft was armed with twelve 250 lb Amatol depth charges, and two of the more potent 250 lb Torpex depth charges. They took off at 10.06 hours, and flew out to a position of 46° 10' N, 08° 15' W, which they reached at 13.05 hours. The aircraft received a signal stating: *'Return not later than 17.00 hours'* so did not continue outwards. At 13.10 hours, they were sighted and attacked by a German Ju 88 aircraft. B/59 was flying at 2,500 feet, in thin cloud, when one Ju 88 was sighted on its starboard beam, 800 yards away, flying on a parallel course at the same height. Both aircraft immediately climbed to reach the cloud base at 3,000 feet, and just before the cloud base was reached, the enemy aircraft had worked its way around and made a level attack at 20° on the starboard bow. The Ju 88 fired long bursts from 400 yards, until it had closed to 50 yards range. The Ju 88 passed underneath the Fortress, and broke away to the left and astern of B/59. This gave the rear gunner of the Fortress the chance to engage the Ju 88, firing a five or six second burst. B/59 took evasive action in the cloud, and the enemy aircraft was not seen again. B/59 had fired about one-hundred and sixty rounds of ammunition, and had sustained no damage. F/O MORAN and his crew landed safely at 16.41 hours, as directed.

The third air crew to be posted to R.A.F. Chivenor was that of Australian, F/O Neville BARSON, R.A.A.F., which arrived on 23 January 1943. On 29 January 1943, F/L J. L. HERON, P/O H. C. J. SPRAGGS, P/O B. A. LIVINGSTON, and P/O T. D. WRIGHT were posted from R.A.F. Thorney Island to R.A.F. Chivenor. During the month of February, the squadron was to complete thirty operational sorties from Chivenor, and one from R.A.F. St. Eval in Cornwall. Operational sorties were usually of between ten to twelve hours in duration, although the maximum was about sixteen hours. Equipped with the 10 millimetre A.S.V. radar, and long range navigational systems, the aircraft operated out over the North Atlantic and Bay of Biscay. Most of the patrols were long and boring, with the possibility of a sudden, intensive few minutes, if a target was identified and sighted. The Fortress could carry six, 500 lb, or fourteen 250 lb, depth charges, which were usually set to explode at a depth of twenty-five feet.

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<sup>1</sup> S/E stood for Special Equipment, which was the codename given to the Air to Surface Vessel radar used by Coastal Command. All references to it in the Operations Record Book of Coastal Command squadrons simply refer to S/E.

The first operational sortie of the month was flown by F/L J. L. HERON and his air crew on 1 February 1943. This was their first sortie from R.A.F. Chivenor. The air crew were:

43285	F/L J. L. HERON, R.A.F.	Pilot & Captain
1370313	Sgt A. KENNEY, R.A.F.V.R.	Second Pilot
R/86825	W/O D. H. McLEAN, R.C.A.F.	Navigator (B)
R/82680	F/Sgt R. S. SANDELIN, R.C.A.F.	WOp/AG
1128327	Sgt J. F. CLARK, R.A.F.V.R.	WOp/AG
1172715	Sgt J. FAGE, R.A.F.V.R.	WOp/AG
1251959	Sgt D. M. DUNN, R.A.F.V.R.	WOp/AG
	Sgt W. B. BRITT	WOp/AG

They took off at 08.47 hours in Fortress Mk. IIA, FK.198 (M/59) on an anti-submarine sortie, loaded with fourteen 250 lb Amatol depth charges. S/E was not fitted on this aircraft. They sighted two Spanish trawlers, but otherwise the patrol was uneventful. The poor visibility did not assist the air crew, but they returned to base and landed at 17.35 without incident.

On **4 February**, F/L J. L. HERON flew his second sortie from R.A.F. Chivenor, with his air crew, although without Sgt D. M. DUNN. They took off at 07.45 hours on the usual anti-submarine sortie, and landed at 18.16 hours without having anything of interest to report.

On **11 February**, S/L EVANS, D.F.C., and his air crew, were detailed to provide an anti-submarine escort to Convoy K.M.F. 9. They took off at 07.50 hours in Fortress J/59, and carried out the patrol at 500 feet in poor weather with patches of sea fog. They located a destroyer that had lost the convoy in the poor visibility, which signally 'Where is convoy?' J/59 responded 'Will return when convoy contacted'. They found the convoy at 13.35 hours after a square search. After about an hour's search, J/59 could not find the destroyer again in the low cloud and patchy sea fog. They left the convoy at 15.26 hours. Due to the weather conditions, they were diverted to Beaulieu, in Hampshire, but when over Beaulieu, they were told to proceed to R.A.F. Holmsley South, where they landed safely at 19.45 hours.

A second sortie was flown on **11 February**, by F/L J. L. HERON and his air crew, including Sgt DUNN, but without Sgt FAGE. They took off at 10.53 hours on an anti-submarine patrol in Fortress Mk. IIA, FK.202 (B/59). They conducted the patrol without incident, and landed at R.A.F. Beaulieu in Hampshire at 21.56 hours due to the weather in North Devon. They were diverted to R.A.F. Holmsley South, but saw the flare path at Beaulieu so landed there.

On **13 February**, F/L J. L. HERON and P/O T. D. WRIGHT were attached to No. 21 School of Technical Training at R.A.F. Burtonwood, Cheshire, for an engine handling course some of their colleagues had completed at the beginning of the month.

On **22 February**, for the first time since its arrival at R.A.F. Chivenor, No. 59 Squadron was able to fly three operational sorties in the same day. First away at 04.34 hours was F/O T. D. WRIGHT and his air crew on an anti-submarine patrol in Fortress E/59. F/O WRIGHT took his usual air crew, except that Sgt H. A. EWART did not fly with them on this occasion, reducing the air crew to seven. They completed the patrol without incident, in good weather, and sighted a convoy that was probably MKF 9. The convoy took considerable evasive action, and would not respond to signals requesting position. E/59 used their S/E for navigation, and landed safely at 16.28 hours.

Next away were P/O S. G. Du-PLOOY and his air crew, who were tasked with escorting Convoy M.K.F. 9. They took off at 13.20 hours in Fortress D/59 (FL.463), and searched for the convoy for two hours. Although they sighted one large motor vessel, it was not part of that convoy. Having failed to locate the convoy, the aircraft returned, but had to land at R.A.F. St. Eval in Cornwall because of the weather conditions at R.A.F. Chivenor. They landed at St. Eval at 01.32 hours. The third sortie was undertaken by F/O A. R. NEILSON and his usual air crew of six. They were detailed for an anti-submarine patrol, and took off at 13.32 hours in Fortress J/59 (FK.209). They sighted nothing of interest, but because of the low cloud over R.A.F. Chivenor, they landed at R.A.F. St. Eval instead. They were down safely at 00.56 hours.

March 1943 dawned with No. 59 Squadron based at R.A.F. Chivenor in North Devon. The build-up of aircraft and air crew at their new base had been slow, but they had achieved one attack on a U-boat, albeit with an unclear outcome. The new month started off much as the old one had finished. On **1 March**, F/O Neville BARSON, R.A.A.F., and his air crew were tasked with an anti-submarine patrol over the North Atlantic. They took off at 07.50 hours, in Fortress Mk. IIA, D/59 (FL.463), loaded with seven 250 lb Torpex depth charges. At 12.46 hours, when in position 47° N, 18° W, a fully surfaced U-boat was sighted while D/59 was flying at 2,000 feet. They attacked the U-boat, but their aircraft received significant damage, and they had to return to base.

On **3 March**, F/O H. D. KELVIN and his usual air crew took off at 07.57 hours in Fortress C/59 (FL.462) for a routine anti-submarine patrol. They also sighted and attacked a U-boat, but the result was inconclusive.

Also on **3 March**, F/L J. L. HERON, R.A.F. and his air crew flew an anti-submarine sortie. Sgt R. G. MONTGOMERY, R.C.A.F. flew with this air crew as an extra gunner. They took off at 09.56 hours in Fortress Mk. IIA, T/59 (FA.703) and carried out the patrol as ordered. At various times, they sighted ten Spanish fishing trawlers, and landed safely at 21.00 hours.

The first sortie on **11 March** was another air/sea rescue search to attempt to locate the lifeboat sighted by F/O ALLEN and his air crew. F/O A. R. NEILSON and his air crew were airborne at 07.13 hours in Fortress P/59, and in spite of searching the region where the lifeboat had been seen two days previously, they could not locate it. They landed at 18.07 hours. At 11.26 hours, F/L J. L. HERON, R.A.F. and his air crew were airborne to escort Convoy MKF 10A.

They flew in Fortress R/59 (FA.704) and searched for three hours, forty minutes, but failed to locate the convoy. They landed at 00.01 hours on 12 March. Also detailed to escort the same convoy was S/L P. G. EVANS, D.F.C., R.A.F., who took off at 13.43 hours with his air crew in Fortress A/59. They met the convoy, and escorted it for one and half hours, before landing safely at 01.43 hours, 12 March.

On **15 March**, P/O S. G. Du-PLOOY, D.F.C., and his air crew were detailed to escort Convoy MKF 10B., in Fortress A/59. They took off at 03.24 hours, but could not find the convoy even following a prolonged search. They returned to base and landed at 14.12 hours. Next up at 12.44 hours was F/L J. L. HERON, R.A.F. and his usual air crew, again to escort Convoy MKF 10B., using Fortress T/59. They searched for two hours without success, after which the aircraft was recalled to base due to the deteriorating weather conditions. They landed safely at 23.15 hours. The third sortie that day to escort Convoy MKF 10B was also unsuccessful. F/O R. J. WEATHERHEAD, R.C.A.F., and his air crew were airborne at 14.23 hours in Fortress C/59, but were recalled before reaching the position where the convoy was supposed to be. They landed at R.A.F. Chivenor at 21.15 hours.

On **19 March**, P/O L. G. WOODS and P/O H. G. BARTON were appointed to the commissioned rank of Pilot Officer, on probation, in the R.C.A.F.; WOODS with effect from 7 January 1943 and BARTON with effect from 14 January 1943. At 14.24 hours, F/L J. L. HERON, R.A.F., and his usual air crew took off in Fortress D/59 in order to escort Convoy KMF 11. They searched for one hour, but failed to find the convoy, so returned to base where they landed at 02.05 hours on 20 March.

On **22 March**, three operational sorties were flown. The first in the hands of F/O A. R. NEILSON and his air crew took off at 04.04 hours on an anti-submarine patrol sing Fortress C/59. They sighted nothing of interest, and landed at 13.48 hours. F/O E. E. ALLEN, R.C.A.F. and his air crew took off at 04.29 hours, on another anti-submarine sortie in Fortress V/59 (FA.698). They sighted nothing of interest, and landed at 15.07 hours. Lastly, F/L J. L. HERON, R.A.A.F. and his air crew took off at 09.03 hours in Fortress R/59 on a routine anti-submarine patrol, and having sighted nothing of interest, landed at 19.19 hours.

On **23 March**, after a quiet period for the squadron, tragedy was to strike for the first time since the squadron had arrived at R.A.F. Chivenor. Two sorties left as usual just before daybreak, F/O R. J. WEATHERHEAD and his usual air crew lifted off at 04.30 hours on a routine anti-submarine patrol in Fortress J/59 (FK.209). In addition to the usual aircrew, P/O R. A. PHILLIPS flew with them as an extra air gunner. At 13.10 hours, a signal was received from J/59 which stated: '*Am being attacked by enemy aircraft*'. Nothing further was heard from J/59, or any of the air crew, and J/59 failed to return to R.A.F. Chivenor. Just fifteen minutes after J/59 had taken off, F/L F. G. TILLER and his air crew (plus P/O A. F. GOODMAN) took off in Fortress T/59 on an anti-submarine patrol. They had a quiet trip, and having sighted nothing of interest, landed at 15.49 hours.

On **26 March**, the squadron was tasked with two sorties, one of which was to end in tragedy. At 11.58 hours, F/L J. L. HERON, R.A.F. and his air crew took off on an anti-submarine patrol in Fortress V/59, FA.698. The second patrol was completed without incident. F/O H. D. KELVIN and his air crew took off at 12.04 hours on a routine anti-submarine patrol using Fortress P/59. They reached a position of 47° N, 11° W, and managed to land safely at R.A.F. Chivenor at 22.47 hours.

The routine of No. 59 Squadron continued on **27 March**, such is the nature of wartime. At 07.01 hours, F/O M. CHARLTON, R.A.A.F. and his air crew were airborne in Fortress R/59 on an anti-submarine patrol. Nothing of any significance occurred, and they landed safely at 18.16 hours. P/O S. G. Du-PLOOY, D.F.C., and his air crew took off at 08.11 hours on a routine anti-submarine sortie. Again, nothing of significance occurred, and D/59 landed safely at 18.33 hours.

These proved to be the last sorties during No. 59 Squadron's short detachment to R.A.F. Chivenor. On 27 March 1943, No. 59 Squadron officially moved from R.A.F. Chivenor to R.A.F. Thorney Island in Hampshire. The reason for the transfer was that enough Liberator Mk. V aircraft had arrived in the U.K. in order to equip it with these aircraft, instead of the Fortress.

## Circumstances of the Crash

On Friday, 26 March 1943, Fortress FA.698 (V/59) took off from R.A.F. Chivenor at 11.58 hours on an anti-submarine patrol over the Bay of Biscay. The air crew of ten were:

43285	F/L J. L. HERON, R.A.F.	Pilot & Captain
1370313	Sgt A. KENNEY, R.A.F.V.R.	Second Pilot
J/16692	P/O D. H. McLEAN, R.C.A.F.	Navigator (B)
R/82680	F/Sgt R. S. SANDELIN, R.C.A.F.	WOp/AG
1128327	Sgt J. F. CLARK, R.A.F.V.R.	WOp/AG
1172715	Sgt J. FAGE, R.A.F.V.R.	WOp/AG
141755	P/O D. M. DUNN, R.A.F.V.R.	WOp/AG

As the aircraft was returning to its base, the weather over North Devon deteriorated, with low cloud over the area. At 22.10 hours, the Fortress crashed into high ground at Luscott Barton, near the village of Marwood in North Devon. Four of the air crew survived, and three died as a result of the crash. The Operations Record Book for No. 59 Squadron simply records: *'F/LT J. L. HERON and crew detailed for A/S patrol. This aircraft crashed near base in bad visibility. The following members of the crew were killed:- P/O D. M. DUNN, Sgt FAGE, F/Sgt SANDELIN, R. S..*

The Medical Officer at R.A.F. Chivenor, S/L D. C. FARQUHARSON, was notified of the crash at 22.30 hours by Flying Control. The information they received was that a Fortress had crashed and burst into flames about a quarter of a mile west of the village of Marwood. The Medical Officer went to the scene with the ambulance immediately. On his arrival, the Medical Officer could see the aircraft burning on the top of a hill.

The ambulance crew found it impossible to get the ambulance anywhere near the crash site. The ambulance crew and Medical Officer made their way to the scene on foot, where they found four of the air crew, F/L HERON, P/O McLEAN, Sgt CLARK and Sgt KENNY together, and all suffering from mild shock. F/L HERON had a cut above the right eye, and was taken to the Station Sick Quarters for treatment. He had four sutures inserted in the wound. Sgt KENNY had two upper incisors knocked out, but no other injuries. P/O McLEAN complained of his back, which the Medical Officer decided was the result of muscle strain and bruising. Sgt CLARK met the Medical Officer at the top of the hill and guided him to the position of F/Sgt SANDELIN. Upon examination, he was found to have suffered a fractured skull, fractures of the right femur, right tibia and fibula, and a large laceration on the right leg. His left leg had sustained a compound fracture of the femur, tibia and fibula. He died on the stretcher while being carried to the ambulance.

Sgt CLARK then led the medical personnel to Sgt DUNN, who was found lying about 500 yards from the aircraft. He had suffered a fractured skull, fracture to femur, Potts fracture right leg, and a fracture to his right humerus. He died en-route to the North Devon Infirmary in Barnstaple. Both F/Sgt SANDELIN and Sgt DUNN were examined by the medical doctors at the North Devon Infirmary, and found to be dead on arrival. The body of Sgt FAGE was recovered from the crash site, and taken directly to the Station Mortuary at R.A.F. Chivenor. He had suffered a fractured skull and facial bones, fractured right femur, and fractures to all his metatarsal bones in his right foot. Sgt CLARK was detained at the North Devon Infirmary in Barnstaple for observation, having been admitted suffering from shock. F/L Jim HERON was admitted to the Squadron Sick Quarters at R.A.F. Chivenor, and was discharged on 2 April 1943.

1128327 Sergeant James Farquhar CLARK, R.A.F., was awarded the George Medal for his bravery in rescuing his colleagues. The award was published in the London Gazette of 27 July 1943, with the citation reading:

*One night in March 1943, Sergeant CLARK was the wireless operator/air gunner in a Fortress aircraft which crashed and caught fire on the top of a hill, in conditions of poor visibility. Sergeant CLARK and three other members of the crew escaped with minor injuries, and Sergeant CLARK realised that three further members of the crew were in the wreckage. Despite the blazing petrol tanks, and the presence of explosives which he knew were in the aircraft, he immediately re-entered the fuselage, and with the assistance of Leading Aircraftman FRENCH, who had arrived at the scene after having seen the flames from his bedroom, dragged the three airmen from the wreckage. Sometime afterwards, an explosion occurred, shattering the aircraft and breaking glass a quarter of a mile away.*

For his part in the rescue, 1197934 Leading Aircraftman Albert FRENCH, R.A.F., was awarded the British Empire Medal (B.E.M.).



## Court of Inquiry

The Commanding Officer of R.A.F. Chivenor convened a Court of Inquiry into the loss of Fortress FA.698. The circumstances of the loss of the aircraft were obvious, as it had flown into a hill in bad weather while returning to base after a long patrol out over the Bay of Biscay. The important question was why?

The Court of Inquiry concluded that a false reading had been given to the pilot by the Special Equipment (A.S.V.) operator, who claimed to have experienced 'mushe' and other problems in obtaining accurate readings. The Court did not apportion any blame to the pilot for the crash.<sup>2</sup>

The Air Officer Commanding No. 19 Group stated that he was unable to agree with the findings. He concluded that the pilots had committed an error of judgement in not carrying out a full and correct Beam Approach Beacon System procedure. He also adjudged that the pilots had committed the fatal error in losing height whilst still outside the line of the dots and dashes put out by the B.A.B.S. transmitter at R.A.F. Chivenor (see below).

## Accidents Investigation Branch

The Accidents Investigation Branch of the Air Ministry may have investigated this accident, but it appears that any accident report has not survived.

## Beam Approach Beacon System (B.A.B.S.) at R.A.F. Chivenor

One of the most significant factors in this accident is the development, training, and use of the Beam Approach Landing System (B.A.B.S.). The need for a system by which aircraft could be landed safely by the pilot in conditions of bad weather or poor visibility was recognised before the Second World War. In retrospect, the development of such a system was slow and erratic, particularly when compared to the advances made in munitions and armaments. Within Coastal Command, although the need for a beam landing system was accepted (eventually), it was not seen as a high priority.<sup>3</sup> The first system introduced within the Royal Air Force was called Standard Blind (later Beam) Approach (S.B.A.). It provided directional information for air crew landing in bad visibility, but not altitude.

Within Coastal Command, the development and use of the Air-to-Surface Vessel (A.S.V.) Radio Direction Finding system, later known as radar, allowed a more sophisticated Beam Approach system to be used. This added a radar responder beacon to the Lorenz system, and was known as the Beam Approach Beacon System (B.A.B.S.).

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<sup>2</sup> Form 1180 FA698. It is believed that the S/E Operator was W/O SANDELIN, who died in the crash.

<sup>3</sup> See: Conclusions, based upon WADDINGTON, Professor C. H. *Operational Research against the U-Boat* (Nottingham, Partizan Press, 1973)



The radar responder beacon was based on the A.S.V. homing beacon. Trials were commenced at R.A.F. Limavady in County Londonderry in early 1941. No. 502 Squadron was based there at the time, with Whitley aircraft, so the trials involved these two elements. The first A.S.V.-based Blind Approach system was known as B.A.B.S. Mk. 1C. The Coastal Command Development Unit at R.A.F. Carew Cheriton undertook further trials with the system. Further trials were conducted at R.A.F. Limavady, R.A.F. Wick in Caithness, and R.A.F. St. Eval in Cornwall. In November 1941, Headquarters Coastal Command declared that the trials of the B.A.B.S. system showed that it fulfilled operational requirements, and requested the manufacture of one-hundred and sixty-eight fixed, and twenty-eight mobile beacons. The Air Ministry approved this request, with the contract being given to Murphy Radio in December 1942.

The A.I./B.A. system was trialled at R.A.F. West Mallory, and a report dated 4 August 1942 states that No. 29 Squadron were satisfied with the installation, and that the pilots had confidence in using it in the method of approach. This rectified the situation reported in June that a back beam and spurious sectors were being experienced in use. The two prototype A.S.V./B.A. installations for Coastal Command were located at R.A.F. St. Eval in Cornwall, and R.A.F. Chivenor in North Devon. No date for their commissioning is known, they were definitely in operation by 16 April 1943, and A.S.V./B.S. was a factor in the crash of Fortress FA.698 on 26 March 1943 at Luscott Barton, near R.A.F. Chivenor.

The first meeting held at the Air Ministry to discuss the A.I. and A.S.V. R.D.F. Beam Approach Installations was held on 6 October 1942. It was agreed for one airfield from Fighter Command, and one from Coastal Command, would be chosen for the installation of the complete pre-production trial equipment; with R.A.F. West Mallory undertaking this role for Fighter Command. There is mention of trials at West Mallory, but no mention of any comparable trials at a Coastal Command.<sup>4</sup> On Monday, 15 February 1943, the second meeting was held at the Air Ministry to discuss A.I. and A.S.V. beam approach installations. At this meeting, it was confirmed that the first prototype mobile A.S.V. beam approach system was nearing completion.

The installation at R.A.F. Chivenor in North Devon, was one of the first Coastal Command bases to be equipped with A.S.V./B.A., as by 1943 it was one of the two main airfields used to prosecute the war against the U-boats in the Bay of Biscay. Preliminary trials of the sites selected for the installation were made at Chivenor on 12 and 13 April 1943. The team undertaking the trials comprised F/L SOUTHAN, F/O HANSON and F/O HARVEY from the B.A.B.S. Familiarisation Party, and S/L CLARKSON, Mr. C. WILLIAMS, Mr. MICHIELS, Mr. BURGESS and Mr. M. BIRCHALL from the Royal Aircraft Establishment (R.A.E.). Their objective was to examine the sites selected for both the fixed and mobile B.A.B.S. equipment, and to exchange notes with the Familiarisation Party. It is assumed, although not stated, that the Familiarisation Party were either drawn from personnel at R.A.F. Chivenor, or were based there to manage the introduction of the new system and to train the air crew how and when to use it.<sup>5</sup>

<sup>4</sup> AVIA 15/1395 Minutes of Meeting of 6 October 1942.

<sup>5</sup> AVIA 15/1395

They spent the morning of 12 April examining the proposed sites, which they concluded were reasonably good. The only issues raised were the close proximity to the bomb dump, and the location of the main hangers, which were built of steel, and therefore could affect the radio waves emitted by the equipment. The eight members of the team met in the afternoon, with the Familiarisation Party explaining their experience to date and their methods of working. They reported that they had seen signs of course distortion on occasions, but the evidence was of little value to the personnel from the R.A.E.. Several test flights were made on 13 April, initially with the B.A.B.S. beacon at the eastern end of the main runway. There was no sign of interference, but it was noticeable that the operator often did not pass information to the pilot until several keying impulses had been shown.

Further flights were made in the afternoon with the B.A.B.S. equipment located at the north-west end of the North-West to South-East runway. Very slight interference was noted, but the effect was deemed to be negligible. The transmitter was moved to another location further away from the hangers, and then to a location 250 yards from the hangers. Course bends resulting from interference were noted, with the maximum distortion occurring at a range of five to six miles, and three to four miles. In addition, a false equi-signal in the dash sector was observed at a range of eight to nine miles. Again, it was observed that the operator often failed to pass to the pilot the slight keying due to interference, and it was only when the keying persisted for more than three to six seconds that the information reached the pilot. The false equi-signal was passed to the pilot on the one occasion it was encountered.<sup>6</sup>

The conclusions were that the siting plan for the B.A.B.S. equipment was adequate, but that the R.D.F. display tended to obscure small keying impulses, which made interference unnoticeable that would be apparent with an audible system. The tests showed that the equipment gave an equi-signal width of one to three degrees, which was suitable to guide aircraft on to the runway. The relatively slow speed of the equipment in the aircraft tended to mask course bends and false equi-signal zones, so only major course bends and false zones will be apparent to the operator. Any course bends were likely to be evident at a distance from the runway, and not close to the airfield due to their short duration. The degree of interference masking was found to be dependent on the operator and the conditions under which he was working.<sup>7</sup>

The third meeting of the R.D.F./B.A. Committee was held at Whitehall on 15 April 1943, under the chairmanship of W/C N. D. GILBART-SMITH. S/L CLARKSON reported on his recent visit to R.A.F. Chivenor, and stated that the R.A.E. had approved the sites chosen for the equipment as the only ones possible. He noted the presence of the hangers, and stated that the standard clearance of 500 yards must not be relaxed without flight testing the approach.<sup>8</sup>

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<sup>6</sup> Ibid.

<sup>7</sup> Ibid. Of note, this meeting took place about two weeks after the loss of Fortress FA.698 of No. 59 Squadron, which crashed at Luscott Barton while attempting a landing using the new B.A.B.S. system. The report is dated 22 April 1943.

<sup>8</sup> Ibid: Minutes of Meeting held on 15 April 1943.

By April 1943, B.A.B.S. was in use at only four bases: R.A.F. Chivenor in North Devon, R.A.F. St. Eval in Cornwall, R.A.F. Colerne in Wiltshire and R.A.F. Middle Wallop in Hampshire. Of these, only the first two can be considered operational Coastal Command airfields. The Ministry of Aircraft Production authorised the manufacture of five B.A.B.S. sets of equipment per week, but it appears this was not met. In April 1943, No. 10 (Beam Approach Training) Flight at R.A.F. Leuchars in Fife changed its syllabus and role to train pilots in the use of the B.A.B.S. system, but events overtook the roll-out of the system within Coastal Command.

No. 1510 (Beam Approach Training) Flight was formed on 8 November 1941 by the redesignation of No. 10 (Blind Approach Training) Flight at R.A.F. Leuchars, which had been formed on 9 December 1940. This was Coastal Command station, and the Flight had a strength of three Airspeed Oxford aircraft, and one as an immediate reserve. On 25 December 1942, it was redesignated as No. 1510 (Beam Approach Beacon System) Flight and now had on strength three Avro Anson aircraft fitted with A.S.V. radar, and one aircraft as an immediate reserve.<sup>9</sup> The date that the title of the Flight changed is also shown as March 1943.<sup>10</sup>

The Operations Record Book for the Flight stated that No. 1510 (B.A.T.) Flight ceased training on S.B.A. on 13 April 1943, and No. 1 B.A.B.S. Course, comprising six Pilots and six Wireless Operators/Air Gunners, arrived in 27 April 1943. The first A.S.V. (B.A.B.S.) equipped Avro Anson arrived at R.A.F. Leuchars on 13 March 1943, and the training of the Instructors began on 5 April. On 8 April, three instructors flew to R.A.F. Thornaby to inspect their B.A.B.S. Link Trainer. On 21 April, a B.A.B.S. training exercise was held at R.A.F. Wick, Caithness, for the Instructors at No. 1510 (B.A.B.S.) Flight. The exercise is reported as being successful. On 24 April 1943, the Instructors received training on the Beam Approach system at R.A.F. Leuchars, three days before the first course of students arrived.<sup>11</sup>

A number of technical faults became apparent with the B.A.B.S. equipment. One was called frequency-pulling, and occurred when the system switched between aerials. It resulted in the indications being given to the operator being incorrect, although the operator may not realise this. Each set of B.A.B.S. equipment had to be tested and calibrated, and the beam alignment checked two or three times a day. If the beams were not set on the correct frequency, a false centre-signal could be generated. Within the aircraft, the B.A.B.S. display could appear confusing, and a degree of knowledge and experience was required to be able to interpret it correctly.<sup>12</sup>

<sup>9</sup> STURTIVANT, Ray & HAMLIN, John *R.A.F. Flying Training and Support Units since 1912* (U.K., Air Britain (Historians) 2007) p.125-126

<sup>10</sup> LAKE Alan *Flying Units of the R.A.F. – The ancestry, formation and disbandment of all flying units from 1912* (Shrewsbury, AirLife Publishing Ltd., 1999)

<sup>11</sup> AIR 29/873/1

<sup>12</sup> Ibid p.468

In December 1942, an improved version of B.A.B.S. was developed, for use with aircraft fitted with the Identification Friend or Foe (I.F.F.) Interrogators. Ericssons received the contract to manufacture four-hundred sets of equipment, but progress was slow, as Lucero had a low priority. On 21 April 1943, the Air Ministry decided that Lucero was to have the same priority as A.S.V. Mk. III, as it was an integral part of the overall system. In May 1943, one prototype and one production model, both using the A.S.V. beacon frequencies, was trialled at R.A.F. Chivenor by the B.A.B.S. Familiarisation Party. They used beacons at Chivenor, Angle Head, St. Eval, and in the Scilly Islands, with the B.A.B.S. Mk. 1C equipment at Chivenor. The results were inconsistent, but led to some recommendations to improve the system. Further trials at R.A.F. Beaulieu in June 1943 by the Coastal Command Development Unit proved the value of Lucero alongside A.S.V. Mk. III. From mid-1943, Lucero was installed on Coastal Command aircraft equipped with the A.S.V. Mk. III, and used operationally.

For more information on the development and use of B.A.B.S., please see: 'A Concise History of Beam Approach Landing' by this author.

## The Air Crew

### **43285 Flight Lieutenant James Lee HERON, R.A.F.**

James Lee HERON was born on 6 November 1914, on a remote sugar cane farm in Queensland, Australia. His parents were James and Eva Fanny HERON, of Silent Grove, Queensland, Australia, and he had at least one sibling, his brother Roy.

After leaving school, Jim HERON worked as a sugar chemist in the North Queensland town of Babinda. In 1938, he tried to fulfil his ambition to fly by applying to join the Royal Australian Air Force. He was unsuccessful, but in the following year, he was selected to join the Royal Air Force. He borrowed £40 from his father, and set off for the U.K. just prior to the outbreak of the Second World War. HERON arrived at Southampton in October 1939, and completed his basic flying training at Anstey, going solo for the first time on 20 November 1939.

On 10 April 1940, James HERON was granted a short service commission for four years in the rank of Acting Pilot Officer, on probation, on commencing his training at R.A.F. Cranwell. He was confirmed in his appointment on 27 July 1940. From R.A.F. Cranwell, P/O HERON was posted to Coastal Command, and was sent to R.A.F. Squires Gate, Blackpool, for his course at the School of Air Navigation based there. He wanted to be posted to flying boats, but found himself posted to R.A.F. Wick in Caithness to commence his operational service patrolling the North Sea, and the Norwegian coast. He undertook his first operational sortie on 8 January 1941, but two days later, he broke his ankle as his aircraft came out of a dive, as he was taking photographs, and he was thrown to the floor. He returned to operational duties on 6 April 1941, back at R.A.F. Wick. During his time in hospital, he met Gordon HARPER, who befriended Jim HERON, and introduced him to his family. Ten years later, he married Gordon's daughter, Helen.

On 16 July 1941, P/O HERON was posted to Reykjavik in Iceland to join No. 269 Squadron. He spent just over twelve months flying from Iceland, until he returned to the U.K. in late 1942. On 27 July 1941, he was confirmed in his appointment and promoted to the war substantive rank of Flying Officer. A year later, on 27 July 1942, F/O HERON was promoted to the war substantive rank of Flight Lieutenant. On his return to the U.K., he was posted to R.A.F. Thorney Island, and joined No. 59 Squadron as a pilot and captain. He learned to fly the Consolidated Liberator, but then his squadron was converted to the Boeing Fortress. F/L HERON and his air crew transferred from R.A.F. Thorney Island to R.A.F. Chivenor on January 1943, and flew their first operational sortie on 1 February 1943. Their fateful sortie on 26 March was the ninth that F/L HERON and his air crew had flown. HERON had a total of one-thousand and three hours solo flying in daytime, with one-hundred and thirty-three on the Fortress. He had a total of forty-nine hours solo night flying, of which twenty were on this type of aircraft.

Following the air crash, F/L HERON was detained in hospital for a time. On 16 October 1943, F/L HERON was transferred to the R.A.F. Reserve, but remained on active service. He returned to service with No. 59 Squadron, and flew Consolidated Liberators from R.A.F. Ballykelly in County Londonderry. In 1945, he was sent to Florida to convert to the DC-4 Skymaster transport aircraft, and was then posted to Ceylon. Jim's brother A/404820 Sergeant Royal George HERON, R.A.A.F., who was known as Roy, died on 21 January 1942 while serving with the R.A.F. in the U.K.. He was twenty-five years' of age, and is buried in Section Q, Grave 204, of the Manchester Southern Cemetery in Lancashire. The inscription on his grave reads: HE GAVE HIS LIFE FOR HIS COUNTRY. PROUDLY WE REMEMBER

After the war, Jim HERON joined the British Overseas Airline Company, known as BOAC, with effect from 7 January 1946. He flew with them until retirement in 1971, finishing as a captain on the VC 10 aircraft. In 1951, he married Helen HARPER, and they had three children together. Jim worked for a couple of years with the Department of Civil Aviation in Zambia, and also worked in Dhaka, Bangladesh for a short while. He and his wife moved to Inverness, but in 1983, they emigrated to Australia, where he lived until his death. He died on 23 October 2000 following a tragic accident in Sydney.

### **1370313 Sergeant Arden KENNEY, R.A.F.V.R.**

Arden KENNEY was born in Hamilton, Lanarkshire, on 5 June 1921. His father had been a Serjeant-Major in The Cameronians (Scottish Rifles) at the beginning of the Great War, and saw active service at Mons in 1914. He was wounded in 1915, and returned to the U.K., where he trained new recruits at the Regimental Depot. His son, Arden, joined the Royal Air Force before the commencement of the Second World War as a Halton apprentice. Having been selected for pilot's training, he was sent to Florida in the U.S.A. for his basic training. He came back to the U.K. aboard a Catalina flying boat. On the date of the accident, he had four-hundred and forty hours flying experience, with one-hundred and thirty-five on the Fortress. His night time hours were the same as for F/L HERON.

Following the crash, Sgt KENNEY was admitted to hospital due to his injuries, where he contracted TB. In consequence, he had half of a lung removed. For his war service, Sgt KENNEY received the:

- 1939 – 1945 Star;
- The Atlantic Star;
- The War Medal.

Post-war, he managed to secure a course at the University of London to study electronics, which is where he met his wife. In 1959, he started MacGregor Industries, making insulation components for the electronics industry, mainly for aircraft avionics and radar. In the 1960's, the company began manufacturing radio control systems for model aircraft, and became the leading U.K. manufacturer of these products. KENNEY retired in 1986, on his sixty-fifth birthday, and spent much of his retirement in his villa in Spain. He disliked flying, although he did fly out to Malta for a family holiday. He died in England in 1998, when his lungs gave out.

#### **R/86825 Warrant Officer Donald Harry McLEAN, R.C.A.F.**

Donald Harry McLEAN was born on 31 July 1915, and came from Edmonton, Alberta, Canada. He was the son of Harry and Laura McLEAN, who lived in Kitchener, Edmonton. After leaving school, he worked in the coal business. Don McLEAN enlisted in the Royal Canadian Air Force, and qualified as a Navigator and Air Bomber. He served with No. 59 Squadron during the period it was equipped with Lockheed Hudson aircraft, and flew with P/O E. E. ALLEN, a fellow Canadian. He was replaced in that air crew by another navigator, apparently due to 'battle fatigue', and moved to join F/L HERON, who was on his second tour.<sup>13</sup> He survived the air crash on 26 March 1943, but received serious back injuries. As a result of his injuries, he was repatriated to Canada in September 1943. Subsequently, W/O McLEAN received a commission in the R.C.A.F. as a Pilot Officer, with the new service number J/16692. As F/O McLEAN, he served as an instructor at No. 8 Bombing and Gunnery School in Canada. On 7 December 1944, he was promoted to the rank of Temporary Flight Lieutenant. After the Second World War, he moved to Santa Barbara, California, U.S.A., where he died on 30 October 1983, aged sixty-eight years.

#### **R/82680 Flight Sergeant Robert Simeon SANDELIN, R.C.A.F.**

Robert Simeon SANDELIN was born on 9 August 1922 in Cornwall, Ontario, Canada. His family lived at 2, Sydney Street, Cornwall, Ontario. His father was Gustav SANDELIN, who was born in Sweden, and was a conductor on the Sydney Street Railway. His mother was Mary SANDLEIN (nee MELLAR), who was born in Montreal, Canada. Both of his parents were Canadian citizens. Their denomination was Presbyterian. Robert attended the Cornwall Public School from 9130 until 1937, when he progressed on to the Cornwall Collegiate for one year. He then went on to study at the Cornwall Technical College in 1938, on an electrical course, until 1940. His main interest was amateur photography, and he did his own printing and developing. He was not a sportsman, and only occasionally went swimming and boating.

<sup>13</sup> See: [http://number59squadron.com/memorial/memorial\\_mclean.html](http://number59squadron.com/memorial/memorial_mclean.html)



Robert served as a Private in the Canadian Army from July until November 1939, when the unit was demobilized. He enlisted in the Royal Canadian Air Force on 24 January 1941, and was shown as being 5' 8½" in height, and one-hundred and thirty-four pounds in weight. He had a fair complexion, hazel eyes, and light brown hair. At his selection interview, he was described as being: *'A nice young man. Very polite, alert, clean cut, confident, pleasing manners, eager to serve in the R.C.A.F. in most suitable capacity. Immature appearance, but with training will develop into a good Air Crew member'*.

SANDELIN commenced his training at No. 2 Manning Depot, R.C.A.F. Brandon, Manitoba, on 26 January 1941, and moved to No. 6 Bombing and Gunnery School in Saskatchewan on 22 February. This was for his basic training, and then he undertook his wireless training as a member of Course No. 14 at No. 2 Wireless School in Calgary from 31 March until 17 August 1941. He passed ninetyeth out of a class of two-hundred and twenty-eight, and was authorised to wear the Wireless Operator's badge. SANDELIN was not assessed as suitable for a commission. He was promoted to the rank of Leading Aircraftman on 1 May 1941. SANDELIN spent time in the base hospital from 29 April until 8 May 1941, while training at No. 2 Wireless School.

LAC SANDELIN completed his training at No. 4 Bombing & Gunnery School at R.C.A.F. Fingal, Ontario, from 18 August until 15 September 1941, as a member of Course 14. He flew in Fairey Battle aircraft achieving a hit to rounds ratio of 5.1%. He finished as twenty-third in the class of thirty-one, and passed the course being described as: *'a good average type, appeared keen in his work'*. On completion of his course, he was awarded the Wireless Operator/Air Gunner's brevet, and promoted to the rank of Temporary Sergeant. From Fingal, he was posted to No. 31 Operational Training Unit at R.C.A.F. Debert in Nova Scotia, to be taught the skills required for maritime patrol duties. While training at Debert, he received two charges on his General Conduct Sheet. The first was on 3 November 1941, for being Absent without Leave (A.W.O.L.) from 00.01 hours on 3 November, until reporting to the R.A.F. Police in the Guard Room at 21.45 hours on 6 November. For being A.W.O.L. for three days, twenty-one hours and forty-four minutes, he was Admonished, and forfeited four day's pay. On 5 January 1942, he was again A.W.O.L., this time from 00.01 hours in 5 January, until 23.50 hours on 10 January; a total of five days, twenty-three hours and forty-nine minutes. He was sentenced to be Reprimanded, and to forfeit six day's pay. These were the last blemishes on his character, and he was not charged with any other offence during his service with the R.C.A.F.. Sgt SANDELIN was admitted to the base hospital on 12 January, and discharged on 19 January, although the reason for this is not known.

Having departed Canada on 8 February, Sgt SANDELIN arrived in the U.K. on 20 February 1942, and was posted to No. 3 Personnel Reception Centre in Bournemouth. He was promoted to the rank of Temporary Flight Sergeant on 1 July 1942. From there, he was posted to No. 6 (Coastal) Operational Training Unit at R.A.F. Thornaby with effect from 10 March 1942, where he trained on Lockheed Hudson aircraft for a posting to Coastal Command.



On 15 April 1942, he was posted to No. 407 Squadron, a Hudson equipped unit that was based at R.A.F. Docking in Norfolk. While serving with No. 407 Squadron, Rob SANDELIN met and married Winifred Jane WEIR. Their wedding was held at Gunnerside Methodist Chapel, Richmond in Yorkshire, and at the time, they lived at a property called 'Hillside' in the village.

On 12 December 1942, he transferred to No. 59 Squadron at R.A.F. Thorney Island, having been promoted to the rank of Warrant Officer, Second Class on 1 November 1942. He enjoyed periods of leave from 30 December 1942, until 1 January 1943, and from 14 until 21 February 1943, and again from 22 until 28 February 1943. This latter period being the last period of leave before his death. In addition to the above, he had been granted six other periods of leave, each of seven days. At the time of his death, he had served for two years and two months in the R.C.A.F..

Robert SANDELIN was alive when rescued by Sgt CLARK, and when he was first examined by S/L FAQUHARSON on the hillside. He died in the ambulance on the way to hospital. As the R.A.F. Form 39 puts it so bluntly, he was admitted to hospital as 'Dead', having sustained multiple injuries, and his condition on discharge was 'Dead'.

He was buried in Grave 342 of the Gunnerside Methodist Churchyard on 2 April 1943. The Ministerial Card was sent on 13 April 1943 to his wife, and the Memorial Cross on 7 June 1943. His mother received a Memorial Cross which was sent on 10 June 1943. The operational 'Wings' were sent from Ottawa to his wife at Gunnerside on 13 May 1946, together with a certificate of service. She received a War Service Gratuity of \$390.28, on or about 5 July 1945 in respect of Robert's three-hundred and eighty-five days qualifying service overseas, out of his total of seven-hundred and seventy-seven day's service. His wife received his posthumous medals, namely:

- 1939 – 1945 Star;
- Atlantic Star;
- War Medal;
- Canadian Volunteer Service Medal, with clasp.

#### **1128327 Sergeant James Farquhar CLARK, R.A.F.V.R.**

James Farquhar CLARK, known as 'Jim', was born in North-East Scotland in 1917, together with his brother and sister. As with many young men from that area, after leaving school, Jim went to sea as a fisherman, working out of Aberdeen harbour. Jim had taken a radio course, so was keen to enlist in the Royal Air Force following the outbreak of the Second World War.

He enlisted at R.A.F. Padgate in Lancashire sometime after September 1939. Jim CLARK would have taken the usual route of training at a radio school, before a posting to a Bombing and Gunnery School to achieve the dual qualifications required by Coastal Command. Following the air crash at Luscott Barton, he was posted to the Bahamas to join an Operational Training Unit there, allowing him a period to rest and recuperate.

After the war, Jim CLARK returned to his native Aberdeen. Work was scarce, but he gained employment as a lorry driver with a timber firm. He met Barbara BOTTOMLEY, and they married in September 1945. They went on to have three children, two boys and one girl. Eventually, Jim CLARK found employment with Marconi, the electronics firm.

For a time, he lived in South Africa as he was seconded to the South African Air Force. He returned to the U.K. to continue to work for Marconi in Chelmsford, Essex, and Alnwick, Northumberland. As the family were growing up, CLARK left Marconi and returned to Aberdeen. He worked for a TV repair firm, and then gained a job with Perth Airworks, servicing radios for the Aberdeen University Air Squadron, based at Dyce airport. When he retired, he remained industrious, but the family was first and foremost to him.

Barbara died in November 2004, and twenty-nine days later, Jim died having suffered a series of strokes. He died suddenly on Thursday, 16 December 2004, at his home of 50, Deevale Road, Kincorth, Aberdeen. He was eighty-seven years of age. His son, Gordon, had also pre-deceased him, but he was survived by his daughter, Susan, and his other son, Raymond.

#### **1172715 Sergeant Jeffrey FAGE, R.A.F.V.R.**

Jeffery FAGE enlisted in the Royal Air Force Volunteer Reserve at R.A.F. Cardington, Bedfordshire, sometime after April 1940. His service number was 1172715. He trained as a wireless operator, and air gunner, and was posted to No. 59 Squadron. He was killed instantly in the crash that claimed the lives of three members of air crew of Fortress FA.698 on 26 March 1943. The twenty-three year-old was the son of William Augustus and Ethel Mary FAGE, of Bushey, Hertfordshire. He was buried in St. James Churchyard, in his home town of Bushey, in Section R., Grave 25. The inscription on his grave reads: *IN LOVING MEMORY OF OUR DEAR JEFF.*

#### **141755 Pilot Officer Denis Macrorie DUNN, R.A.F.V.R.**

Denis Macrorie DUNN was the son of Wilfred Macrorie and Helen DUNN. He was born in the third quarter of 1912 in the Lambeth district of London. P/O DUNN was thirty years' of age upon his death, and was married to Eileen Hester DUNN, of Clapham, London. He enlisted in the Royal Air Force Volunteer Reserve at either R.A.F. Uxbridge, R.A.F. Gloucester or R.A.F. Penarth, sometime after May 1940, and was given the service number of 1251959. The 1939 Electoral Register gives him living at 11, Blakemore Road, Streatham, London, in the Borough of Wandsworth, with his parents. As he appears to have been living in London, it is most likely that that he joined the R.A.F.V.R. at R.A.F. Uxbridge, Middlesex. He trained as a wireless operator and air gunner, and on completion of his training, was granted the rank of Sergeant. Sgt DUNN was posted to No. 59 Squadron. He married Eileen Hester HAYWARD in Wandsworth in the third quarter of 1941.

On 30 March 1943, No. 59 Squadron were informed that four of their non-commissioned officers had been granted a commission and promotion to the rank of Pilot Officer. This included Sgt DUNN, who was granted the new service number of 141755, and his commission to date from 24 January 1943. Sadly for Sgt DUNN, this was irrelevant, as he had already died.

Sgt DUNN was critically injured in the crash, with the account of the Station Medical Officer indicating that DUNN died on his way to the North Devon Infirmary in Barnstaple, however the Commonwealth War Graves Commission gives his date of death as 29 March 1943. He was buried in Block 5, Grave 7941 of the Richmond Cemetery, Surrey. The inscription on his gravestone reads: *IN LOVING MEMORY. KILLED ON OPERATIONS.*

## Conclusions

Whenever any historian investigates any event in history, usually he or she does so from a position of privilege and knowledge. By definition, they are looking back at events, and can review them dispassionately. This means that historians should refrain from being judgmental, and apportioning blame or culpability for an event, or a decision made at the time. Likewise, where the participants involved are not able to respond, any conclusion will be one-sided, without the right of reply or revision. Events do not happen in a 'bubble', they are a product of that moment in time, and are impacted by a range of external factors over which most of the participants will have little or no control. Rarely is an event such as an air crash the result of one, isolated factor, usually they are the product of a causal chain of events that come together to result in the eventual outcome. Any one break in that chain would change that outcome.

The loss of Fortress FA.698 was an accident. Not only did it result in the deaths of three air crew, it had a long lasting and traumatic impact on the four surviving men. The accident occurred because the aircraft flew into high ground on its approach to land at R.A.F. Chivenor in poor visibility. The reasons around why it flew into the high ground are more complex.

They relate to the development of new technology, namely the Air-to-Surface Vessel (A.S.V.), and the inter-related development of the Beam Approach Beacon System (B.A.B.S.). The A.S.V. was introduced to detect enemy surface vessels and submarines on the surface, but it was also found to be useful to aid navigation. B.A.B.S. came into being by the evolution of the Standard Beam Approach system to work in conjunction with the A.S.V. radar. The loss of Fortress FA.698 occurred on the cusp of the entry of the B.A.B.S. into operational use with Coastal Command. The new equipment was only installed at R.A.F. Chivenor a few weeks before the crash.<sup>14</sup> Neither the pilot, nor the A.S.V. operator, had received any formal training on the new system, because the courses for B.A.B.S. training at R.A.F. Leuchars did not start until April 1943.

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<sup>14</sup> The actual date of installation, or when it came into operation is not known, but documentary evidence indicates that it was in place by April 1943, and was in use on the date of the crash in late March 1943.

It is unlikely that many, if any, other landings had been made at R.A.F. Chivenor using the new B.A.B.S. prior to 26 March, so there was little or no experience to share amongst the air crew of the squadrons operating at the base. It appears that there was a B.A.B.S. Familiarisation Party of three officers based at R.A.F. Chivenor, but the installation was not inspected by staff from the Royal Aircraft Establishment until about two weeks after the crash. This inspection did find some issues with the installation, particularly on the North-West/South-East runway. It is believed that this was the runway intended to be used by FA.698 for landing at Chivenor. The report also highlighted that a close working relationship was required by the pilot and A.S.V. operator, and that the display was not always easy for the A.S.V. operator to interpret.

The question arises as to why the pilot did not divert to another airfield, and here we can only surmise as to the decision making process by the air crew. We do not know if the Fortress was low on fuel, thereby making a diversion an unsuitable option. In addition, the installation of B.A.B.S. may have made the air crew overconfident on their ability to undertake a successful landing at R.A.F. Chivenor in the prevailing weather condition, and it is unknown to what degree air crews were encouraged to try using the B.A.B.S. system.

It can be argued that it was a poor decision to install B.A.B.S. at Coastal Command airfield prior to the necessary training being available. This may explain the decision of the senior officers in Coastal Command over-ruling the original findings of the Court of Inquiry. They may have been prompted in making their comments by a desire not to damage the reputation of the new system, finding it easier from their positions within the hierarchy of the R.A.F. to blame the air crew, or they may simply have been more objective than the Court of Inquiry held at R.A.F. Chivenor.

In the end, fate placed F/L HERON and his air crew in a unique position on that day, tired as they were at the end of a long patrol of over eleven hours, in a noisy and stressful environment. The captain made an informed decision to land at R.A.F. Chivenor using the new B.A.B.S. equipment, but the causational chain of events in which the air crew found themselves, involving many factors over which they had little or no control, resulted the aircraft crashing into high ground, changing the lives of seven men for ever.

## In Memoriam

Friday 26 March 1943 – Boeing B-17 Fortress – FA.698

1.	DUNN <sup>15</sup>	Denis Macrorie	30	29/03/43	Pilot Officer	WOp/AG	R.A.F.V.R.	141755	Richmond Cemetery, Surrey	Block 5. Grave 7941
2.	SANDELIN <sup>16</sup>	Robert Simeon	24 <sup>17</sup>	26/03/43	Warrant Officer II	WOp/AG	R.C.A.F.	R/82680	Gunnerside Methodist C'yard	Grave 342.
3.	FAGE <sup>18</sup>	Jeffrey	23	26/03/43	Sergeant	WOp/AG	R.A.F.V.R.	1172715	Bushey C'yard	Sec. R., Grave 25.

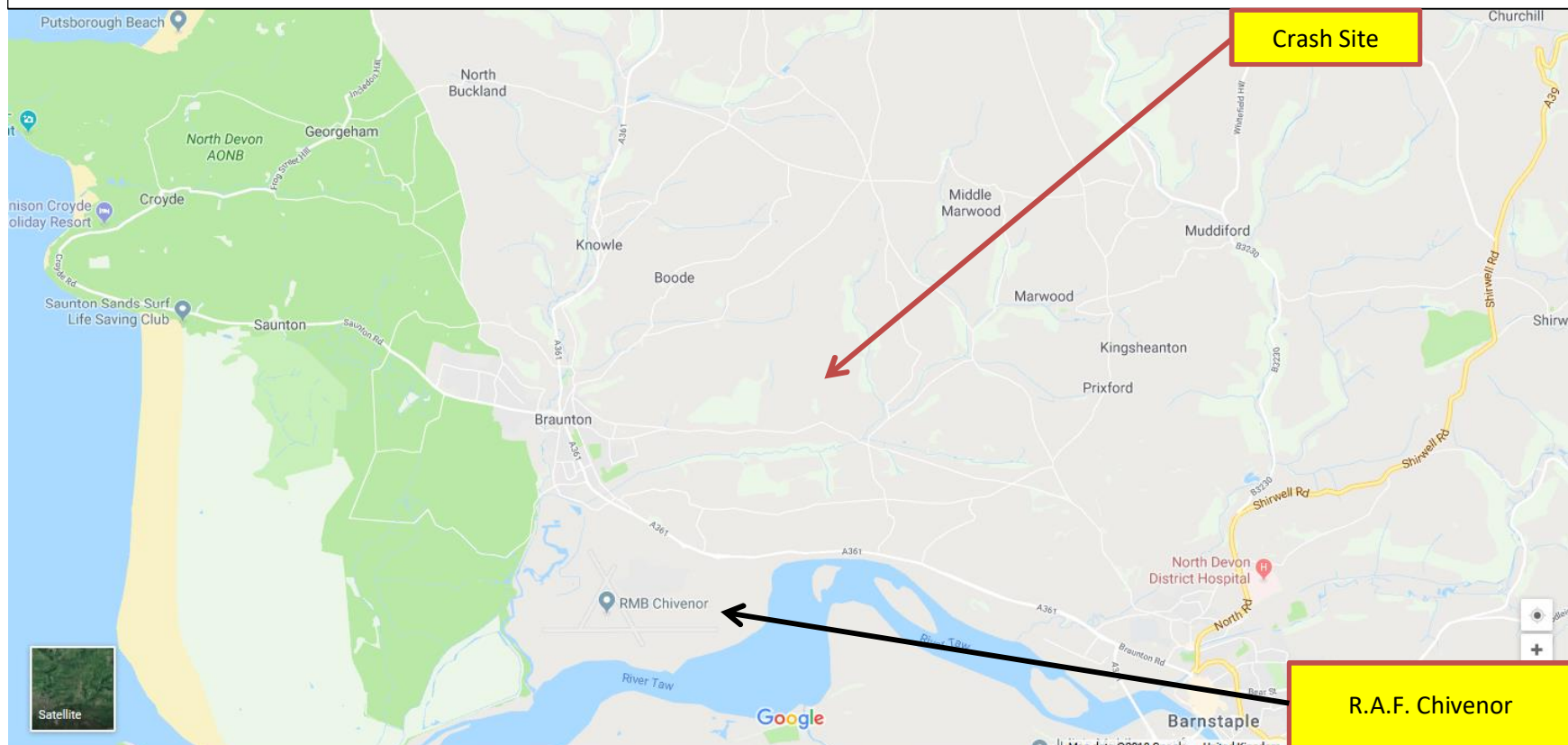
<sup>15</sup> Son of Wilfred Macrorie and Helen DUNN; husband of Eileen Hester DUNN, of Clapham, London. INSCRIPTION: IN LOVING MEMORY. KILLED ON OPERATIONS

<sup>16</sup> Husband of Winifred Jane SANDELIN, of Cornwall, Ontario, Canada. Inscription: THEY SHALL NOT GROW OLD AS THE YEARS FLEE BY

<sup>17</sup> This is his age as shown on the C.W.G.C. website. He was in fact just 20 years' of age.

<sup>18</sup> Son of William Augustus and Ethel May FAGE, of Bushey, Hertfordshire. Inscription: IN LOVING MEMORY OF OUR DEAR JEFF

Map of the area to the north of R.A.F. Chivenor





Map of the crash site of FA.698 – 26 March 1943







Left – F/L Jim HERON, R.A.F.



Right – P/O E. E. ALLAN (far right) with his Hudson air crew. Sgt McLEAN is stood next to P/O ALLEN, second in from right.

Courtesy of: <http://www.doralholdings.com/eallen/part4.html>



*Above Left – Sgt SANDELIN in an official photograph as a WOp/AG with No. 407 Squadron, R.C.A.F.*

*Above Right – Grave of W/O Robert Simoen SANDELIN*

*Right – Pilot Officer Denis Macrorie DUNN*





*Left – Members of the FRENCH family displaying the British Empire Medal awarded the Joe FRENCH for his bravery on 26 March 1943.*

*Right –A general view of the crash site, looking towards R.A.F. Chivenor.*

*Courtesy of: Graham MOORE (2018)*

## Bibliography and Sources

### Primary Sources

Canadian Air Ministry	<i>Personnel Record R/82680 Robert Simeon SANDELIN, WWII Services Files of War Dead, 1939-1947</i> At: <a href="http://www.ancestry.co.uk">www.ancestry.co.uk</a>
Air Ministry Files (AIR)	27 555/47 – 59 Squadron Summary of Operations January 1943 (London, Air Ministry 1943)
Air Ministry Files (AIR)	27 555/48 – 59 Squadron Record of Operations January 1943 (London, Air Ministry 1943)
Air Ministry Files (AIR)	27 555/49 – 59 Squadron Summary of Operations February 1943 (London, Air Ministry 1943)
Air Ministry Files (AIR)	27 555/50 – 59 Squadron Record of Operations February 1943 (London, Air Ministry 1943)
Air Ministry Files (AIR)	27 555/51 – 59 Squadron Summary of Operations March 1943 (London, Air Ministry 1943)
Air Ministry Files (AIR)	27 555/52 – 59 Squadron Record of Operations March 1943 (London, Air Ministry 1943)
Air Ministry Files (AIR)	27 555/53 – 59 Squadron Summary of Operations April 1943 (London, Air Ministry 1943)
Air Ministry Files (AIR)	28/153 – R.A.F. Chivenor Operations Record Book
Air Historical Branch	Form 1180 Aircraft Loss Card FA698

### Secondary Sources

DUCKERS, Peter	<i>British Campaign Medals 1914 – 2000</i> (Princes Risborough, Shire Publications Ltd., 2011) [ISBN 0 7478 0515 6]
STITT, Robert M.	<i>Boeing B-17 Fortress in RAF Coastal Command Service</i> (Poland, Stratus s.c., 2010) [ISBN 978-8389450-88-3]
THETFORD Owen	<i>Aircraft of the Royal Air Force since 1918</i> (London, Putnam & Company, Sixth Edition 1976)
WADDINGTON, Professor C. H.	<i>Operational Research against the U-Boat</i> (Nottingham, Partizan Press, 1973)

### Websites

No. 8 Service Flying Training School	<a href="http://rcafmoncton.blogspot.co.uk/">http://rcafmoncton.blogspot.co.uk/</a>	[Accessed 11 April 2018]
CWGC Commonwealth War Graves Commission	<a href="http://www.cwgc.org/find-war-dead.aspx">http://www.cwgc.org/find-war-dead.aspx</a>	[Accessed 10 April 2018]
No. 59 Squadron	<a href="http://number59squadron.com/roll/crew_html/fortress_heron.html">http://number59squadron.com/roll/crew_html/fortress_heron.html</a>	[Accessed 12 April 2018]
A R.C.A.F. Pilot's Story – The memoirs of Ernest E. ALLEN	<a href="http://www.doralholdings.com/eallen/part4.html">http://www.doralholdings.com/eallen/part4.html</a>	[Accessed 23 May 2018]

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