GLIDER- BORNE RADAR

IN

WORLD WAR II

Prepared by F.R. Hunt

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PREFACE

At the end of 1943, a requirement arose to provide radar coverage after the landing of airborne troops far behind enemy lines. The solution was thought to lie in the use of Light Warning (LW) radars. The initial trials of loading gliders with this type of radar nearly ended in disaster. The first operational attempt to use the equipment in such a role at Arnhem did end in disaster. Subsequent deployment of a ground-based Light Warning radar illustrated that the requirement was necessary. This resulted in a Horsa glider being fitted out with the LW equipment and a second radar. When the glider landed, the crews had only to erect the antennae and the equipment was operational. Three crews were trained on this equipment, but the operational need for its use never occurred before the war ended.

The Story of Glider-Borne Radar

Three Light Warning units were sited at or near the permanent radar station Darsham High Street, Suffolk, in the late spring of 1943. The twelve-man crews consisted mainly of RAF personnel. However, like many mobile radars, the two radar mechanics (NCO i/c and an LAC) on each unit were often RCAF. **Sgt. Blondie Lievense** from St. Boniface was in charge of LW 6080 while **Sgt. Joe Leech** from Woodstock, NB, was in charge of LW 6090. **Sgt. Dave Calder** from the Vancouver area and the author from Port Hope, Ontario, were with LW 6096. The Canadians on the three units often linked up for week-end passes to London.

The Light Warning (LW) radars were 200 MHz equipments using mainly airborne ASV (Air-Surface Vessel Radar) electronic equipment. It employed four Yagi antennas in a 2 x 2 array mounted on a pedestal which permitted continuous rotation in azimuth. The electronic equipment included a PPI (Plan Position Indicator). Electrical power was provided by Douglas twin-cylinder motorcycle engine-driven generators. Two versions were employed. The first was the tented version in which the electronics, antenna, and tent components were broken up into a number of cases, the largest of which could be carried by four men. Normally, this equipment was carried in a three-ton truck with all the men, and their personal belongings. The second version was mounted in a 3/4-ton signals van with the antenna dismounted. The tented version could normally be put into operation in about a half-hour with all the crew members present. The van-mounted version could be operational within a few minutes of arrival at a site, since the antenna was readily assembled and erected on top of the van. Light warning crews served in all the World War I I theatres.....North Africa, Italy, Burma, and North-West Europe.

In the autumn of 1943, **Sgt. Calder** of LW 6096 was repatriated to Canada suffering from a stomach ulcer. He was replaced by **Sgt. Colin Downs** of the RAF. In the last week of December, 1943, the LW 6096 crew went on a one week detachment to AFTDU (Air Forces Tactical Development Unit) at Tarrant Rushton, Dorset. On this detachment, only part of the crew went as the remainder were on Christmas leave. AFTDU was a test centre for airborne troops, mostly devoted to testing with various gliders. Three types of gliders were used here .... Hotspurs, which carried seven fully equipped men plus the pilot. Horsas, which carried about twenty fully equipped men, or a jeep plus trailer, and three men plus two pilots, and the Hamilcars which were designed to carry a small three-man tank. Here the crew tried to fit their tented version LW into Hotspur gliders. It became obvious that five of them would be required to carry the equipment plus the essential men to operate and maintain it. The crew voiced their disapproval of the idea of using the Hotspurs to the Glider Pilot Captain who was the project officer. Failure of the arrival of only one of the five gliders would mean that there would be no operational radar. It was suggested that one Horsa glider could carry the equipment and men.

All three gliders were basically of wooden construction with a very thin plywood skin. However, the floors of the gliders were of strengthened wood construction. We had been warned to never stray

from the main floor area. It was difficult to manoeuvre the radar equipment in the Hotspur glider, and Atkins managed to put a foot through the side on one. The captain saw our difficulties, and all was forgiven.

On Sunday, January 2, 1944, our project officer arranged to give us a ride in a Horsa glider. We took off normally and were being towed by a Stirling. The glider had an unserviceable air speed indicator, as we later found out. There was much shouting over the intercom between the glider pilot and the aircraft's crew. The glider's air speed showed that we were going too fast, and the pilot wanted the Stirling to slow down. The tow aircraft did not want to do this because it was in danger of stalling and crashing. After making one circuit of the aerodrome, the captain gave up, released the tow rope and made a safe landing. So much for the first flight of a glider-borne radar crew.

In late March of 1944, several Light Warning Crews, including 6096, were disbanded and their Radar and Motor Transport Mechanics and some Radar Operators were posted to Eureka-H beacon crews. These beacons provided navigational information to night-time photographic reconnaissance Mosquitos of 140 Squadron, 34 Wing, 2nd TAF. They took part in the Normandy and subsequent campaigns in North-West Europe.

No glider-borne radars were used in the assault on Normandy. The airborne divisions were operating close to the coast within range of ship-borne radars. Also, the sea-borne troops, with accompanying radars, were expected to, and did make contact with, the airborne divisions on the first day of the invasion.

When the planning of the airborne assault on southern Netherlands (Market Garden) began, the Army commanders were aware of the presence of JU 88 aircraft in the area. It was expected that these would be used against Allied troop positions and any captured bridges. Since the operation involved a 70 mile salient, this would leave the Arnhem area well beyond the range of radar units accompanying the 2nd Army in northern Belgium. The RAF was asked to provide the radar units. The radars selected were Light Warning Units, No. 6080 and No. 6341. These units had fewer than normal Radar and Wireless Operators but had two or three officers as aircraft controllers attached to them. **Wing Commander J.L. Brown** was in overall command of the two units and was attached to the Airborne Headquarters. (i), (ii).

Of the 25 officers and men taking part in the operation, two officers and eight men were killed in action. Of the remainder, eleven men including one wounded were taken prisoner. Four officers escaped, including one wounded.

(i) Middlebrook, Martin: "ARNHEM 1944. The Airborne battle, 17-26 September": Penguin Books Ltd., Harmondsworth, Middlesex England, 1994.

(ii) S/L Hayward, F., "The RAF Presence at Arnhem 18-25 September, 1944." Air Mail, page 10, Royal Air Force's Journal, London, England, (winter), 1994.

Glider-Borne Radar

From "They Shall Grow Not Old"(iii) --- ***Lievense, Semon F/S*** *R100278 -radar mechanic from St. Boniface, Manitoba. Killed in Action Sept 22/44, age 27, #6110 Servicing Echelon. One of two killed and sixteen missing from a glider that landed in the Arnhem area of Holland.* ***F/Sgt Lievense*** *is buried in Oosterbeek War Cemetery, Arnhem, Holland.* It is known from a later write-up that **F/Sgt Lievense** was the radar NCO i/c with LW 6080 (ii). (See previous page for (ii) footnote).

LAC Mowatt, R168469, RCAF, (home address unknown), was the second Radar Mechanic with LW 6341 who was taken a prisoner of war. This author has no other record of him except that he survived his experiences. (ii), (iii).

The two LW crews selected had only two weeks to prepare from the time that they were notified. They moved to RAF Harwell (near Didcot) and were briefed by **W/C Brown**. The equipment and crews of each of the tented versions of the radars were divided into two loads. These four loads were each destined to be carried by a Horsa glider towed by a Stirling aircraft from either 570 or 295 Squadrons. It was hoped that at least one of each of the two load types would be successfully landed to provide a working radar. The crews then practised loading and unloading the Horsas. They also occupied some of their time in small arms training which they woefully lacked. Initially, the two units were to fly in the first lift to Nijmegen, but this was subsequently changed to the second lift as there was a shortage of tug aircraft. Their destination was also changed to Arnhem.

Wing Commander Brown flew in a Horsa with the Headquarters of the Airborne Army Corps in the first lift to Nijmegen on the 17th of September. His glider made a successful landing but he was killed later by a strafing Me l09.

During the early morning on the second day of the operation the two crews loaded their gliders. However, a thick fog had settled over that part of England and nothing moved until midday. Then the second lift took off. As the gliders came to s'Hertogenbosch, Holland, the last turning point, heavy flak was encountered. The radar glider, piloted by **S/Sgt Cummings** of the Glider Pilot Regiment, had its Stirling tug rear up and spin into the ground. Cummings pulled off successfully and landed to the south-west of Arnhem, on the other side of the Rhine from the British Airborne Division.

Meanwhile, radar gliders piloted by **S/Sgts Edwards and Kennedy** successfully landed at the intended landing zone. Both gliders encountered machine-gun fire, some of it incendiary, on the way down or shortly after landing. Contact was made between the two gliders. Edward's glider was already on fire before it landed. The crew escaped the glider but the equipment was lost. With the landing zone under mortar and machine-gun fire, it became obvious to **F/L Richardson**, (the senior RAF officer present) that there could be no radar operations. He ordered the remaining glider's load

(iii) Allison, L and Hayward, H., "They Shall Grow Not Old - a Book of Remembrance," Commonwealth Air Training Plan Museum Inc., Brandon, Manitoba, Canada, 1992

to be destroyed with Sten gun fire and explosives. The airmen then set off for Divisional Headquarters at Oosterbeek.

Cummings' glider, which had lost its tug, landed in a quiet area and was quickly surrounded by English-speaking Dutchmen. They were informed that they had landed in German-held territory, although there were none in the immediate neighbourhood. The radar was destroyed with Sten gun fire and they headed for Divisional Headquarters, led by a Dutchman riding a bicycle. They crossed the Rhine with many other parachute and glider troops by the Friel-Hevesdorp ferry and reached Oosterbeek.

What of the fourth radar glider? Piloted by **S/Sgt Harris**, it was later established that the tail had been shot off, leaving it out of control. The glider crashed near Doodeward and all on board were killed.

It was now a case of survival for the radar crews. On their way to Oosterbeek the airmen had become separated. **Lt. Davis**, an American Controller with 6080, driving a jeep, collected some and made a dash for the Hartenstein Hotel, the Divisional Headquarters. Here, they were set to work digging holes for their protection at the back of the hotel. They suffered considerably from continuous German mortar and artillery bombardments. About this time, **F/Sgt Lievense** was killed by an 88mm shell which burst about 25 yards away. Several more of the airmen were killed or later died of wounds, in subsequent shelling.

Finally, on the 25th of September, most of the remaining troops were evacuated from the north bank of the Rhine at Arnhem. Amongst them were four officers, including the wounded Lt. Davis.

Was the threat of enemy attacks on the Arnhem bridgehead an empty one? Certainly the third and fourth airborne lifts suffered from fighter attacks and the area was subjected to some bombing attacks. JU87's appeared carrying out attacks in the Nijmegen bridge areas. **Sgt. Joe Leech's** LW 6090, augmented with additional personnel and two officer Ground Controllers, moved to a site near Eindhoven on the 21st of September, and operated in a GCI capacity. Eight days later, they moved to the vicinity of Nijmegen. They were rewarded on the night of the 2nd of October, when Mosquitos from 219 Squadron had confirmed kills of four aircraft. The four included three Ju87s destroyed in a single mission by **W/C W.P. Green and F/0 D.A. Oxby**, as pilot and radar operator respectively. (iv).

The experience at Arnhem showed a need for radar equipment and the necessity of training special radar crews for future airborne operations. These radars and the crews would become an integral part of the Sixth Airborne Division.

(iv) Shores, C.F., "2nd TAF," Osprey Publications Ltd., Oxford, England, 1970.

Glider-Borne Radar

Charlie Young, Belleville. Ont., K8P 3R1, writes: *The equipment was two radars mounted in a Horsa glider. The intent was that we would be a fully operational GCI within minutes of touch-down. Our training was simulated airborne attacks during which we worked up efficient routines. "Our best time ... not under fire ... was 8 minutes." The first set was British-made and operated in the 200 MHz region, while the second set was American-made and operated at about 500 MHz. We trained with the British 6th Airborne Division out of Tarrant Rushton. There were three crews, each consisting of four officers and thirty-four other ranks ... radar mechanics and operators and wireless operators and mechanics. The three crews reported to a Wing Commander.*

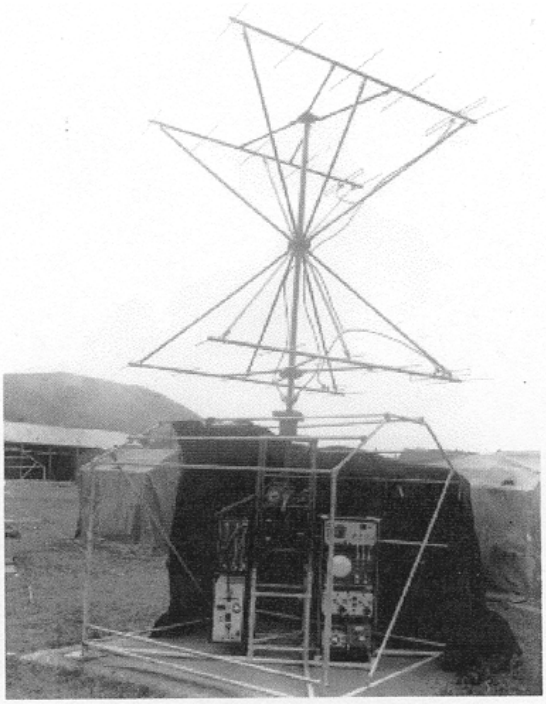
In addition, each of the three crews had a van-mounted Light Warning Set with a six-man team attached to it. The LW crew was commanded by a Sergeant. The van was carried in a Hamilcar glider and would also be operational within a few minutes of landing. The LWs reported in to the glider-borne mother station and covered the latter's blind spots.

Our uniform was unique. We wore army khaki battle dress, boots and web belt. On our heads we wore the blue RAF Regiment beret. Our Air Force ranks were in blue and, in my case, my CANADA badge. On our shoulders there was the badge of the British 6th Airborne Division -- a silver Pegasus on a purple patch.

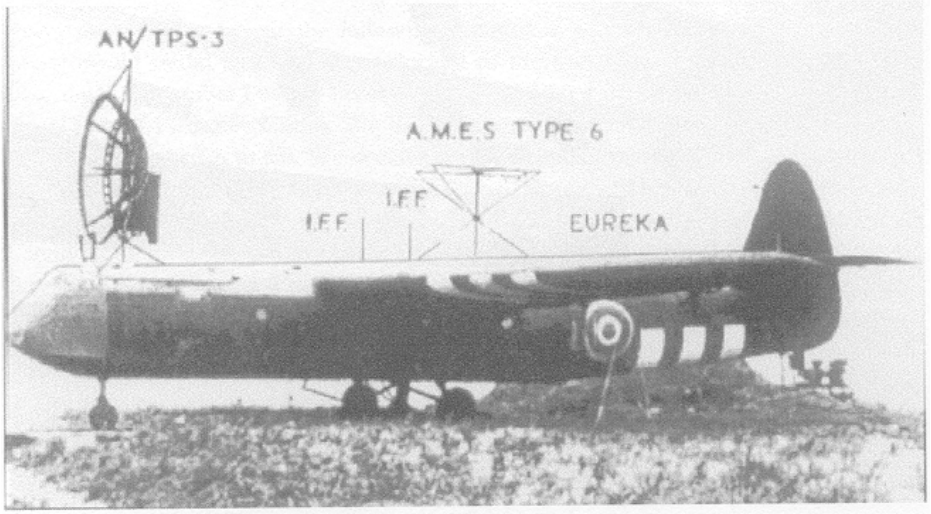
The only Canadians involved were three F/L radar officers. My crew was AMES 6563. The other two Canadians were H. Grant (Port Arthur, Ontario) and Lorne Stairs (Plaster Rock, New Brunswick).

On March 24, 1945, in the crossing of the Rhine, the 6th British Airborne Division and the 17th United States Airborne Division descended en masse beyond the Rhine in an enormous impressive show of force. The radar crews of the 6th Airborne Division were not deployed because the Landing Zone (LZ) had adequate coverage by the high power radars of the Base Defence Sectors on the West bank of the Rhine.

Glider-Borne Radar



LIGHT WARNING RADAR
(early model)



HORSA GLIDER
(with mounted antennae)