Bard Hill, Salthouse Norfolk

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COLD WAR PROJECT

SURVEY REPORT

BARD HILL
Salthouse
North Norfolk
Norfolk

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SUMMARY

The Radar Station at Bard Hill was probably established in 1941, as a ship tracking station and Chain Home Low station to detect low flying aircraft. At the end of the war it was equipped with a Type 2, Chain Home Low radar, and a Type 57 radar. The Type 2 was dismantled soon after the end of the war, but the Type 57 appears to have been retained. In 1953 Bard Hill was chosen for the site of the experimental Green Garlic radar. This was later developed as the powerful Type 80 medium to long range early warning radar. Experimental work lasted until the late 1950s, but by 1960 the site had been cleared.

The remains of the Chain Home Low Radar Station comprise a brick wall which surrounded the stand-by set house, a tower base, an 'Identifier Friend or Foe' hut, and a concrete hut base. Immediately its north is the site of the wartime Type 57 station, and the early 1950s experimental station, which may be identified as concrete floor slabs. In the vicinity of the Radar Station are various defence features, including the remains of trenches and a spigot mortar pit.

HISTORY

The Radar Station at Bard Hill was probably established in late 1941 and was numbered 134. Initially the site was a coastal defence radar station manned by the army. Its purpose was to act as a surveillance radar, and with an effective range was about 24 km (15 miles) it was able to track targets virtually down to sea level. Its main functions were to detect small fast moving German E-boats and low flying mine laying aircraft (Foynes 1994, 126). The original equipment at Bard Hill was a Coast Defence (CD) Mark IV radar (Foynes 1994, 226). This equipment was based on the Naval Type 271 radar and operated on a 10cm wavelength. Installation of this new type of station began July 1941, and they were termed 'K' stations to distinguish them from the first generation 'M' stations which worked on a one metre wavelength. In 1943 its equipment was updated and a CD Mk VI** radar installed, designated by the Royal Navy a Type 277 and the RAF as a Type 55 (Foynes 1994, 232). Under ideal conditions this new equipment could detect small torpedo boats at ranges of up to 160 km (100 miles). The Type 55 consisted of a circular dish, which was usually mounted on the middle platform of a Chain Home radar tower. In this instance it may have been installed to replace the original CD Mk IV equipment. During 1942 and 1943 responsibility for all coastal early warning stations passed from the Royal Navy to the RAF and the 'K' stations were reclassified as Chain Home Extra Low (CHEL) stations (Pearson 1991, 96). The CD Mk IV radar was initially a mobile system, but later versions were supplied in a transportable container, but it could also be removed and installed in any suitable building. Some CD Mk IV sets were mounted on a 61m (200 ft) towers (Pearson 1991, 98-99).

Towards the end of the war, in March 1945, the specified equipment at Bard Hill was a Type 2 (Chain Home Low) operating on a 1.5m wave length and a Type 57 radar (Historic Radar Archive). The station had, however, been put out of operation on 15 January 1945 when a Lancaster bomber collided with its aerial. No one at the station was injured but all the aircrew, bar one, were killed when the aircraft came down at Langham (Bullers 1991, 19). At the time of investigation this event was commemorated by a small wooden cross tied to the gantry base inscribed 'Remembered every day by the Boyce family'.

The immediate post-war history of the station is obscure and it is not known if it was closed. Air photographs taken in April 1946 show that the Type 2 had already been dismantled, but the Type 57 and its associated buildings remained standing. There was, however, no discernible sign of activity at the site (106G/UK/1430, 16 April 1946, frame 3153). In early 1953 the site of the wartime station was selected for the installation of an experimental combined medium to long range early warning radar. This was originally given the nomenclature Stage 1a, but in January 1953 received the codename Green Garlic, and after January 1954 the production equipment was known as the Type 80. Work on the experimental equipment by the Royal Radar Establishment, at Bard Hill, continued until the late 1950s, but by 1960 the equipment had been dismantled and the site returned to its owner (Gough 1994, 118, 120, 164). The equipment at Bard Hill is illustrated by Gough (1994, figure 8).

DESCRIPTION

The Radar Station at Bard Hill is situated on a plateau, Salthouse Heath, behind a steep escarpment. From this commanding position it overlooks the village of Salthouse 600m (about a third of a mile) to the north, but more importantly it dominates the local coastline and offshore waters. It was the most northerly of a chain of radar stations sited around the East Anglian coast during the Second World War. The site of the radar station and associated features is covered by dense bracken and brambles. Access to much of the heath is therefore restricted to tracks and casual footpaths.

The east coast was one of the most vulnerable areas in the country to air attack and the threat of large scale landings or small raids. The Norfolk coast and its immediate hinterland was therefore fortified at the outbreak of the war to counter any of these threats. Some of the minor defence works around the Radar Station may therefore also form part of a wider local defended area. In the bracken areas close to the Radar Station is a spigot mortar pit and the earthworks of partly filled trenches. Air photographs also show trenchworks on the top of the escarpment, at TG 0713 4317, dominating the road up from Salthouse, and on the opposite side of the road is a pillbox or observation post, at TG 07336 43238. About 400m (about ¼ mile) southsouthwest of the Radar station was a heavy anti-aircraft battery comprising a command post and four gun emplacements, at TG 0728 4261 (106G/1430, 16 April 1946, frame 3153).

The landward side of the Radar Station was enclosed by a bank and ditch, the seaward side was relatively secure as it fell away to a steep escarpment. Along its top small slip trenches or weapons' pits were placed to oversee the coastal strip below, and many small trenches, some of which may be practice works, were also dug into the eastern side of the enclosure.

The Chain Home Low (CHL) or Type 2 radar was placed on the southern side of the enclosure, which was interrupted to accommodate its buildings. Typically for a station of this type it was situated on high ground to maximize the radar cover at low angles of elevation. Air photographs show that it originally consisted of a standby set house, a tower base, a transmitter and receiver block, an 'Identifier, Friend or Foe' (IFF) building, and an unidentified building against the main track (106G/UK/1430, 16 April 1946, frame 3153). Most of the features may be identified on the ground. The remains of the stand-by set house, at TG 0741 4302, comprise a protective square brick wall 0.91m (3 ft) wide laid to English bond. The enclosure wall is 8.34m (27 ft 6 ins) square and 2.3m (7ft 6ins) tall, in the interior are two concrete plinths on which the generators were mounted. There is a single entrance on its south-east side 1.83m wide (6 ft) flanked by projecting wall 1.26m (4 ft) long.

The base of the tower, which supported the radar, is about 20m (65 ft) east of the generator building, at TG 0742 4302. Its feet are formed from steel plates set in concrete. This probably supported a tower 56.3m (185ft) tall (see Gough 1993, plate 3) The base is square in plan, the external corners measure 12.76m (41 ft 10½ ins), the base of the steel frame is 12.45m (40 ft 10 ins) square, and each of the concrete feet are 1.52m (5ft) square (see Latham & Stobbs 1996, 49-51). It is uncertain whether this tower was constructed late in the war to support the Type 2 radar or if it was part of the original K Station built to support the CD Mk IV radar. Adjacent to the tower, on its southern side, is an overgrown concrete floor slab - the remains of the transmitter and receiver block.

The IFF building lies to its north east, at TG 07475 43055, it is of brick construction laid to English bond, and is roofed by a flat concrete roof slab 13cm (5 ins) thick. It is 2.53m (8 ft 4 ins) square in plan and stands 2.3m (7 ft 6ins) high. It is entered through a single door on its southern side, which is protected by a brick blast wall. A small cable duct leads from the rear of the cabin to site of the IFF unit which is marked by a concrete slab.

Air photographs show that another radar station was sited at the end of the track by the edge of the escarpment, at TG 0749 4317. The photographs show that the site consisted of a radar modulator building, which probably also contained the transmitter and receiver block, and immediately to its north was a small radio mast. Related to this radar was a Nissen hut, and seven smaller buildings. This may be the site of the early CD Mk IV radar or the Type 57 recorded at Bard Hill at the end of the war. The difficulty with this identification is that the Type 57 was usually a self-contained mobile radar comprising a horizontal 'cheese' type aerial mounted on a box trailer containing the transmitter, receiver and all electronics (Latham & Stobbs 1996, 222), while in this instance the photographic evidence shows a static station (106G/UK/1430, 16 April 1946, frame 3153).

Ancillary buildings associated with the Radar Station include five huts in set into the valley west of the presumed site of the Type 57, which were probably used as accommodation huts. To the southwest, and downhill, of the radar sites is a roughly defined rectangular area, at TG 0729 4295, which was probably the camp sewage works.

By 1949 the site of the Type 2 radar had been cleared and the huts in the valley removed. The station on the escarpment edge and its associated structures, however, remained in place, although there was no evidence of activity (RAF 541/367, 31 October 1949, frame 3087; RAF 541/440, 28 February 1950, frame 3037). Two years afterwards this site had been secured by a tall and apparently solid fence to form a rectangular enclosure (RAF 58/844, 21 March 1952, frame 5078). A later photograph (RAF/1214, 06 June 1955, frame 0194) shows the site after the installation of the experimental Green Garlic radar. This was placed at the western end of the enclosure, the structure consisted of a three-cell building which housed the radar modulator at its northern end, a link corridor and a generator room The radar was supported on a free-standing steel gantry over the modulator room. For these experiments the wartime buildings and the enclosure were retained; initially it appears that only two additional buildings were erected, a hut along the southern boundary and a smaller hut adjacent to the wartime Nissen hut. Both these structures had pitched roofs. Another hut was placed on the southern boundary some time after 1955 (RAF/576, 06 June 1963, frame 0121).

Today the central part of this site is an irregular area of tarmac and bare earth, and is now used as an unofficial car park. In the bracken areas around this open space footings for a number of buildings may be traced. Along the former southern boundary of this site, centred at TG 0748 4309, are two concrete floor slabs marking the positions of the huts erected during the 1950s. The easterly one measures 12.5m (41 ft) by 5.08m (16ft 8 ins). This was a pre-fabricated structure consisting of concrete uprights 7.6cm (3 ins) square into which thin panels were inserted. The westerly slab is more overgrown and its limits were not visible. A cable duct along the side of the wall and ceramic pipes coming up through the floors of the buildings mark the positions of line-feeds from the radar to the consoles.. To their west the site of the wartime Nissen hut

may be traced in the bracken area. No surface trace could be seen of the wartime radar modulator building or of the experimental Green Garlic radar building.

This account is the result of a field investigation carried out by Wayne Cocroft and Roger Thomas on 11 December 1997. Roger Thomas also took the 35mm record photography.

SOURCES

Primary

Air photographs consulted held by NLAP NMR Swindon

106G/UK/1430, 16 April 1946, frame 3153

RAF 541/367, 31 October 1949, frame 3087

RAF 541/440, 28 February 1950, frame 3037

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