RAF Trimingham, Norfolk

Report by Wayne D Cocroft

COLD WAR PROJECT

SURVEY REPORT

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SUMMARY

The Radar Station at Trimingham was established during the Second World War as a coast defence radar station. Its principal function was to detect German E-boats and low flying aircraft. It was also the site of an 'Oboe' station - a Precision Navigation Aid for bombers attacking targets in Europe. In the early 1950s the station was remodelled as part of the Rotor radar programme to upgrade Britain's radar defences. As part of this scheme new radars were installed and the control facilities were placed in a single level underground R1 type bunker entered from a bungalow-like guard room. The Rotor scheme was relatively short-lived and the Radar Station was closed, probably during the early 1960s. Subsequently the former guardhouse was converted into a private dwelling. A reappraisal of air defences needs in the late 1980s, however, identified the necessity for a station at Trimingham and the site was re-occupied by the RAF. Initially it was laid out to accommodate a mobile Marconi Type 91 'Martello' radar. In the late-1990s as the result of a reassessment of Britain's post Cold War defence requirements, the unit is being converted to have a static role with the construction permanent ground facilities and a Kevlon dome, to house the radar.

The surviving buildings and other surface remains are all post-war in date. To the south of Mundesley Road the only survivals from the Rotor period are the modified guard house and the underground bunker. This part of the site is an active RAF station. To the north of the road five early 1950s radar plinths survive, including the building which housed the prototype Type 80 radar. Other remains in this field consist of concrete footings.

HISTORY

Second World War

The Radar Station, at Trimingham, was established by the end of 1941 and designated number 65. Initially the site was a coastal defence radar station manned by the army. Its primary purpose was to detect German E-boats and low flying aircraft. The original equipment at Trimingham was a Coast Defence (CD) Mk 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, it was termed a 'K' station to distinguish them from the first generation 'M' stations which worked on a one metre wavelength. 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 sets were mounted on a 61m (200 ft) towers (Pearson 1991, 98-99). By the end of the war Trimingham was equipped a Type 54 radar, which comprised a circular dish mounted on a 61m (200 ft) tower. A copy of a later photograph, held on the site, shows it was a Type 54a radar, where the transmitter was mounted directly beneath the dish (Latham and Stobbs 1996, 225).

In addition to its role as a Radar Station, Trimingham was also chosen as the site for an 'Oboe' station, designated as a Type 9000 radar (Historical Radar Archive). 'Oboe' was the codename for a Radar Navigation Aid (RNA), which was used to assist bombers to pinpoint targets in Europe. It was a sophisticated system, only provided for special bombing raids, and the equipment was only used for pathfinder aircraft, usually Mosquitoes (Historical Radar Archive 1991, 18-19; Latham and Stobbs 1996, 95-106). The system relied on two ground stations, one codenamed the 'Cat' and the other the 'Mouse'. Each station could be selected as the 'Cat' or 'Mouse' depending on where the target was located. The 'Cat' station transmitted a series of audible dot and dash signals which indicated if an aircraft deviated from the correct course to its target - a continuous signal signified that it was on course. As the aircraft neared its target (at 10 minutes or approximately 80.5 km (50 miles)) it began to receive signals from the 'Mouse' station; at 10 minutes it received a signal of four Morse code 'A's, then at timed intervals Morse code 'B's, 'C's and 'D's followed by the release signal of five dots and a dash. Trimingham was one of the first three 'Oboe' stations to be established, and was operational by December 1942. It was a very specialised type of station and in March 1945 only six were in operation, including Trimingham, spread along the east and south coasts (Historical Radar Archive nd).

Also at Trimingham, from May 1941, but apparently not near the Radar Station, was a Royal Navy 'Y' service station. Its function was to monitor German radio traffic and by means of direction finding aerials try to locate the source of the transmissions (Foynes 1994, 227).

Post-war and the ROTOR radar programme

By the late 1940s it was apparent that the depleted wartime radar network was inadequate to cope with the threat posed by the fast approach speeds of jet aircraft. In June 1950 the Air Council approved the Rotor plan to up-grade the United Kingdom's

early warning radar, and to provide more effective fighter control. It also aimed to provide protection for personnel by placing the control and reporting centres in protected bunkers (Hartcup 1993, 228). It was an enormous programme, which in addition to the construction of protected structures also demanded a new communications network and the installation of 1620 display consoles. The plan was split into four principal construction phases carried out between 1951 and 1954, although the majority of the stations were commissioned by the end of 1953 (Wood 1992, 204).

Under the Rotor plan Trimingham's role was as a Centrimetric Early Warning (CEW) station. Air photographs indicate that the initial compliment of radar arrays comprised the wartime, or modified version, of the Type 54, three Type 13 height finding radar, a Type 14 surveillance radar and one unidentified array (V.58 RAF 1124, 11 May 1953, frame 0064).

The reporting centre was placed in an R1 type underground bunker, this is a standard single level bunker entered from a bungalow-like guard room. Bunkers of this type were divided into two sections by an off-centre corridor, from which doors gave access to rooms on either side. The contractors were Peter Lind, who were also responsible for the control bunker at RAF Bawdsey. In total eight R1 type bunkers were built. The technical facilities at Trimingham cost £300,000, a further £200,000 was spent on domestic facilities, and between its refurbishment and 1956 a further £64,000 was spent on the station (Neat 1997/169, Appendix R).

As part of the second phase of the Rotor programme, known as Rotor 2, it was planned to upgrade the system by installing new and more powerful radar. Trimingham was selected for the installation of the first production Type 80 search radar. This radar had a displayed range of 386 km (240 miles) and a maximum range of up to 515 km (320 miles), compared to the 145 km (90 mile) range of the then current British Type 7 search radar (Bullers 1991, 23). The Type 80 Mk 1 was installed between February and September 1954, but owing to a number of teething problems, including the position of the aerial feed in relation to the reflector and the aerial turntable mechanism, it was not handed over to the RAF until April 1955. In total five Type 80 Mk1 radars were installed in the United Kingdom (Gough 1993, 129-130, 153, 155).

The Rotor scheme was, however, relatively short-lived and in 1956 a new plan was put forward. This was necessary due to by faster aircraft speeds, which required radars to identify hostile aircraft at ever greater distances, linked with the need to integrate the control of new interceptors and air defence missiles coming into service. But the change was also brought about by the installation of the more powerful Type 80 radar which allowed the number of radar stations to be reduced. Under this programme Trimingham was retained as a Centrimetric Early Warning (CEW) station. For this role it was to be equipped with the new Type 80 Mk 1 radar controlled from the R1 bunker. But owing to delays in the programme the Type 80 was not ready, and an American Type AN-FPS-3 long range radar was installed with a range of 322 km (200 miles) (Bullers 1991, 23). Trimingham also had a Chain Home Extra Low (CHEL) role for which it was equipped with a Type 54 Mk 3. In operation the data from CEW stations was piped to larger comprehensive stations, in this instance RAF Neatishead. The following functions were allocated to rooms in the R1: plant, GPO apparatus, track telling room, workshop, radar office including five consoles, cloak and rest room, technical officer's room and a spare room (Neat/1997/169, Appendix C, Appendix D).

The plan also foresaw a substantial reduction in the number of personnel at the station from 9 officers, 19 senior non-commissioned officers and 218 aircraftsmen to 3 officers, 11 senior non-commissioned officers and 72 aircraftsmen. The suggested compliment of the cabin crew was as follows:

Flight Lieutenant/Flying Officer (Commanding Officer)	1
Group 12 Junior non-commissioned officers (Supervisors)	3
Group 12 Aircraftsmen Plan Position Indicator Recorder Air	3
Group 12 Aircraftsmen Plan Position Indicator Recorder Sea	3
Group 12 Aircraftsmen A Scope readers	3
Total	13

(Neat 1997/169, Appendix N)

1960s-late 1980s

Little is known about the later history of the station during the late the 1960s and 1970s. By 1981 the station had closed and all the radar arrays had been removed. The former R1 guard room situated in a bungalow-like building had been converted into a dwelling with an associated yard next to it.

The station today

The site was re-occupied by the RAF in the late 1980s to install a Marconi Type 91 'Martello' radar unit. This is a fully mobile radar unit, which it was envisaged could be deployed on the continent in times of crisis. It is operated by No 432 Signals Unit whose full compliment comprises three officers (a Commander, Deputy and Engineering Officer) and 24 men. The station acts as a detached site for the Sector Operations Centre, and Control and Reporting Centre at RAF Neatishead (Jackson 1993, 13). Under current post Cold War defence planning the need for the deployment of mobile radar units on the continent is thought to be unlikely. The station is therefore currently being converted to fulfil a static role.

DESCRIPTION

The site of the radar Station lies on the North Norfolk coast between Cromer and Mundesley. It is situated on a local high point, Beacon Hill, on top of the eroding coastal slope between 61m and 69m above Ordnance Datum. The maximum extent of the site was about 4 hectares (about 10 acres) and was originally split in two by the coast road, Mundesley Road; only the southern half of the site is now occupied by the RAF.

The majority of the remains are associated with the post-War configuration of the station. The development of the station from the Second World War may, nevertheless, be reconstructed using air photographs. The earliest available photograph, taken in June 1942, shows a couple of huts, or possibly semi-mobile cabins, on the seaward side of the road to Beaconhill House, which used to stand on the crest of the hill. The scale of the photograph precludes any assessment of the radar types (AC59 H13 140, 19 June 1942, frame 61). At the end of the War the Radar Station occupied three fields either side of Mundesley Road and covered about 3 hectares (about 7½ acres). A photograph taken in 1946 confirms that the Type 54 tower stood on the crest of the hill behind Beaconhill House, at TG 28844 38310. Within the garden of Beaconhill House, three huts were built. Across the road, perhaps on the site of the first mobile station, were three Nissen type huts, at TG 2889 3833, and adjacent to the road was a small picket post. Immediately to the north of these buildings was a radar gantry, corresponding to the position of a plinth which survives, at TG 28903 38368. To the east of the Nissen huts sited on a kink in the hedge, at TG 28964 38322, is what appears to be an angular sectioned handcraft type prefabricated hut surround by a brick blast wall. This is probably the site of the 'Oboe' station. If this identification is correct, the transmitter gantry, which originally straddled buildings of this type, had been removed by this date. Minor earthworks in the northwest corner of the site, at TG 2881 38435, and at the southern corner of the site, at TG 28915 38255, mark the positions of small defence posts.

For the construction of the Rotor period station extra land was acquired on the southern edge of the site which extended the boundary to the garden of a house called The Nest. On the northern side of the road additional land was acquired to the east. Air photographs indicate that construction was underway by March 1952 (540/690, 11 March 1952, frame 5108). The most substantial undertaking was the construction of the R1 bunker. This involved the excavation of a large hole and then the casting *in situ* of the reinforced concrete bunker. By March 1952 the main structure of the bunker was complete, but the dog-legged tunnel leading to the entrance was still open and incomplete. Across the road all the wartime buildings remained standing and two additional huts had been built, probably by the contractors. The gantry which stood at TG 28903 38368 had been removed, but the position of its feet were visible as four dark marks on the air photograph. Just over a year later the site appear to be finished and the radar arrays in place (V58 RAF 1124, 11 May 1953, frame 0064). By this date the bunker had been covered with earth and the bungalow-like guard room, at TG 2893 3822, which controlled entry into the bunker, completed. To the west of the guard room was a car park. The guard room is a single-storey building with a pitched tile roof which was originally fronted by a veranda; here internally were a guard room, armoury, stores and rest room. Above these rooms the roof is a flat concrete slab; the roof space was originally empty except for water storage tanks. On the rear of the guard room is square stairwell with a flat roof. From the foot of the stairs a tunnel, with a single dog-leg, slopes gently down to the bunker entrance, which is sealed by a locked door - access

into it is prohibited due to health and safety considerations. Inspection from the door confirmed that the off-centre corridor and internal dividing walls remained intact.

On the surface above the bunker were two plinths, for Type 13 height finding radars and air conditioning vents, which have been removed by the later remodelling of the site. On the opposite side of the road, at TG 28825 38395, is the site of another Type 13 radar plinth and is a small brick building with a flat concrete roof, and a flight of steps leading up to a door on its south-eastern side. The sites of three more radar arrays may be identified as having been related to the rebuilding of the station in the early 1950s. At TG 2891 3837 is small radar plinth, about 2m (6ft 6ins) square in plan, with a door in its eastern side. Air photographs show four feet at each corner of the building (MAL 65080, 19 Sep 1965, frame 064). To its south east, at TG 28952 38352, is a single-storey brick building approximately 4m (13 ft) square with double doors on its west side and capped with a flat concrete roof. To its south are the feet of a mast; air photographs also show four marks in the centre of the mast which are the feet of the central lift. It is not known whether or not if this mast supported a radar or was a wireless station. To its east, at TG 28995 38252, is another single-storey brick radar plinth approximately 3m (9ft 9 ins) square in plan, which air photographs show to have had gantry feet at each of its four corners. This arrangement is consistent with the remains of a Type 14 radar. To its west, at TG 2896 3827, is a concrete floor slab for a temporary hut, air photographs show had a pitched roof.

The largest surviving building in the field is the Type 80 modulator building, at TG 2890 3835, constructed in early 1954. It is a single-storey structure, built from breeze block, rendered in cement and roofed by a flat concrete slab. It is divided into three sections, at its eastern end is the modulator building above which stood the radar mounted on a steel framed gantry. In the centre a link corridor joins it to the generator room.

Air photographs confirm that the station had largely been dismantled by 1965 and the radar arrays removed. The Type 54, behind Beaconhill House, remained standing into the late 1960s, but had been removed by 1972 (MAL 65080, 19 Sep 1965, frame 064; OS/68083, 25 Apr 1968, frame 082; MAL 72052, 22 Jun 1972, frame 215). Air photographs, held on-site, show that by the early 1980s the bungalow-like guard house had been converted into a dwelling and a barn erected on the car park. Above the bunker its vents; Type 13 radar plinths and the building beneath the Type 54 mast (now removed) all survived intact. Other photographs also record the casual use of the site by mobile radar units.

The present form of the site is the result of a late 1980s rebuilding programme to accommodate a Type 91 'Martello' radar unit. This is a mobile unit which usually comprises seven trucks, to move the radar equipment, and an additional eight trucks, when on the move, to carry the unit's general stores. To accommodate this unit the field south of the Mundesley Road was re-occupied and most of the surface features from the Rotor period and the bungalow Beacon Hill House cleared. The facilities created in the late 1980s were designed to house the radar unit, its support vehicles and its crew while in this temporary static position. The R1's bungalow-like Guardhouse was retained, and converted into crew accommodation, including offices and basic mess facilities. Portakabins were also added to increase the available accommodation. The main alterations to the earlier structure were the creation of an upper storey in the roof space and the removal of the veranda along the front of the building. On the rest of the site a winding concrete loop road was built. At the highest point a Type 91 radar was

parked, and on the lower road the mobile control cabins and support vehicles. This was its normal location, but it might also be deployed for part of the year to the Stanford Battle Area near Thetford.

In the late 1980s, in common with most service bases, with a heightened terrorist threat, the site's perimeter defences were strengthened by the addition of sandbagged and mounded, prefabricated Arnold shelters. At the time of investigation in December 1997 the unit was being converted to fulfil a permanent static role. The Type 91 had been mounted on permanent setting and a Kevlon dome, composed of irregular polygons, erected around it. Permanent buildings were also being built to house the mobile control cabins.

Site archive

No historic archives are held on-site except for a small album of secondary material.

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SOURCES

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