Underground in WWII – Halstead In-Station (dugout)

Evelyn Simak and Adrian Pye

Much has already been written about Churchill's Auxiliary Units in World War II whose training was carried out clandestinely under Colonel Colin Gubbins at Coleshill Estate near Swindon – see *Subterranea* 28 (December 2011).

These secret Auxiliary Units included a 'Special Duties Section' (SDS) whose purpose, following a German invasion, was to stay in their normal jobs and gather intelligence. In other words they were spies. Their intelligence would have been communicated via battery-powered transceivers (TRDs) to a signals control station, often known as an In-Station (also referred to as Zero Stations).

Secret underground bunkers

Near Halstead in Essex we have located an In-Station that was one of the first three such stations in East Anglia. Crewed by ATS officers throughout the time of its existence, it was operational from 1941 until close-down in the summer of 1944. Like similar stations, the wireless traffic was conducted from a hut, often on an existing Army base and given cover as a Meteorological Unit.

From mid-1942 onwards concealed bunkers or dugouts containing food rations for 21 days, toilet facilities and provisions for battery charging were built near most of these huts, so that the crews could operate closed down for up to three weeks without surfacing if the Germans occupied the area. The Halstead In-Station used the call-sign "Buttercup".

At Halstead, the dugout was built immediately above and partially into a steep overgrown bank located on the edge of a small wood that is bounded by fields. The entrance opening is situated only a few yards distant from the wood's edge whereas the emergency exit opening emerges, in common with many others, onto the slope of bank below that adjoins open fields. The dugout was accessed through a drop-down shaft built from breeze-blocks.

When the station was closed at stand-down, the top row of breeze-blocks and the concrete lip that sealed them from above were knocked off and the broken pieces thrown down the entrance shaft. Several small rectangular recesses can be seen in the breeze-blocks near the entrance opening. They served to support a timber frame to which pulleys for operating the opening mechanism would have been attached. The floor below is littered with broken sections of timber framing, some bearing the imprints of pulleys that appear to have been knocked out.

The exterior of the hatch would have been well camouflaged so as to blend in perfectly with its surroundings, and casual passers-by would have been unable to spot it. A ladder would seem to have been necessary for access, as there is no trace of the presence of built-in steel rungs.

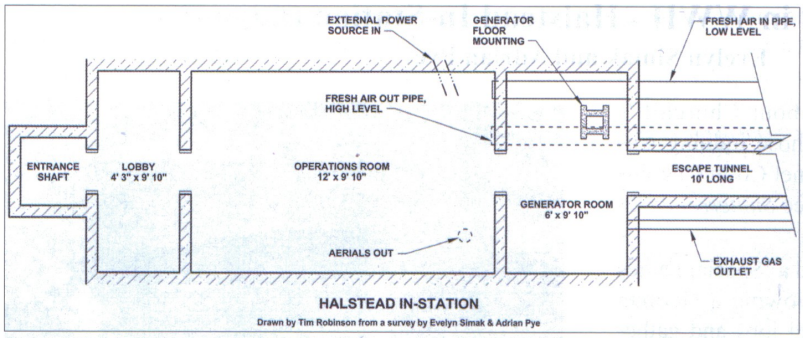
View down the entrance shaft

The counterweight – a length of 95 lb bullhead railway line – was found at the bottom of the shaft, which leads directly into a small anteroom or lobby that in all probability would once have contained a water tank and a chemical (Elsan) toilet. Coming down the shaft, the uninitiated would have found themselves in a small room that to all intents and purposes was used for storage, containing shelves stacked with boxes and tins. This shelf unit, however, was cleverly designed to conceal a door leading into the operations room. A cast-iron pipe, the remains of which are still in place, ventilated this lobby.

The counterweight – a length of 95 lb bullhead railway

Operations room

The operations room, whose interior walls are painted an off-white colour, was accessed through the secret door in the lobby. Its floor is covered with precisely laid concrete paving slabs which were originally covered by a layer of brown linoleum (some still in situ). In several places the corrugated iron of the elephant shelter is badly corroded and has fallen away, particularly along the



bottom where it meets the floor. Consequently, sandy soil is trickling into the chamber, partially covering the floor and any small artefacts that might still be lying there. The openings of two large ventilation pipes can be seen in the wall separating the operations and the generator room.

Ventilation in all known In-Station dugouts was supplied in the same way, i.e. by two large concrete pipes, the lower being the inlet, the upper the outlet pipe. Fresh air entered the dugout through the bottom pipe, expanding and rising as it warmed until in reached the top pipe, from where it would have made its way outwards, being replaced by fresh air. This process could, if necessary, be assisted by a fan or by the use of a Tilley lamp (N. Oxenden, *Auxiliary Units – History and Achievements, 1940–1944*, p26).

The operations room
(view towards the generator room and emergency exit)

'1A' can be seen pencilled on the wall beside the outlet pipe and '1B' was written beside the inlet pipe. Obviously, the annotations meant something, but what exactly remains a mystery. Presumably there would originally have been some kind of covers, perhaps wooden blanks, used for covering the ventilation pipe openings for the purpose of noise reduction and also to prevent generator exhaust fumes from seeping into the operations room. Pencilled lines, drilled holes, remains of bolts and wooden battens are evidence of shelves once having been affixed to the wall, and a row of large cable-clips along the ceiling indicates the presence of wiring or of a conduit for the lighting.

An aerial feeder cable, shielded within a metal pipe, enters the room through the roof near the far corner. A second feeder cable, a short length only, was found embedded in a broken piece of concrete that formed part of the construction of the entrance and is now lying at the bottom of the entrance shaft. The presence of at least two feeder cables supports the theory that every wireless link required its own aerial.

One of two two-cored 240 Volt mains power cables

The Halstead In-Station is believed to have had at least five OUT-Stations and it also had a wireless link to an In/Relay-Station at Ousden in Suffolk. A wireless link with the AU Signals HQ at Bachelor's Hall near Hundon, Suffolk, has also been documented. If there is any truth in the theory of there having been one aerial per wireless link, then several more feeder cables could in theory still be found, but since all the original trees are long gone the chances of finding cables or aerials still in situ are nil.

Electric power

Two two-cored 240-Volt mains-power cables entered the operations room through the opposite wall, each one contained within its own ducting. Even when used for heating only, the load would almost certainly have been too high for a single cable to carry, and it is for this reason that two cables were used. As no lighting conduits or cables have survived at Halstead it is not possible to establish whether the dugout had two separate lighting circuits, as has been documented elsewhere.

Lengths of the same type of mains-power cable have been found at the Shipley (West Sussex), Wilton (Wiltshire) and Norwich (Norfolk) In-Stations – the last being the first In-Station where the use of mains power as well as the existence of two separate electric circuits, one powered by 6V batteries, the other by mains electricity, has been documented (E. Simak & A. Pye, *Churchill's Secret Auxiliary Units in Norfolk and Suffolk*, 2013).

One of the original artefacts found on the floor of the wireless room is a fairly large fragment of an unidentifiable khaki-coloured, oil-stained fabric made of heavy-duty canvas, with what would seem to be an adjustable belt at one end. It appears to have been eaten away by acid in parts and is indistinguishable as an article of clothing. What purpose it served has as yet to be determined.

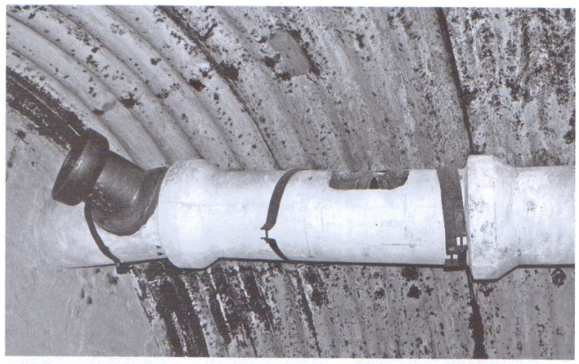
Part of a door frame is leaning against the wall beside the doorway into the generator room, with patches of what appears to be hessian fabric still adhering to it. In all probability this doorway, leading into the generator room, would once have been secured by twin doors – with a raised concrete doorstep in-between the two (in situ). The insides and edges of both doors would have been covered with a felt-like fabric soaked in paraffin oil (Union cloth anti-gas) which provided a tight seal against war gases and the deadly carbon monoxide present in the generator exhaust.

Ventilation

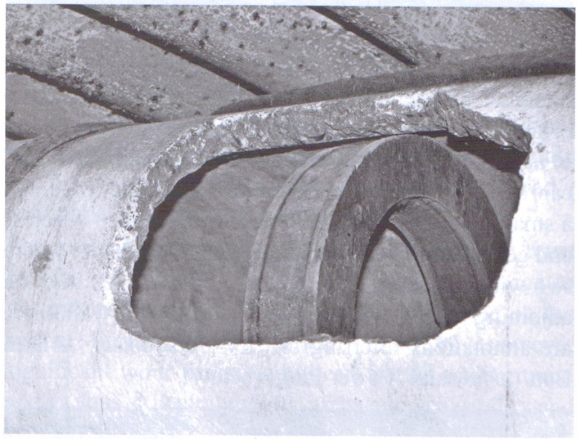
A pair of large concrete ventilation pipes traverses one end of the generator room, sporting characteristic rectangular openings. Screens or covers made from wood or from Union cloth were commonly used for blocking these openings. At Halstead a rectangular piece of slightly bent sheet metal (in situ) served as a cover. It still is firmly held in place by steel circlip-like bands of thin steel with a nut and bolt.

The pipes are painted white and, interestingly and unusually, both have a large section of glazed ceramic pipe, opening into the generator room, coupled onto them. Perhaps these Y-junctions served to create some additional airflow or they helped to smooth the airflow and ensured roughly equal suction from both generator and wireless rooms, or both, as without a doubt did the extractor fan, part of which is still in situ and can be glimpsed within the outlet pipe – an unusual feature that has not previously been documented. The fact that an electrical fan assisted air circulation might have influenced the unusual design of these pipes, which provided the only means of ventilation both in the operations room and in the generator room.

A much smaller ceramic pipe in the end wall still contains part of the generator's exhaust which had been inserted into it. Great care would have been taken to seal it with fire-clay or asbestos matting in order to minimise the risk of any poisonous carbon monoxide gas from escaping



Outlet ventilation pipe with extractor fan mounting



into the generator room. On the wall above it, the word 'CHARGED' can be seen written in pencil – no doubt referring to batteries. Like the adjoining operations room, the interior walls of the generator room are painted off-white and neatly laid paving slabs cover the floor.

Generator

On the floor of the Generator room, the wooden generator-mounting block is still in place, in its original position. Constructed from sections of 4-inch-square timber, this is the only original specimen known to have survived. Four six-inch metal bolts on its underside, one near each corner, not only prevented it from being propelled all over the smooth paved floor by the generator's vibrations when it was running but also held it firmly in place when pulling the starter cord. The bolts, albeit quite corroded, are still contained within the holes that were drilled into the paving slab that the block is resting on. This disproves earlier theories as to whether generators may have been positioned on shelves or benches.

Refuelling would have been problematic, considering that 4-gallon Jerry cans or 2-gallon petrol cans would have been used, and that refuelling was tricky even when using a funnel. Bearing in mind that the primary source of carbon monoxide is from exhaust fumes and that it is a colourless, odourless, tasteless and initially non-irritating toxic gas – and hence very difficult for people to detect – the notion that generators were ever situated in the operations room is unsupported.

Wooden generator block

The generator room is of particular interest not only because of the unusual ventilation pipes and the original artefacts still in situ but also in that a number of handwritten annotations can still clearly be read. '2A' can be seen written on the joint of the outlet pipe. On a small patch on the partitioning wall between wireless and generator room, immediately beside the spot where two wires, covered with woven fabric, are fed into the adjoining wireless room through a hole in the wall, there are annotations referring to: '6V Batt'*(eries)*, 'Alarm Batt'*(eries)* and 'Power Plug' (below).

A broken wooden panel was found on the floor of the generator room. This panel would originally have been affixed to the wall with four screws. It has a number of drilled holes through which cables would once have been threaded. Note the pencilled annotation 'Fan and 6V Lighting'. The cable clip seen below the drilled holes presumably held the fan's wire in place. The pencilled annotation 'Power' is yet more evidence of the station having been connected to mains power.

Emergency exit

A square opening in the end wall of the generator room, near the ventilation pipes, leads into the emergency escape tunnel which at Halstead In-Station is an unusually short passage of about ten feet in length, before it is cut short by the slope of the earthen bank it was built into. The opening has retained most of its original timber frame but nothing remains of the cover that would once have sealed it. The passage has a concrete floor, covered with soil and debris.

The walls were constructed from breeze-blocks, with some brickwork filling gaps mainly along the top, and the roof was made from concrete paving slabs. The steep slope the exit opening emerges onto is today heavily overgrown with brambles, making it currently inaccessible. An interior view suggests that the exit opening appears to have been destroyed and/or backfilled. As the true length of the tunnel could not be ascertained due to the collapse it is possible that it may have been somewhat longer than it appears.

Emergency exit tunnel

The site is on private land and was accessed by kind permission of the owner.