

BULL SAND FORT (TA371092)

Bull Sand Fort or the Northern Fort as it was known for security reasons during its construction, is the larger of the two island forts, decided upon by the naval and military authorities towards the end of 1914. The fort is located on extensive sand banks 4200 yards southwest of Spurn Head lighthouse, with deep-water channels about three quarters of a mile away on either side. The contract for the building of the fort was awarded to C J Wills & Son of London, who had previously undertaken a detailed survey of the site and had submitted their proposals for the foundations to the Director of Fortification and Works in April 1915. These proposals took into account not only the exposed nature of the site but also the effect the tidal race of some six knots would have in scouring the sand away from any obstruction placed on the river bed. No design existed for the superstructure but it was envisaged that it would be circular, approximately 80' in diameter and built of steel.

After consideration of the proposals, a decision was taken to build a foundation of octagonal plan measuring 100' between the square faces, with an outer row of Lakawanna interlocking steel piles 74' long, driven 37' into the river bed. There was to be an inner row of steel piles, 27' inside the outer row with radial steel arms connecting the two rows, effectively dividing the foundation into one inner and eight outer compartments. These compartments would then be excavated to a depth of 20' below the level of the riverbed, and the outer ones filled with mass concrete. The central, hexagonal compartment would then be filled with chalk rubble and sealed with a cap of concrete 14' thick. To further reinforce the foundation, steel bars in two transverse rows were laid over the concrete cap of the inner compartment and concrete deposited in layers over the whole foundation area up to the floor level. Whilst this mass of concrete was being poured, shuttered compartments were left in the upper part of the foundation to form the cellar floor. The final floor level was 5' above high water and would leave a clear apron of 9' around the superstructure; the total amount of concrete deposited in the foundation was 15,000 cubic yards and the total weight of piles driven was 960 tons.

The first piles were driven in May 1915 and, as predicted, sand began to scour away around the foundation because of the obstruction. To counteract this effect tons of chalk and stone rubble were deposited around the foundation to a width of 30'. This divided the scour into two channels either side of the fort, and these were then filled with large lumps of chalk and stone to limit the depth of scour in the channels; 45,000 tons of material were deposited in this work. One last precaution was taken by depositing 776 twenty-ton concrete blocks around the fort, except in the area close to the landing stage, up to the level of low water.

The design of the superstructure was finalized in late 1916 and was to be as originally stated, circular with an external diameter of 82', formed of a double skin of 3/8" steel plating fixed 18" apart, except on the seaward side where the space would be 3'. The intervening space between the plates would be filled with concrete, comprising one part of cement, two of sand and four of stone. On the seaward side there would be an external belt of armored plate 12" thick covering an arc of 99° and rising the full height of the superstructure.

There were to be two storeys of accommodation for the projected wartime garrison of 113 men and 6 officers of the Royal Garrison Artillery and 46 men and 2 officers of the Royal Engineers. The bottom floor would contain sleeping quarters, ablutions, engine and boiler rooms while on the first floor would be more sleeping accommodation (in bunks and hammocks), kitchen, stores and officers' mess. At the lowest level would be the cellar floor, containing the main magazine, shell store, coal store and, most important of all, the beer cellar. Because of the confined nature of the fort, a forced air ventilation and heating system was to be installed based on the 'plenum system'. This would give an air change five or six times an hour on average. Four sponsons to house 90cm searchlights were built onto the outside plates and were accessible from the first floor. To facilitate re-supply a steel and timber landing stage, equipped with a hand-

operated crane was erected on the north-west side.

The gun floor of the fort would be at roof level and the armament was to consist of four 6" BL Mk7 guns on Mk2 mountings. These guns were sited on an arc of 160° and at a radius of 33' from the centre of the fort. The two seaward-facing guns were housed in a bulletproof steel enclosure, known as an armoured barbette position, while the remaining two guns were in open barbette emplacements. The position of the guns was such that their arc of fire could cover nearly 360°, leaving only a minimal amount of dead water. Ready-use ammunition was kept in recesses around the gun emplacements and in action more ammunition could be supplied from the magazine below by means of an electric hoist, the magazine had a capacity of 2000 shells and cartridges. Also at roof level was a bullet-proof structure housing the Battery Command Post and Electric Light Directing Station, with two armoured revolving turrets each containing a 9" Barr & Stroud rangefinder on top.

Construction work, with its centre of operations at Crimsby, was pushed ahead with all possible speed but the very nature of such an undertaking was to cause many problems and delays. Above all it was the weather that caused the most trouble and much time and material was lost through its effects. Despite the many problems and the escalating cost, sufficient work had been completed by October 1918 to allow the mounting of four 6" guns but it was not until December 1919 that Bull Sand Fort was officially completed.

From the outset of construction no formal estimates of the cost of the fort were issued because of the many difficulties foreseen in its construction. Consequently the work was undertaken on a cost plus percentage basis and the final figure was reputedly in excess of £1 million. The only official statement of the cost the author has seen is £293,500, quoted on a document dated May 1918, over twelve months before the fort was officially completed. One can only assume therefore that the true cost lies somewhere between the two figures. The building of Bull Sand Fort had consumed over 40,000 tons of concrete and steel.

During the inter-war years the fort was maintained by a peacetime garrison of one officer and twelve other ranks, and was used periodically for seaward firing practice by the local TA gunners during their annual camps.

Bull Sand Fort was reactivated for a short period during the emergency mobilisation due to the Munich Crisis of September 1938, and was once again fully operational in August 1939, manned by personnel from the East Riding Heavy Regiment RA (TA). During these early months of war the fort's main role was to support the Examination Service and an area of water to the south of the fort was designated as the examination anchorage.

In May 1940 the two rear 6" guns were removed to be replaced by two twin 6-pounders, the army's latest anti-motor torpedo boat weapons. The twin 6-pounders were installed by September and, in conjunction with new installations of the same weapons on Spurn Point and Haile Sand Fort, they could lay down a withering crossfire against any enemy attack trying to penetrate the outer defences. With the new installations came more building work, each new gun had its own bullet-proof steel directing station, erected behind the 6" BOP, and to provide more night-time illumination two new searchlight sponsons constructed in reinforced concrete were built onto the outside of the fort. For the comfort of the garrison, a hall for recreation and dining was built of brick at roof level behind the B.O.P. at about this time.

As the war progressed the responsibility for supporting the Examination Service was transferred to the 6" battery on Spurn, and the fort's main mission was redefined - 'The primary role of the battery is to prevent hostile MTB's and similar light craft from entering the Humber.' By November 1943 the economies in Coast Artillery personnel had caused a reduction of the 273rd and 274th Coast Batteries who now manned the fort. The twin 6-pounders were placed in care and maintenance and Bull Sand Fort ceased its operational role on the 5th January 1945.

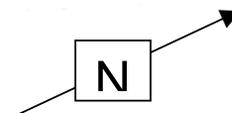
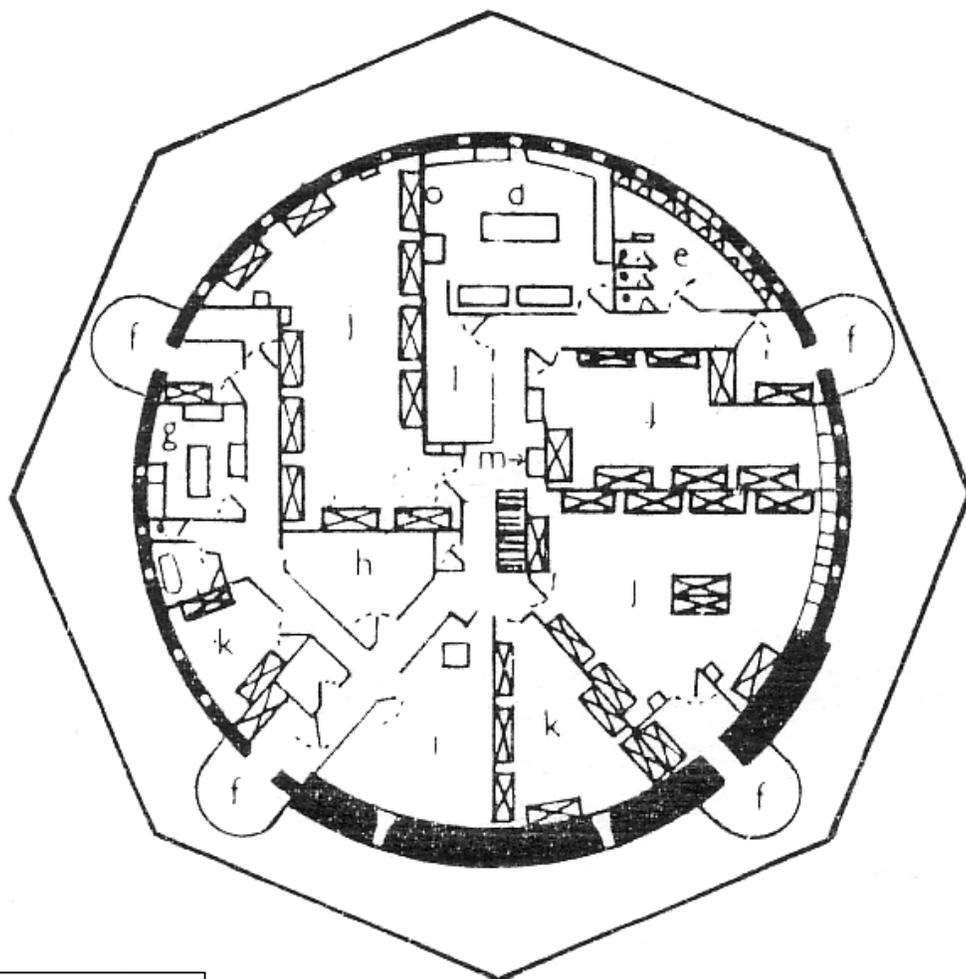
After the war the fort was once again placed in care and maintenance although the guns were fired periodically and the records show that the twin 6-pounders were re-calibrated in "1952. The fort remained garrisoned by various maintenance batteries until December 1956 when, in line with the policy of the abolition of Coast Artillery, it was to be demilitarised.

Whilst the army set about the task of removing the tons of equipment and

ammunition from the fort, the debate about its future use began. At first the military authorities decided to keep possession of the fort and installed civilian caretakers to maintain its fabric and tend the various navigational aids mounted on the roof. In 1964 however, the Ministry of Defence announced that it wished to dispose of the fort, which again revived speculation about its future. Various schemes were put forward for its future use including that of a base for the Number Pilots, but surely the most enterprising plan put forward was by a gentleman who wished to turn Bull Sand Fort into a casino and duty-free drinking club, pointing out that if Spurn Head was eroded by another three quarters of a mile, the fort would lie outside the three mile limit.

All this speculation ended when in November 1964 the fort was sold to the Humber Conservancy Board for £625.

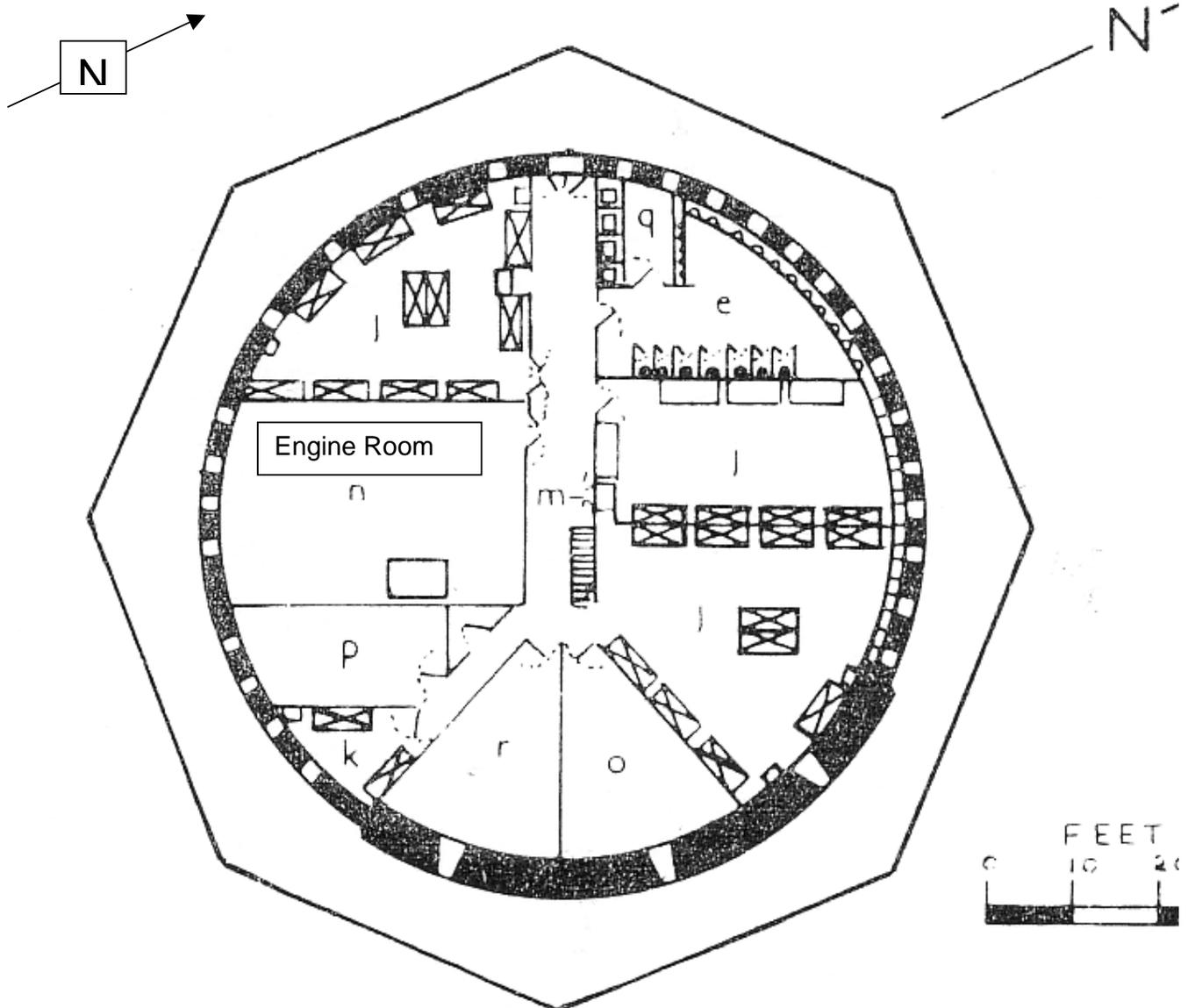
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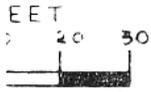
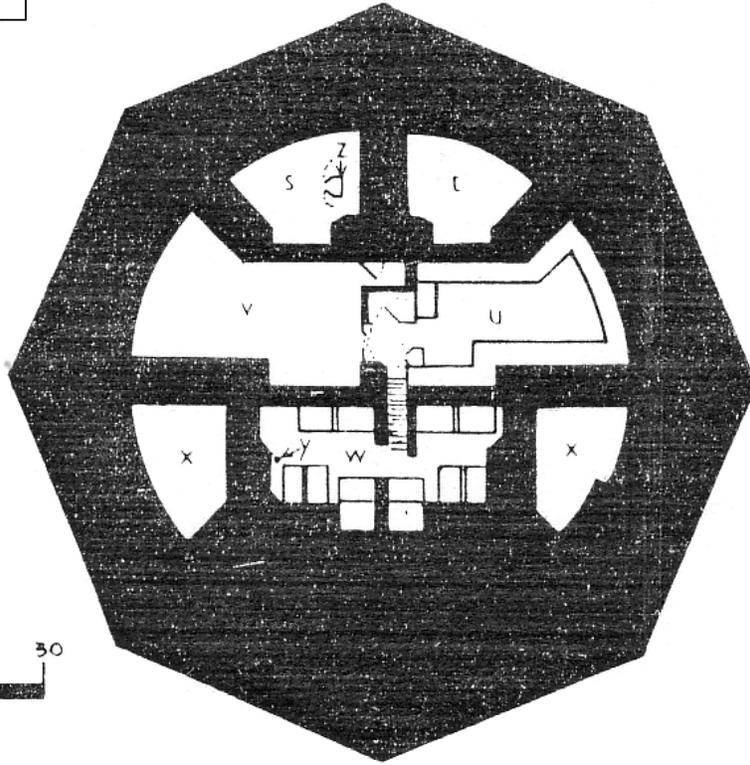
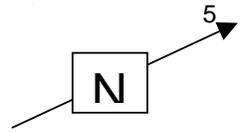
KEY

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|--------------------------------|-------------------------------------|-----------------|
| (a) SHELTER | (j) OTHER RANKS QUARTERS | (s) COAL STORE |
| (b) SHELL RECESS | (k) OFFICERS QUARTERS | (t) BEER CELLAR |
| (c) CARTRIDGE RECESS | (l) BREAD AND MEAT STORE | (u) SHELL STORE |
| (d) KITCHEN | (m) AMMUNITION LIFT | (v) MAGAZINE |
| (e) ABLUTIONS | (n) ENGINE ROOM | (w) OIL STORE |
| (f) ELECTRIC LIGHT EMPLACEMENT | (o) BOILER ROOM | (x) WATER TANK |
| (g) OFFICERS KITCHEN | (p) ACCUMULATOR ROOM | (y) BORE HOLE |
| (h) ROYAL ARTILLERY STORES | (q) SHOWERS AND BATHS | (z) LIFT |
| (i) OFFICERS MESS | (r) ROYAL ENGINEERS SHOP AND OFFICE | (x) BUNKS |

Bull Sand Fort, floor plans, 1918

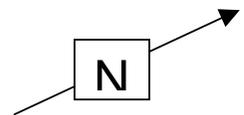
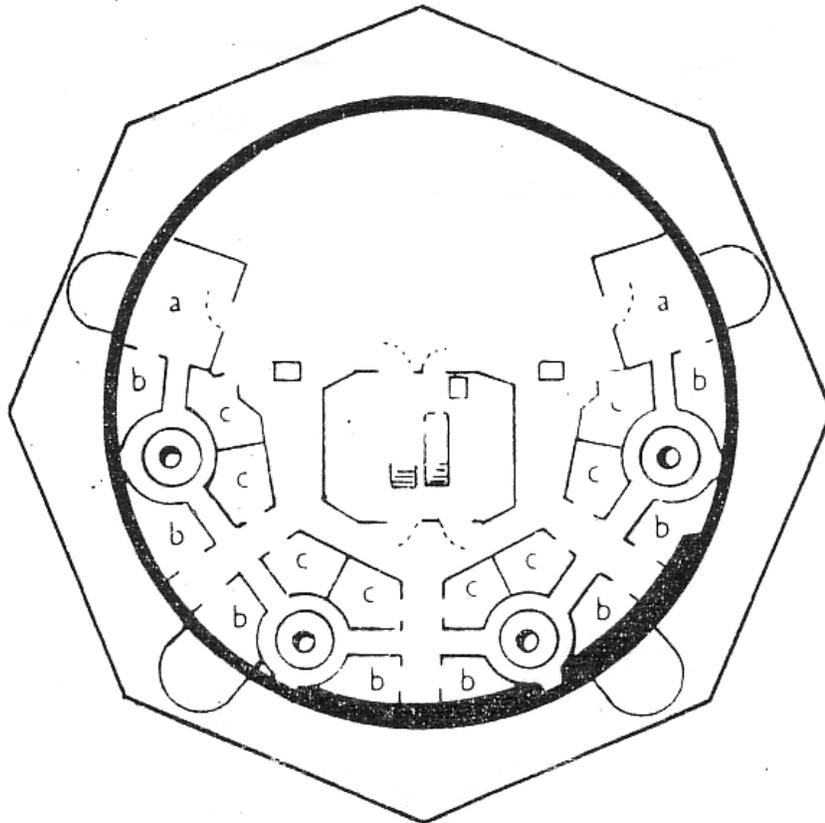


BOTTOM FLOOR



CELLAR FLOOR

GUN FLOOR



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