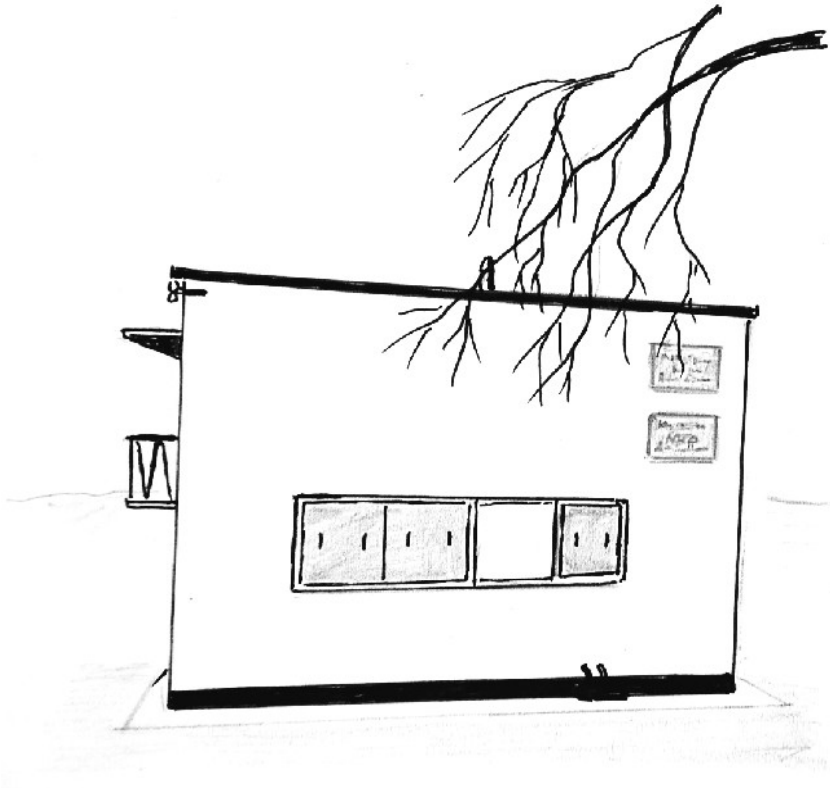


Canvey's Secret War



The Secret Degaussing Station

A SeeHistory PUBLICATION

SeeHistory

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Canvey's Secret War.

On the Western side of the Canvey Island's seafront, just to the East of Thorney Bay beach, stands a sombre white blockhouse style building. Next to it sits what used to be the old deserted toilet block and shelter that has since become The Bay Café.

Most people passing the building wouldn't have previously given it a second glance, the majority of locals assuming it to be something to do with the seawall defences, maybe a pump house or similar? - In fact it did have something to do with defence – that being: 'Defence of the Realm!'



The post war estrangement. The defence trigger that made the Canvey building essential...

As World War 2 drew to a close and our military men and women returned home to our shores a new threat to World peace emerged almost as soon as the World War ended. This was triggered by the dropping of the first atomic bombs on Japan on August the 6th and 9th 1945.

This then was to become the era of the Cold War. It ran from 1945 to 1991 and was at its height between 1962 and 1979. It was mostly a secret and stealthy war of information gathering and spying. This might sound exciting, but in truth, for those people involved it was in the main a boring and demoralising time as little seemed to happen year in year out. However the Cuban Missile Crisis in October 1962 raised the level of excitement and very nearly culminated in the triggering of WW3.

It is possible that more money was spent in this period than in both WW1 & WW2 together. The re-enforcing of WW2 bunkers or building new, sometimes massive, deep nuclear hardened bunkers, observation posts, listening stations, atomic weapons/missiles/aircraft and all the other various items, buildings and logistics etc. supposedly needed in the Cold War Defence programme was how much of this money was spent.



The white building on Canvey is currently being used as The Bay Museum & Research Centre:-

But historically like so many defence type buildings of this period it could be viewed by some as being rather sinister in nature!

Its history starts between 1962 and 1963 when planning finished and building work began. It was classified as a UK Admiralty Secret site and remained so up to 1993 and although the building itself is now declassified, the equipment it contained and the technology that lay mid-channel, out in the busy shipping lane of the River Thames still remains, in part, classified as **UK SECRET** even to this day.

Use of the building is known to have been that of a Degaussing Range Station (DG Range), however locally and maybe affectionately it was known as the **Canvey Loop**. There is many a sceptical and/or nonsensical tale about what the Degaussing Station did, some are no doubt the making of a good well spun yarn!



The top sign used to read:

**MINISTRY OF
DEFENCE
PROPERTY**

KEEP OFF

**ADMIRALTY
DG RANGE**

Canvey Loop.

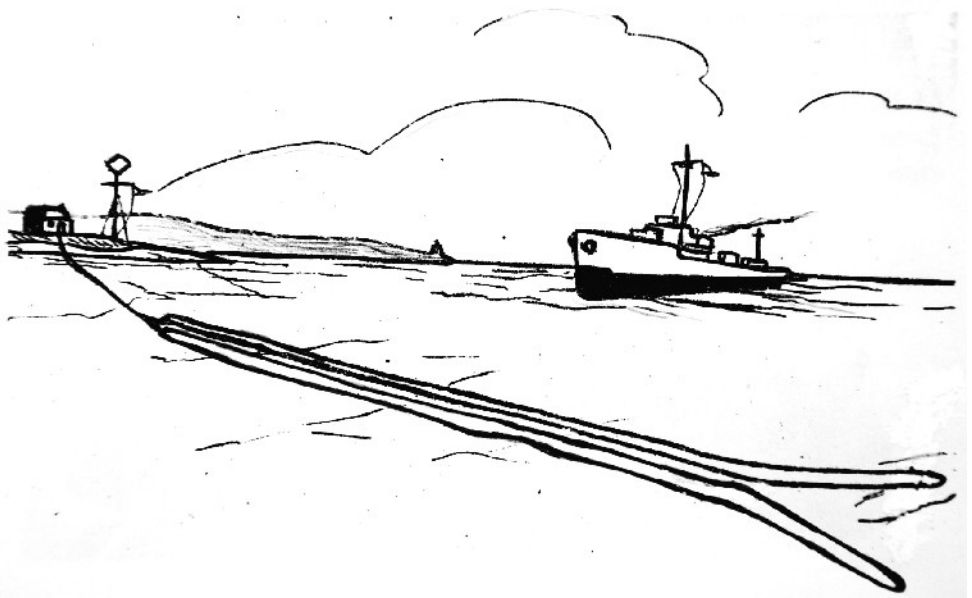
The Canvey Loop got its name from the technology of an earlier period which was used to detect magnetism in Naval and Merchant shipping.

It consisted of nothing more than two thick loops of cable that sat on the river bed below the shipping that ply the deep water channel. As a ship passed over so any magnetism in the ship's hull will induce small currents into the loops of cable that could then be detected with sensitive instruments as electrical signals*.

This then is the basis of the operations in the Degaussing Loop Station It did nothing more than detect the magnetism of passing ships in order that they could be demagnetised (Degaussed) against a known wartime threat.

The aim of degaussing was to neutralise this magnetic signature.

[*The principles of magnetic fields causing electrical currents to be produced in cables is know as “Gauss's law” recorded by Carl Friedrich Gauss way back in 1835 later published as part of Maxwell's equations in 1867].



Why demagnetise a ship? Hitler's Secret Weapon.

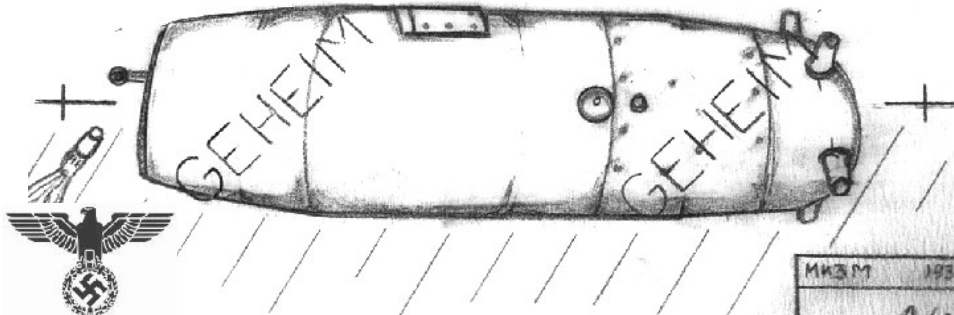
A horror weapon from WW2: the Magnetic Mine or Hitler's Murder Mine as it was sometimes known.

It wasn't as some may remember it: the limpet mine that was stuck to the hull of a ship by divers or a passing vessel. Nor was it the contact mine that looked like a floating conker that would detonate when struck. This was a far more sinister beast that lurked on the bottom of rivers and in ports.

It precedes and is the basis of modern influence mines in that it used magnetic influence detection to discriminate between small insignificant vessels and the larger metal warships or merchant shipping. On detecting such a vessel by the magnetic fields it produced the mine would then detonate at the midships point as the ship passed overhead; creating sufficient damage through an underwater explosion generated pressure wave to sink or cripple the vessel.

When first introduced, the Nazis concentrated their efforts on laying many magnetic mines in the Thames Estuary and at the entrances of docks throughout the UK, around 470 were deployed by Germany in the first three months of the war alone with the inevitable result that:-

During September and October 1939 incidents were reported of mines possibly acoustic in nature being triggered by passing vessels, they were almost certainly now known to have been magnetic mines.



On the 13th November HMS Adventure and HMS Blanche were damaged by what were later thought to be magnetic mines in the South Edinburgh Channel in the mouth of the River Thames, HMS Blanche capsized and sunk with a loss of two lives as attempts were made to assist the stricken vessel.

November 18th the Dutch Liner The Simon Bolivar with 400 passengers and crew on-board was sunk in the busy shipping lanes of the North Sea. The Dutch later indicated this was caused by a magnetic mine. This triggered a public outcry in Holland. It was also revealed during a later enquiry that the ship Canada was almost certainly sunk on the 4th November by the same means!

On November 18th the Luftwaffe specifically concentrated its efforts on the dropping of magnetic mines within British Coastal waters.

November 20th and mine sweeper HMS Mastiff was destroyed in the process of trying to recover, what later turned out to have been a magnetic mine, using a fishing net!

On November 21st HMS Gypsy was maybe the first officially recorded casualty of a magnetic mine followed on the same day by then brand new HMS Belfast being badly damaged in the Firth of Forth and the Japanese liner Terukinu Maru in the Thames Estuary.

All of these mines were either dropped from aircraft or ejected from submarines (The U-21 in the case of HMS Belfast) straight into the sea or river. However, two strokes of good luck or misfortune, depending on how you view it, resulted in their discovery and the eventual method for their disarming.



Fact, Fiction or Myth?...

The tale goes that the first incident happened up river, close to Dagenham Docks, where boys seeing a monstrous strange black object with protruding horns laying on the mudflats; they threw stones at it! At some point a piece of metal was most likely thrown and the object exploded! The boys were reported killed, but at least one must have survived for the tale to have been told in the local newspapers? The suspicion of a sound or metal detecting device in the form of a mine or bomb was firmly born!

The later official line was that a prisoner of war had revealed to his interrogators the existence of a new metal detecting mine weapon!

Then on November 21st 1939, the second event took place: Two mines were parachuted out of a German Heinkel 115 bomber. They landed on the mudflats off Shoeburyness, adjacent to the Defence Proof & Experimental Establishment, Artillery Ranges and their associated military workshops. As they sat fully exposed on the mud flats, they were quickly spotted and reported to the Admiralty.

Now armed with the previous unnerving knowledge that the mines could possibly be triggered by the close proximity of sound and/or ferrous metals, two men were dispatched to deal with them, but not before every metal item was removed including their buttons and belt buckles! Even the tools to be used were later to be quickly fashioned out of a non-ferrous metal in the Shoeburyness workshops.

Navy Bomb/Mine Disposal Officers Lieutenant Commanders J G D Ouvry and R C Lewis were tasked with approaching one of the mines and recovering it intact **'no matter what the cost!'**

The mines were some two metres long, constructed out of aluminium alloy with six tubular horns at the nose end! John Ouvry made a careful rubbing of the external brass assembly points so that new tools could be designed and made over night in the range workshops before any work could commence.

Petty Officer Baldwin and Lieutenant Commander John Ouvry returned the following day on the 22nd November at 4 am - low tide. It took John Ouvry twelve hours to defuse one of the weapons having to remove two detonators, one of which was located underneath the weapon in the mud. Finally he had to locate and deactivate the hydrostatic activation valve, that was set to initiate the mine when it settled on the seabed, before it was thought safe enough to move, whereupon it was quickly transported to HMS Vernon in Portsmouth. It was there examined in great detail.

From this event the countermeasures, of which the much later Canvey Loop DG Station forms part, were formulated and deployed.

Officers Ouvry and Lewis were awarded the Distinguished Service Order (DSO) medal by the King himself that very same year, 'so important was their courage and work in recovering the mine intact thought to have been to the war effort'.

Of the others involved: Baldwin and Vearncombe were awarded the Distinguished Service Medal (DSM), while Lieutenant Glenny, who rendered the second mine safe, received the Distinguished Service Cross (DSC).

Nevertheless in November 1939 alone, some 27 ships totalling some 121,000 tons were lost to magnetic mines and the River Thames was virtually closed to all shipping movement by the end of that month.

On 26th November 1939 Prime Minister Neville Chamberlain broadcasts to the nation that Britain was aware of the magnetic mine threat.

[Fact, Fiction or Myth?... *It was later to be revealed that Hitler's maritime arsenal actually contained some three thousand magnetic trigger type mines at the very beginning of the war, many of which were eventually deployed around UK coastal waters, particularly in our ports and estuaries.]*

How to demagnetise a ship?

It was determined that the only safe way to avoid further casualties to the magnetic mine was to find a way to somehow demagnetise a steel ship? No doubt this was initially thought to be an impossible task!

So, first it was necessary to 'see' how magnetic each individual ship was?

Stations such as the one that previously existed within Coalhouse Fort at East Tilbury, just up river from Canvey, were constructed to measure magnetism in ships - they used the underwater loop method of detection previously mentioned.

In the meantime a magnet sweeper line called the 'Bosun's Nightmare' was used by mine sweepers to try and detonate undetected mines on the seabed or riverbed.

There were by all accounts many attempts to finding the ideal solution to demagnetise a ship and eventually the following method was adopted by the Admiralty:-

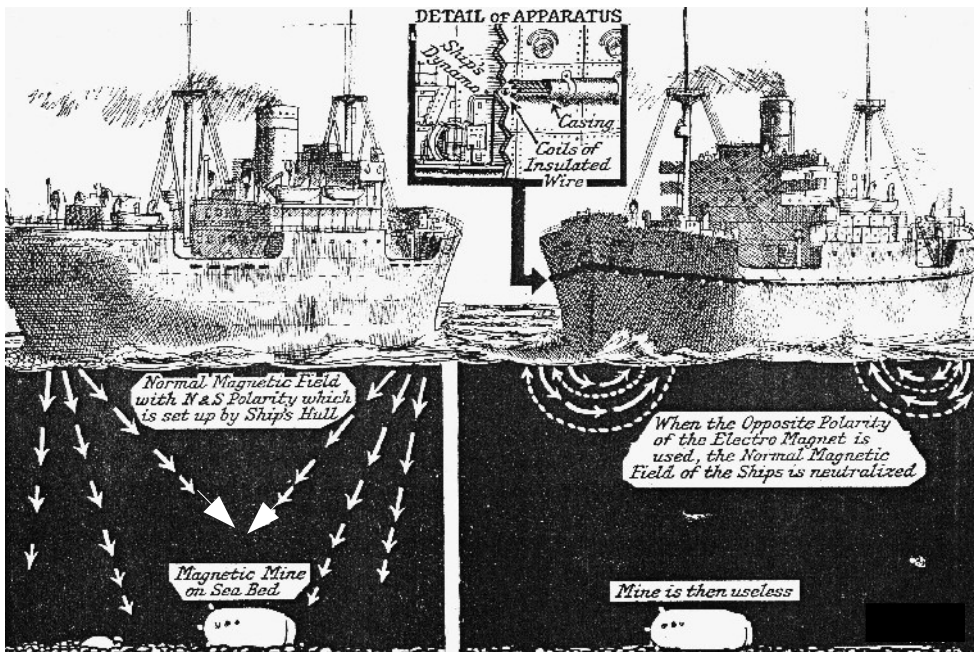
To remove the magnetism: fat coils of cable would be wound around the vessel and unbelievably massive electrical direct currents (d.c.) of 4000 Amps or more would be passed through them creating an opposing or cancelling magnetic field. The current would then be slowly reduced and finally switched off and the magnetism checked again... followed by the same procedure over and over again until all magnetism was minimised and the vessel showed a sufficiently small enough magnetic field that it would be unlikely to trigger a mine. This was called degaussing (Or deperming by the United States after the first successful trial there on a ship called The USS Deperm ADG-10).

The method used was very dangerous to personnel undertaking the work as the vessels had to remain in the water during degaussing operations and put simply 'electricity and water form a very dangerous combination!'

In the years that followed, new measures and countermeasures were adopted by both sides to improve both magnetic weapons and the means to defeat them.

In the Cold War period the magnetic mine was deployed again... (if in a slightly different form that could now detect changes or disturbances in the planet's own magnetic field known as Magnetic Anomaly Detection MAD) ...by some Communist States and as the odd unexploded mine remained left over from the Second World War, so the requirement to continue degaussing ships remained.

Naval shipping used new on-board methods for both the detection and defeating/zeroing of magnetism, but this equipment was very expensive. Merchant shipping continued to rely on degaussing detection stations such as Canvey Loop to detect the magnetic fields, whilst the more affordable on-board degaussing equipment, now built into the ship itself, would be used by the ship's own engineers to zero the magnetic fields by themselves under the direction of the Degaussing Station.



The boredom of war; a 'not so typical day' working on a Admiralty DG Range: inside the Canvey Loop Station.

The Admiralty DG Range was most likely the second structure on Canvey Island of its type to be involved in the degaussing procedures, as there are strong indications that a station, of sorts once existed on the west side of Thorney Bay during World War Two within what was then Canvey Fort. This, if it existed, would have used the same methods as Coalhouse Fort, that being the loop system. Nevertheless, the name Canvey Loop stuck even though it is unlikely that the loop itself existed for very long, if at all, in connection with the new DG Range Station that is today The Bay Museum & Research Centre.

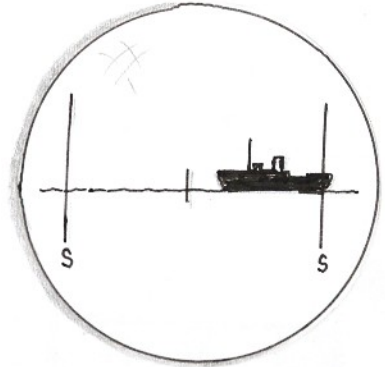
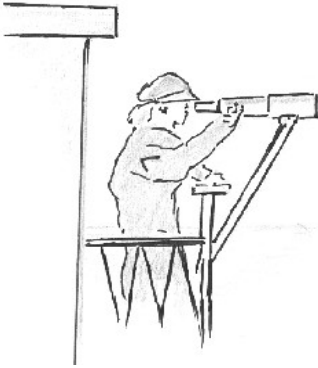
[Fact Fiction or Myth?... *An earlier rumour attached to the area: was that it had been set up during WW2 to treat gas bomb victims and as such, the area acquired the name of a Degassing Station... some confusion about this remains to this day on that one i.e. 'Degassing' – 'Degaussing' just one letter difference in the spellings??? The jury remains out on this one!]*

It is more likely that Canvey's Admiralty DG Range Station – Canvey Loop used the newer and more sensitive magnetometer devices available at that time to undertake measurements.

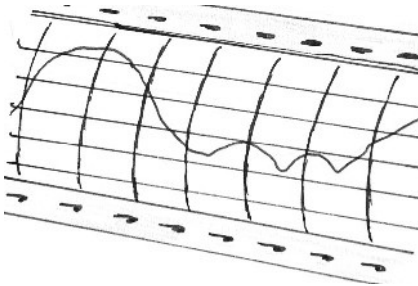
The Canvey building usually had four people working in it and its main role seemed to be in the training of WRNS (Women's Royal Naval Service) 'pronounced Wrens' to carry out the procedures, whilst technical officers, usually men and often civilians, would carry out the calculations needed.

There would be long periods of inactivity waiting for the next vessel to be tested, but when one came into the testing zone so the work went from zero to manic.

The observer Wren checks the position of the vessel to be tested for magnetism.

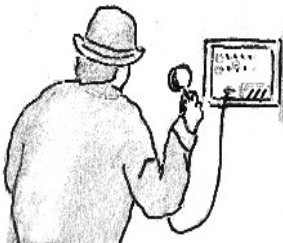


As the ship aligns with the start line so the command is given to run the chart recorders.



The chart recorders will plot any magnetism that is detected.

The results are checked and this will determine if any action is required to reduce the vessel's magnetic levels.



The ship is contacted by radio with the results and told of any action that is needed.

The ship would radio ahead to inform the Wrens of its approach and they would then prepare. The readings would be taken on a number of pen chart recorders and these had to be checked, calibrated and freshly inked in readiness; a failure in this area was not acceptable as the costs involved in turning a ship around to repeat/restart the process was expensive to say the very least!

The range over which the vessel was required to travel was determined by the appointed observation Wren using a graticule calibrated telescope, with corresponding start and stop lines etched into the glass.

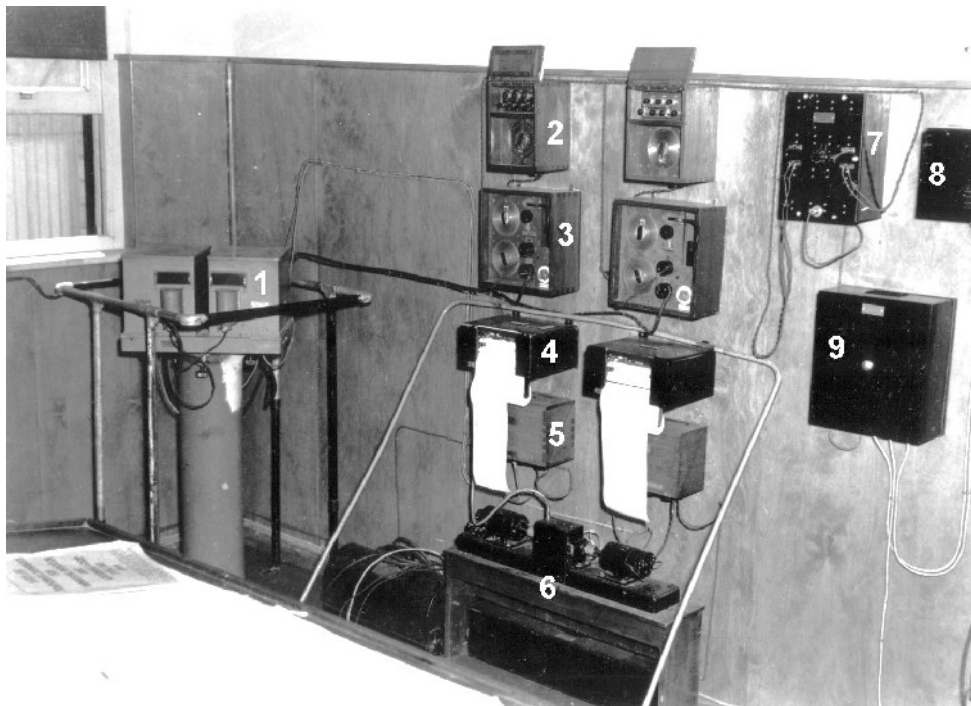
As the moving ship aligns with the range start line, so the command is given by the observer to initiate the chart recorders. They would then run until the ship had passed over the second line and the command was then given to stop the recorders.

The resulting charted patterns would be quickly checked for their completeness and then, once numbered, the paper chart from each machine would be removed and taken to the technicians to work out the level of degaussing correction that was needed; although during training, the Wrens themselves would also be asked to carry out the calculations using Logarithm tables and slide rules.

The whole time the ship would be in contact with the Station by radio or semaphore flags and would not be allowed to proceed on its journey until the results were obtained. If the figures indicated that zeroing of the magnetic fields were required, then the calculated results generated would indicate how this work should be carried out and instructions would be sent by radio to the ship.

After some considerable time the ship would report back that the degaussing procedures, as recommended, had been carried out and completed. After which, arrangements would be made for the ship to repeat the the test again by sailing over the range once more to confirm that the magnetism had indeed been zeroed.

This was a procedure that would have to be repeated more than once due to the magnetic influence of the planet itself. As a ship moves around the seas and oceans it will, over time, pick up new magnetism and this would also eventually need to be removed by degaussing!



Inside a typical loop type Admiralty DG Range Station.

1. The sensor that converted the very small signals into a much larger signal. This unit is called an integrator.
- 2 & 3. The equipment used to balance the cable loops.
4. The chart recorders, these are driven by motors: item 6.
5. A chart recorder amplifier.
6. The chart recorder motors.
7. The power supply unit.
- 8 & 9 The audio amplifier and loudspeaker units that would allow underwater Morse communications to be detected on the loops!

Demise of the Admiralty DG Range: the Canvey Loop.

For a building, 'only constructed in the early Sixties' and designed to withstand a near distant nuclear explosion in time of war, it would seem strange to find such a structure in such relatively good condition being abandoned? In fact the Admiralty DG Station on Canvey is possibly the last remaining recognisable example of this particular type of building anywhere in the UK, if not the World! Although in truth, there are hundreds of other, if different, Cold War Admiralty and Ministry of Defence buildings and bunkers throughout the country in good condition, that have been abandoned to a similar fate!

*“However the demise of the Canvey loop was somewhat different as in fact it was the upgrading of the island's seawall defences that sealed **its** fate!”*

In February 1953 during a storm in the North Sea the island suffered terrible flooding and many people drowned. The reason was obviously the weather, but also a number of other factors in the North Sea that produced not only an unusually high Spring Tide but also the storm which, causing a surge tide to run all the way down the South East coast, overwhelmed our little island's flood defences! Canvey's seawall at that time proved to be little in the way of protection against such a massive surge of water!

As a result 20 years later Canvey was to have a brand new seawall after work commenced in 1973!

This wall was much higher than the original and obscured the required view out over the Thames estuary from the DG Station preventing it from being able to continue monitoring the ships on the DG Range! This could no doubt have been overcome by adding an observation platform onto the concrete roof of the building!

The 1953 Flood



But that aside, the interlocking steel piles that would form the hidden central core of the new seawall structure were to be rammed into the old seawall foundations to such a depth that they would undoubtedly sever the cables that ran between the DG Range Station and the deep water channel out in the river!

It was thought far too expensive an upgrade to the building, to recover the old cables and then lay deeper replacements in order to resolve this! Also the use of magnetic mines had declined in modern warfare and were being replaced with more sophisticated systems that relied less on magnetic detection and more on physical displacement detection. As a result the building of the new seawall spelt out the death warrant for it.

The construction of the new seawall went ahead and was completed in winter of 1982.

Between 1981 and 1982 the doors were closed and the shutters put up at Canvey Loop for the last time in respect of its Admiralty uses, the new seawall now completely obscuring the required view and with the cables assumed to have been cut through and now thought to be completely dead!



It came to pass...

[Fact Fiction or Myth?... *The future of the building was not known, at one stage following an increase in head lice in island schools, it was reported in local newspapers that the building would be handed over to the NHS in order that School Nurses treating the lice could be located from there! So the station almost gained a new nickname, from that of Degaussing Station to "De-lousing Station, home of Nitty Nora the School Nit Nurse!]*

This proposal didn't amount to anything and eventually the Canvey Lifeguards acquired the station around 1982 as a storage facility building for their equipment. This though was a short term acquisition and so the building was again soon to be deserted.

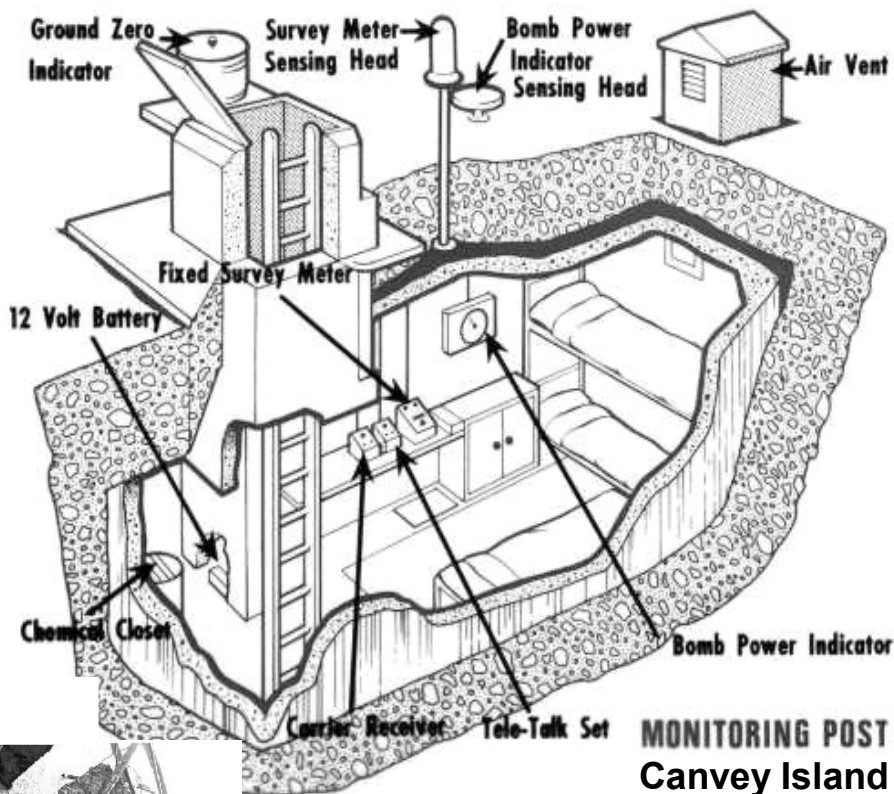
Then in 2006 the local Borough Council, who were in the process of disposing of, or levelling 'dangerous and unused structures' in the locality, they offered both the old toilet block & shelter along with the Admiralty DG Range Station up for suggested uses?

Whilst the Cold War Royal Observer Corps (ROC) post on Northwick Road was capped with concrete (see following page). The toilet block & shelter, (on all accounts part of many a courting couples fond memories) were acquired and converted into The Bay Café.

A suggestion was put forward that the Admiralty DG Range Station be converted into a small museum of remembrance; this was eventually agreed and some three years later the new Bay Museum and Research Centre was to be born.

The keys to the Admiralty DG Range Station were officially handed over on the 25th July 2009; as it happens this date also coincided with the sad death of Harry Patch, at 111 years of age the oldest surviving and last fighting of England's World War One Tommy's.

The only other known Cold War artefact on Canvey Island is that of the ROC Post (now capped). This would have been used to monitor the effects of a nuclear explosion, to record wind direction, power of the weapon and if the ROC monitor(s) survived the aftermath, to report the damage inflicted; although in truth the job was recognised as a suicide mission!



Fact Fiction or Myth?... A final few to think about:-

- 1. The Royal Navy degaussed metal ships to stop magnetic limpet mines sticking to the hull?*
- 2. The Royal Navy degaussed metal ships to stop contact mines being pulled towards them?*
- 3. An exploding magnetic mine looked like a massive mushrooming purple jellyfish erupting out of the water?*
- 4. The true name for a Degaussing Station or DG Range Station is that of an Indicator Loop Station?*
- 5. Germany invented the magnetic mine?*

Answers:-

The answer to questions 1 & 2 are the same in so much as the degaussing process would only reduce the magnetic signature of a vessel, it would not stop it from becoming magnetic and/or attract magnetic objects to its metal surfaces! So in both cases the answer is: These are both untrue statements.

The answer to question 3 is: This was in fact an observation made by many workers at Hole Haven Creek, Canvey Island during WW2 when mines were seen exploding under the water in that area. The power of the 660 pound explosive charge generated by the underwater mine was very damaging, it could disrupt and tear apart the steel plates of a ship and even twist and damage internal structures within the vessel. So, yes it is very likely that this is how such an explosion would have looked.

The answer to question 4 is: Such stations throughout the rest of the world are generally known as Indicator Loop Stations.

As far as records show the answer to question 5 is: Untrue! The magnetic mine was originally patented by an American: Mr Caesar Marshall in the British Patent Office as early as 1918? It is however known that experiments with such devices were carried out even earlier than this; so it was far from the secret German development that Hitler announced in 1939.

SeeHistory would like to thank the following contributors to this booklet:-

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