

De-magnetising a ships hull



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DE-MAGNETISING A SHIP'S HULL October 13, 2008 Keywords: Magnet, Ship's Magnetism, Degaussing De-Magnetising a Ship's Hull

1. Earth as a magnet

A freely suspended magnet or a magnetic needle always comes to a position of rest by showing its N-pole towards the geographical N-pole of the earth and S-pole towards the Geographical S-pole of the earth any where. From this it is clearly evident that earth behaves like a huge magnet by which it could attract the poles of the magnet in a specific direction wherever the magnet is suspended. [2]

2. Ship's magnetism

2. 1Ship as a magnet

Modern ships are entirely built of iron and steel. The body parts of the ship are made of hard steel and other instrumental parts are made of soft iron. The hard steel parts get permanently magnetized due to hammering and riveting those parts at the time of construction of the ship. The soft iron parts get temporarily magnetized due to the influence of horizontal and vertical components of earth's magnetic field which flows through the huge ship when kept on the harbor for a long time. [1] So the entire ship behaves like a magnetic after construction for which it is subjected to two types of dangers. Firstly, the magnetic compass will not work correctly inside the ship and secondly the ship will be affected by magnetic mines inside the water. So we have to remove ship's magnetism and the process is called degaussing. Above all we have to place magnets and magnetic materials on each side of the compass inside the ship to keep its direction exactly towards the magnetic meridian.

2. 2Degaussing

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It is a process to remove ship's magnetism. [3] This is done by winding few turns of insulated wire around the ship and passing a heavy current so as to create an opposite magnetic field to that of the ship's magnetic field. This will remove ship's magnetism by the demagnetization process. A steel hulled ship is like a huge floating magnet with large magnetic field surrounding it as the ship moves through the water, this field also moves. The ship can act as a trigger device for magnetic sensitive ordnance or devices, which are designed to detect these distortions. The degaussing system is installed aboard ship to reduce the ship's effect on the earth's magnetic field. The electric current flowing through degaussing coils wound in specific location within the hull. This in turn, reduces the possibility of detection by these magnetic sensitive ordnance or devices. Ship's such as Mine sweepers carry out degaussing before they venture out magnetic mines sweeping operation.

References

[1]Fas. org, " Degaussing", [Online] Retrieved from

[2]Leonard B. Loeb, (2004), " Fundamentals of Electricity Magnetism",
London Chapman Hall, page 42-45

[3]Wikipedia. org, " Degaussing", [Online] Retrieved from