

U.S.S. Surfbird (ADG-383)
Care of Fleet Post Office
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WELCOME ABOARD!!!

You are now on board the only operational DEGAUSSING VESSEL in the U.S. Navy. Not only is it the only operational DEGAUSSING VESSEL in our navy, but has the distinction of being the only operational DEGAUSSING VESSEL in the Navies of the world. SURFBIRD is an EX-MSF and was converted to a fully operational ADG during several availability periods and the transition from MSF to AGD was completed during the early part of fiscal year 1960. Some of the ships characteristics might be helpful here

Length: 221 feet. Beam: 32 feet. Displacement: Approx. 1100 tons.
Speed: 18 knots. Shaft Horsepower: 3200. Type of propulsion : Diesel-Electric, which consists of diesel driven 230v D.C. 710KW, 3060 Amperes Generators which drive 4800 H.P. Motors connected to two drive shafts through reduction gears.

Now that you have a general description of the ship, you may be wondering what her mission is. We stated above that the SURFBIRD was a DEGAUSSING VESSEL, but if you are like most people, the subject, DEGAUSSING, is fairly remote to you. It is the purpose of this pamphlet to try to enlighten you on this subject. Before we go into the mission of the ship, a brief history of DEGAUSSING and how it came about might be in order here.

In September, 1939, at the beginning of world war II, many British ships were sunk in the English Channel by a new weapon to which there was no known defense. It was suspected that this new weapon was a magnetic mine and this was later confirmed when one of the new weapons was captured intact and a visual inspection of the firing mechanism was made. The next problem was to determine some defensive measure against this new weapon.

Through much hard work and strenuous research it was found that by installing a series of coils of wire in the proper locations about the ship and energizing them with a direct current an electromagnetic field could be setup in such a direction that it would oppose the magnetic field of the ship (all ships have magnetic fields due to the large amount of magnetic materials involved; i.e. iron and steel). This system was called a DEGAUSSING SYSTEM and is derived from the word GAUSS which is the scientific term for magnet line of force, hence DEGAUSSING means demagnetizing. It was found then, that when a ship was properly degaussed (its magnetic field reduced to a minimum value), it would pass over magnetic mines and torpedoes without detonating them. A ships magnetic field had to be continuously checked by magnetic detecting instruments and the degaussing system maintained in the best condition possible.

Much improvement has been made in the field of degaussing and today's modern naval vessels are equipped with Automatic Degaussing systems which maintain the ship in the best possible magnetic condition at all times regardless of heading or area of operation. Periodic re-adjustment of the degaussing system on board a ship is necessary due to changes of the ships magnetic field caused by vibration while operating, heat, chipping, welding, etc.

When a ship becomes permanently magnetized to such a degree that re-adjustment of the degaussing system will no longer compensate for the magnetic field produced, then the ship must be depermed. This consists of wrapping a number of turns of cable around the ship to be depermed in such a manner that it forces a magnetic solenoid around the ship. This process is repeated with current of opposite polarity and diminishing values until such time as magnetic detecting instruments indicate that the ship's permanent magnetic field is of a safe magnitude. Two of SURFBIRD'S main propulsion generators are set up to furnish power to the solenoid and is controlled by a salt water rheostat which is mounted on the after part of the deck.

We have mentioned several times in this pamphlet "magnetic detecting instruments", and you may by now be wondering just what this consists of and how they are used in connection with degaussing. First let us say that the words "magnetic detecting instruments", cover several types of instruments used in degaussing work, but the ones you will hear most are FLUXMETER, and RANGE COIL. The two go together, as the range coil is the device which detects the ships magnetic field, and the FLUXMETER being electrically connected to the RANGE COIL.

You may have already noticed a strange looking contraption on the port side of the ship that to the uninitiated may upon first inspection look something like a rocket launcher or other weird device. This device is known as a portable DEGAUSSING RANGE. This range consists of 9 range coils connected by watertight cables to the FLUXMETER installed in the DEGAUSSING SHACK located on the after starboard side of the main deck. Of course it is not as simple as that, for in order to detect the magnetic field of a ship, this range must be located on the bottom of a harbor or other suitable location so that a ship can pass over the range coils and calculations are made to determine the magnetic condition of the ship running the range. To simplify matters and give you a brief picture of how the ships magnetic field is detected, let us say that as the ship passes over the RANGE COIL, a small voltage is induced in the RANGE COIL circuit and this voltage is in turn amplified to a value capable of operating the control in the FLUXMETER so that a picture of the magnetic field of the ship will be drawn in the moving tape.

Now we are beginning to understand something of the primary mission of SURFBIRD. Our job is to provide mobile degaussing service for units of the U.S. and Allied Navies in the far east.

In order to provide these services in various locations throughout the FAR EAST, SURFBIRD has on board two different types of range coils and you may see either type installed depending on the type of ship to be ranged.

Before placing the range on the bottom of the selected site, it is necessary first to send divers down to inspect the bottom area to determine if it is suitable for installing the portable range. Such things as the type of bottom, I.E. whether it is mud, sand, rock, etc., and whether or not the bottom is fairly level are considered. Another thing that is considered even before the site is selected is the depth of the water, for ships should be ranged at approximately beam depth.

For example an LST has a beam of 50 ft. and therefore it should be ranged at approx. 50 feet. Once an area has been inspected and found to be suitable for installation of the DEGAUSSING RANGE, it is necessary to plant the range on a magnetic EAST-WEST heading on the bottom of the selected site. In order to accomplish this it is necessary for SURFBIRD to make a precision 4 point moor and if you have already noticed the 6 anchors installed, you will now understand the purpose behind the extra anchors.

Once the range is placed on the bottom so that the line of range coils is on a magnetic, SURFBIRD maneuvers to a position so that she is at right angles to the range. This is necessary because as was noted earlier, the ship whose degaussed condition is being checked has to pass over the range coils. It might be mentioned here that in most cases we want the ship to run the range in a NORTH-SOUTH direction with SURFBIRD lying at right angle to the range. There are two reasons for this; first we must sight across the range in order to determine the exact time that the bow and stern of the ship being ranged passed over the range, secondly SURFBIRD has to be clear of the range traffic. After ranging operations have been completed the range is retrieved and SURFBIRD is able to proceed to a new location.

In addition to the mobile degaussing services mentioned above, SURFBIRD personnel also operate 3 ranges located in SABEBO harbor, 2 of which are base ranges at the seaplane base and the minesweeper range located in JULIEIT BASIN.

From the information given in this pamphlet it is easy to see we do an important job out here in the Far East in maintaining our ships and the ships of our allies in their best degaussed condition.