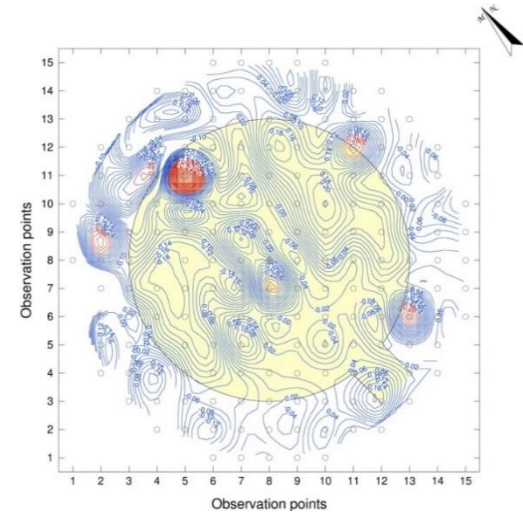




**Magnetic and Electrical Field services
provided to the Aviation, Aerospace and
Maritime Industry**

Lazola Bucwa
November 2019

- Calibration and maintenance of Landing (reference) compasses (service initiated in 1964)
- Magnetic survey of compass swing areas
- Presentation of training courses relating to the execution of aircraft compass swings



Magnetic variation contours
of an compass swing area



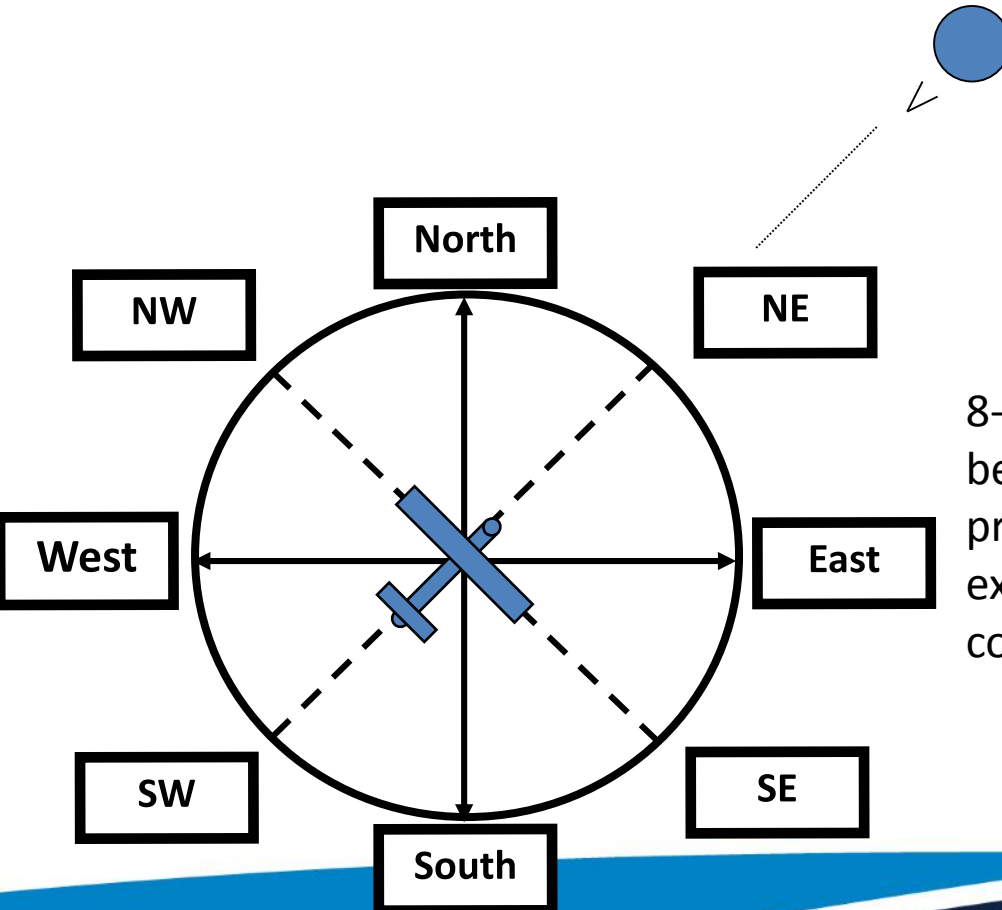
Magnetic survey of a compass swing area

Practical training of students attending
aircraft compass swing course



Aircraft compass swing procedure

Reciprocal bearing compass swing
procedure being executed on an
ORYX helicopter of the SAAF



8-Point Reciprocal
bearing compass swing
procedure using an
external magnetic
compass as a reference



Handheld Landing or
reference compass

Magnetic tests on avionics equipment



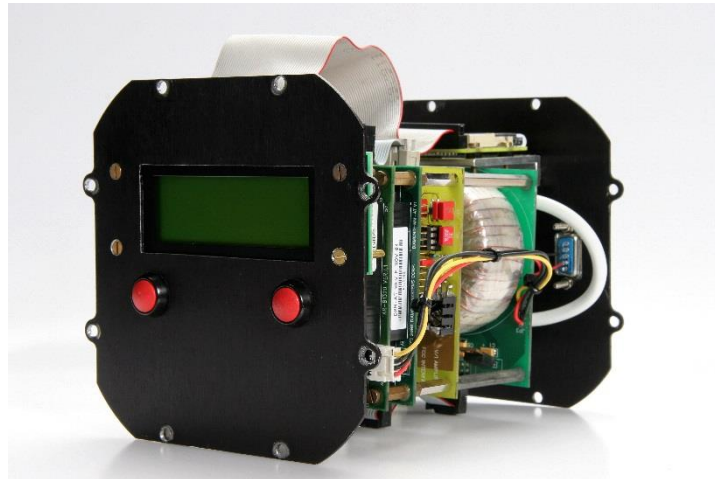
Execution of magnetic tests on newly developed avionics equipment according to international standards (RTCA/DO-160G and 3G.100:Part 2: Section 2)

Development of magnetic navigation ground support equipment



- Design of Magnetic Test Bench – used for verification of standby (emergency) compasses prior to installation
- System won several local and international design awards
- South African Patent

Magnetic test bench with processor and data-acquisition card in PC104 format



Calibration of magnetometers / electronic compasses

Calibration and characterization of magnetometers and electronic compasses:

Navigation sensors on-board Unmanned aircraft

Space qualified scientific and orientation
magnetometers for satellites

Underwater magnetic sensors used in
degaussing systems

Specialised Helmholtz Coils System has
homogeneous area of 0.01% variation in the
middle – 25cm diameter



Compensation for platform magnetism



Rotating the platform on a 2D / 3D non-magnetic test jig



Pre-flight calibration routines



Rotation of a user-defined magnetic field around a stationary platform



In-flight calibration routines

Support SA Navy with Magnetic and Electrical field signature measurement and management

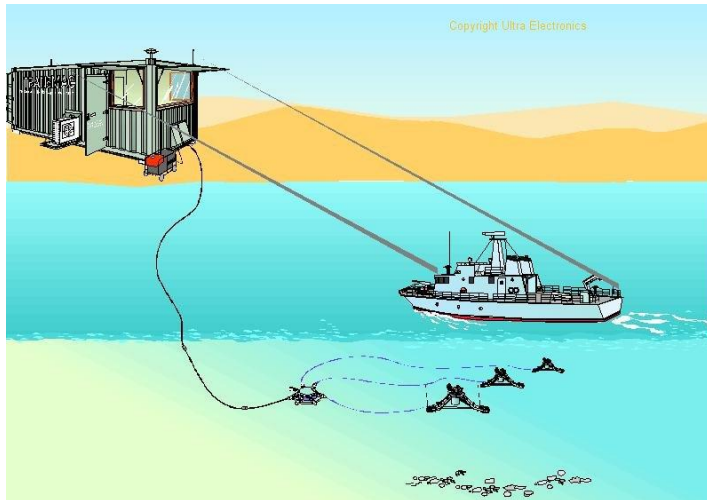
Aims:

Magnetic signatures reduction

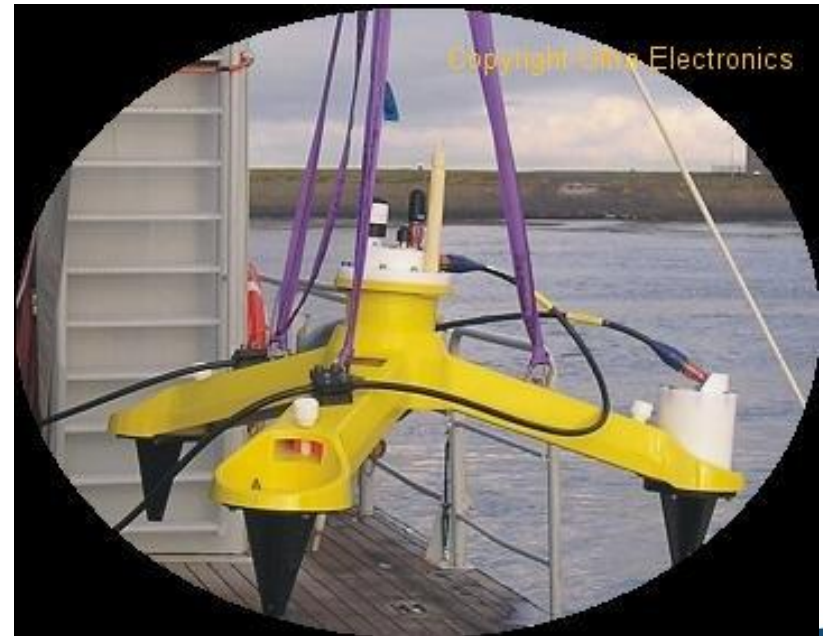
Protection against influence-mines

Preventative measures e.g. corrosion

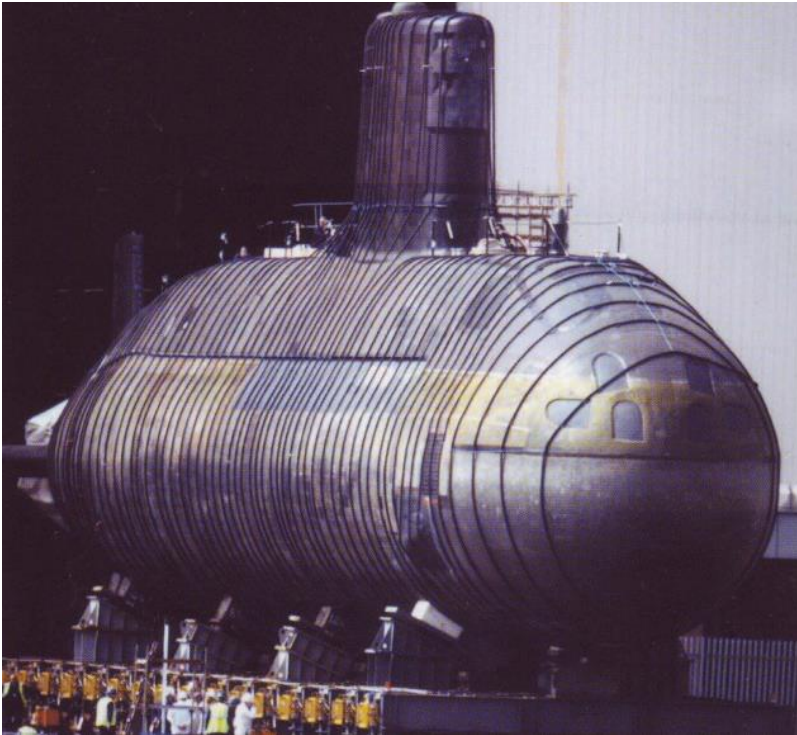
Underwater Multi influence range (MIR) tripod containing magnetic and other sensors



Vessel moving over multi influence range (MIR)



Degaussing / Deperming of a Maritime Vessel

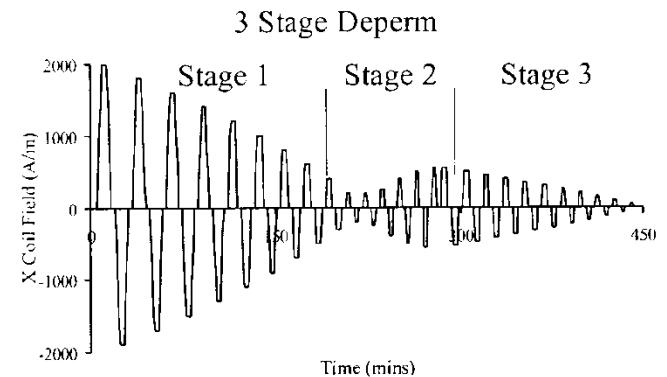


Submarine in dry-dock indicating deperming coils in the longitudinal direction

Flash-D deperming process



SAN submarine in deperming range



Presentation of technical training courses for the SA Navy

Presentation of Magnetic Awareness courses



Presentation of Compass Adjuster courses

Thank you very much for your attention