

# Maritime New Zealand Guidelines

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SAFETY BULLETIN ISSUE 23 – AUGUST 2010

## Maintenance of switchboard safety systems

### This safety bulletin is for:

- New Zealand ship owners, masters and crew of SOLAS ships
- New Zealand ship owners, masters and crew of SSM ships greater than 24m in length
- Safe ship management companies and SSM surveyors
- Classification societies in New Zealand and class surveyors
- MNZ maritime safety inspectors, auditors and investigators

### Purpose

This bulletin is issued to highlight the importance of regular and systematic testing of safety critical systems.

A recent accident highlighted the importance of being able to regularly test that electrical switchboard safety systems work the way they are supposed to. It also highlighted the importance of ensuring that switchboard breakers are set to operate at the correct values and are tested at regular intervals.

### Key issues

- In order to plan maintenance you need to know how an item or system is supposed to work.
- Information and drawings from the manufacturer must be available onboard to support the maintenance that is required and for problem solving when problems are experienced.
- Planned maintenance is required for every system or item of equipment where sudden failure may result in a hazardous situation.

### How the safety principles apply onboard

The ISM Code and the SSM Code both state specific responsibilities against the company (or owner) to ensure that maintenance of the ship and its equipment is planned and arranged. Specifically that:

- inspections are held at appropriate intervals;
- any non-conformity is reported with its possible cause, if known;
- appropriate corrective action is taken;
- records of these activities are maintained; and
- for each ship an appropriate maintenance plan is maintained.

It is also a core responsibility that company or owner ensures that the safety system onboard the ship identifies items of equipment and technical systems the sudden operational failure of which may result in hazardous situations.

The safety management system needs to provide specific measures to promote the reliability of such equipment or systems. These measures should include the regular testing of stand-by arrangements and equipment or technical systems that are not in continuous use.

## **What to do if information or maintenance records are missing**

It has been noted that the details on the ship's maintenance are often not passed onto the new owners when a ship is sold. This should be a key issue upon the purchase of any ship.

If the information on the previous owner's maintenance is not available then safety assumptions cannot be based on reliable information. If maintenance information is missing it cannot provide any confidence on the condition or performance of an item or system. Copies of the manufacturer's 'user-manuals' and drawings must always be secured and kept available for the lifetime of that item or system.

If the details on the last overhaul and last test (based on either set 'operating hours' or 'calendar-time-passed') are not available on an item or system this should also be highlighted as a potential hazard. Where this is the case the manufacturer's testing and maintenance requirements should be applied at the earliest possible opportunity. The sound and detailed reporting of maintenance must always be undertaken as it is important information for the future.

## **Switchboard safety surveys, tests and reporting**

There are many types of tests that need to be undertaken to ensure that main electrical switchboards are safe and operating correctly. Planning maintenance around these required tests and safety checks is important.

So too is recording what tests have been undertaken, a detailed description of what was done and what the results were. It is important to get electrical surveyor support in arranging the content of the maintenance plan for each of the main items in a switchboard.

Of key importance is the regular survey, testing and recorded testing of the following items:

- the earthing of all structural elements of the switchboards (including any doors with lights or controls) and provision of insulating mats on the floor around the switchboard
- the cleanliness and close visual inspection of the elements within the switchboard
- the protection of the switchboard from piping systems, condensation or water-ingress
- the functionality of all controls, lights and meters (and their appropriate marking and labelling)
- the functionality of any power management systems (if arranged)
- the functionality of all automatic control system (any auto-starts or standby functions)
- the functionality, set-point and delays of 'under-voltage' circuit breaker trips on the shut-down (or de-clutch) of the power generator prime-movers (the ship's generators or main shaft alternators).
- the functionality, set-point and delays of 'reverse-power' circuit breaker trips for generator alternators
- the functionality, set-point and delays of 'over-current' circuit breaker trips for generator alternators, through the simulated 'secondary injection testing' onboard (or full 'primary injection testing' ashore)
- the functionality and verification of the set points of the engine room alarm system tested under both normal and emergency power
- the testing of back-up power arrangements (normally batteries), their charging and ability to take over the powering of the alarm system without causing failures or false alarms.

The interval of the above surveys and tests should be discussed with your Surveyor or Classification Society.

The time intervals for each survey or test and the supported methods for reporting (and record keeping) of each one should also be detailed within your planned maintenance system or maintenance plan.

### **Further Information**

For further information please contact our Wellington office:

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