

Lifeboat Battery Explosion



Description of Process:

Weekly maintenance tasks were conducted by two Maintenance Technicians on lifeboat. This involved charging the 12V starter battery, conducting voltage checks, and starting the lifeboat engine. The lifeboat battery is located within the passenger area of the boat, contained within a hatched compartment.

Description of Incident:

Following the charging and completion of voltage checks, the battery compartment hatch was closed, and the engine was then started. At this point the battery exploded. Pieces of the battery and fluid were expelled from the compartment having been partially restricted by the closed hatch lid.

Neither technician was injured by the blast nor exposed to the released battery acid.

The lifeboat itself was undamaged.

Investigation found that the battery installed was a wet cell lead / acid type, described by its manufacturer as 'maintenance free' although could be topped up with distilled water. The model of battery was noted as not suitable for 'installation inside the vehicle'.

The battery had been overcharged weekly, at voltages between 14-15V over the past 12 months by various technicians. Maximum charge voltage should have been 13.8V. No other lifeboat batteries had been overcharged during this time.

Supporting work order text was conflicting in guidance given regarding charging voltage levels required.

SAFETY ALERT

Overcharging caused a depletion of electrolyte within the battery and generation of an explosive mixture of hydrogen and oxygen gas. An internal electrical fault allowed for the ignition of this mixture upon start up.

Good Practice Guidance:

- Ensure equipment is suitable for its intended use through technical qualification
- Provide clear work instruction to avoid confusion in the expected parameters of maintenance required
- Ensure the workforce has the correct core skills training / competency to undertake a task safely
- Encourage the workforce to be assertive in identifying and reporting operational discrepancies promptly to avoid a status becoming a 'norm'