



Safety Alert 10

Lifeboat (TEMPSC) Davit Winch Motor Brake Failure

What happened?

A recent incident involving the failure of Lifeboat winch motor brakes occurred when a defective winch motor starter module was racked in with its main contactor in a forced energised condition, defeating the davit limit switch interlock and energising the motor against its brakes. This caused brakes to fail and the lifeboat to free-fall to the splash zone. Manual retrieval attempts failed to recover the lifeboat, which sustained severe damage, as the winch wire ropes entangled then parted, causing the lifeboat to strike the platform structure.

This incident has highlighted issues with the motor starter design, mainly, the vulnerability to spurious electrical faults due to the non-redundancy of electrical control logic, a facility to defeat safeguard interlocks, and a lack of adequate defeat override indication.

It also highlighted failure or inadequacies of various systems of work mainly: the use of permit to work process; use of the JSA/Stepback 5x5 during job preparation and fault troubleshooting; handover and communication; training gap analysis and competency assessment; maintenance procedures; and supervision.

What went wrong?

The switchgear on this facility uses a winch motor starter that is a standard type with a single mains contactor. This lifeboat winch motor starter had a permanent not-readily detectable contactor fault that bypassed the logic interlock with the davit limit switches. The fault was wrongly communicated to another shift electrician who had not been trained on this equipment operation or maintenance practices.

When the starter was racked in and de-isolated, it allowed the winch motor to energise against its brakes causing them to fail and the lifeboat winch wire ropes to payout freely. The normal maintenance procedure of using a simulator was not followed, while the use of lifeboat davit chains was not adopted.

Key Lessons:

- Winch motor starters should be designed to provide adequate indication of fault annunciation, ease of troubleshooting and redundancy of components.
- Appropriate safeguards should be installed to ensure ancillary equipment can not be operated outside their design by providing protection appropriate to the associated main equipment Safety Integrity Level/criticality.
- Operators should ensure that their permit to work procedures are adequately reviewed to cater for better handover, application of risk assessment/JSA, job authorisation/follow-up and closure.
- Operators should systemise work orders and maintenance procedures to allow for better scrutiny of unsupervised work through traceable checklists, use of simulators and davit chains.
- Operators should ensure all new technicians are adequately trained and supervised until fully competent to work alone.

Contact

For further information email alerts@nopsa.gov.au and quote Alert 10