



# MANAGEMENT SYSTEM MANUAL

## ARM 8.7 R/V Armstrong Testing and Running of the Emergency Generator

Originator:	Approved By:
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### 1. Purpose

The purpose is to set forth general instructions for the operations of the MTU Series 60 210 kw Emergency Generator installed on R/V Armstrong

### 2. Responsibility

It is the responsibility of the Chief Engineer to maintain guidelines for operating the emergency generator. It is also the responsibility of the Chief Engineer to ensure the emergency generator is fully functional and tested as per USCG requirements.

### 3. References

- a) 46 CFR 196.15-30 Emergency Lighting and Power Systems
- b) Pacific Power – Emergency Generator Set MTU Series 60 Diesel Engine Service Manual Volume 1 & 2
- c) Point Eight Power Drawing 1366 – Emergency Generator Switchboard
- d) R/V Neil Armstrong PSTP (Periodic Safety Test Procedures)

### 4. General

The emergency generator is to be operated and inspected at least once each week that the vessel is operating. At least once each month the generator shall be operated under load for no less than 2- hours.

Storage batteries for emergency lighting and power systems shall be tested at least once each 6-month period that the vessel is navigated to demonstrate the ability of the storage battery to supply the emergency loads for the specified period of time as per 46 CFR 196.15-30.

Periodic testing of the alarms and shutdowns as scheduled in the NS5 maintenance program system will be performed as specified in the PSTP.

### 5. Reporting

The testing and general condition of the emergency generator is to be recorded in the Engine Room and Bridge logbooks. In addition, an entry is to be made in NS5.



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### Emergency Generator Load Testing

#### Normal Operation

1. Engine Control Selector Switch is in the 'Auto' position.
2. Feedback switch in 'off' position

#### Testing Procedures for the Emergency Generator

##### No-Load Run Test

Place the Emergency generator Mode Selector Switch from "Auto" to "Manual". This will start the generator, bring it up to speed, but will not open the bus-tie breaker or close the generator circuit breaker.

Note: Normal opening time for the ventilation louvers is approximately 3 minutes.

After finishing with no-load run test, place the engine mode selector switch in the "Off" position (This will stop the engine after about 15 seconds). Then place the Engine Mode Selector Switch into the "Auto" position.

**Note: Normal closing time for ventilation louvers is around 5 seconds.**

#### Simulation of Load Loss Test from Main 480-Volt Switchboard

At the 480 Volt switchboards, trip the 'Emergency SSWBD Tie Breaker' to simulate loss of normal power to the emergency switchboard. This will cause an under voltage trip, which in turn will cause the emergency switchboard 'Main Feeder Circuit Breaker' to open. The generator will start and come up to speed. The 'Emergency Gen Circuit Breaker' will close, feeding the emergency bus and switchboard.

#### Securing after "Loss of Load Test"

The Engine Control Mode selector switch is to remain in "Auto".  
Place the Sync Switch in the 6 o'clock position

With the 480V switchboard energized the system will automatically switch back to normal power.

Stop the generator from the CIB HMI at the engine side.