
(a) Programable control or alarm system logic must not be altered after Design Verification testing without the approval of the cognizant Officer in Charge, Marine Inspection (OCMI). (See subpart 61.40 of this subchapter, Design Verification Tests). Safety control or automatic alarm systems must be provided with means, acceptable to the cognizant OCMI, to make sure set-points remain within the safe operating range of the equipment.

(b) Operating programs for microprocessor-based or computer-based vital control, alarm, and monitoring systems must be stored in non-volatile memory and automatically operate on supply power resumption.

(c) If a microprocessor-based or computer-based system serves both vital and non-vital systems, hardware and software priorities must favor the vital systems.

(d) At least one copy of all required manuals, records, and instructions for automatic or remote control or monitoring systems required to be aboard the vessel must not be stored in electronic or magnetic memory.


§ 62.25–30 Environmental design standards.

(a) All automation must be suitable for the marine environment and must be designed and constructed to operate indefinitely under the following conditions:

1. Ship motion and vibration described in Table 9 of section 4–9–7 of the ABS Steel Vessel Rules (incorporated by reference; see 46 CFR 62.05–1); note inclination requirements for fire and flooding safety systems are described in 46 CFR 112.05–5(c).

2. Ambient air temperatures described in Table 9 of part 4–9–7 of the ABS Steel Vessel Rules.

3. Electrical voltage and frequency tolerances described in Table 9 of part 4–9–7 of the ABS Steel Vessel Rules.

4. Relative humidity of 0 to 95% at 45°C.

5. Hydraulic and pneumatic pressure variations described in Table 9 of part 4–9–7 of the ABS Steel Vessel Rules.

NOTE: Considerations should include normal dynamic conditions that might exceed these values, such as switching, valve closure, power supply transfer, starting, and shutdown.

(b) Low voltage electronics must be designed with due consideration for
static discharge, electromagnetic interference, voltage transients, fungal growth, and contact corrosion.


Subpart 62.30—Reliability and Safety Criteria, All Automated Vital Systems

§ 62.30–1 Failsafe.
(a) The failsafe state must be evaluated for each subsystem, system, or vessel to determine the least critical consequence.
(b) All automatic control, remote control, safety control, and alarm systems must be failsafe.

§ 62.30–5 Independence.
(a) Single non-concurrent failures in control, alarm, or instrumentation systems, and their logical consequences, must not prevent sustained or restored operation of any vital system or systems.
(b)(1) Except as provided in paragraphs (b)(2) and (b)(3) of this section, primary control, alternate control, safety control, and alarm and instrumentation systems for any vital system must be independent of each other.
(2) Independent sensors are not required except that sensors for primary speed, pitch, or direction of rotation control in closed loop propulsion control systems must be independent and physically separate from required safety control, alarm, or instrumentation sensors.
(3) The safety trip control of § 62.35–5(b)(2) must be independent and physically separate from all other systems.
(c) Two independent sources of power must be provided for all primary control, safety control, instrumentation and alarm systems. Failure of the normal source of power must actuate an alarm in the machinery spaces. One source must be from the emergency power source (see part 112 of this chapter, Emergency Lighting and Power Systems) unless one of the sources is—
(1) Derived from the power supply of the system being controlled or monitored;
(2) A power take-off of that system; or
(3) An independent power source equivalent to the emergency power source.

§ 62.30–10 Testing.
(a) Automated vital systems must be tested in accordance with subpart 61.40 of this chapter.
(b) On-line built-in test equipment must not lock out or override safety trip control systems. This equipment must indicate when it is active.

Subpart 62.35—Requirements for Specific Types of Automated Vital Systems

§ 62.35–1 General.
(a) Minimum instrumentation, alarms, and safety controls required for specific types of automated vital systems are listed in Table 62.35–50.
(b) Automatic propulsion systems, automated electric power management systems, and all associated subsystems and equipment must be capable of meeting load demands from standby to full system rated load, under steady state and maneuvering conditions, without need for manual adjustment or manipulation.

§ 62.35–5 Remote propulsion-control systems.
(a) Manual propulsion control. All vessels having remote propulsion control from the navigating bridge, an ECC or maneuvering platform, or elsewhere must have a manual alternate propulsion control located at the equipment.

Note: Separate local control locations may be provided for each independent propeller.

(b) Centralized propulsion control equipment. Navigating bridge, ECC, maneuvering platform, and manual alternate control locations must include—
(1) Control of the speed and direction of thrust for each independent propeller controlled;
(2) A guarded manually actuated safety trip control (which stops the propelling machinery) for each independent propeller controlled;
(3) Shaft speed and thrust direction indicators for each independent propeller controlled;