



USCG Office of Commercial Vessel Compliance (CG-CVC)
Mission Management System (MMS) Work Instruction (WI)



Category	Domestic Inspection Program			
Title	Guidance on Overspeed Protection and Testing of Electronically-Controlled Engines			
Serial	CVC-WI-011(1)	Orig. Date	12/30/2019	Rev. Date N/A
Disclaimer:	<p>This guidance is not a substitute for applicable legal requirements, nor is it itself a regulation. It is not intended to nor does it impose legally-binding requirements on any party. It represents the Coast Guard’s current thinking on this topic and may assist industry, mariners, the public, and the Coast Guard, as well as other federal and state regulators, in applying statutory and regulatory requirements. You can use an alternative approach for complying with these requirements if the approach satisfies the requirements of the applicable statutes and regulations. Any questions concerning this guidance should be sent to Coast Guard Office of Commercial Vessel Compliance (CG-CVC) at CG-CVC@uscg.mil.</p>			
References:	<p>(a) 46 Code of Federal Regulations (CFR) Chapter I, Subchapter F Part 58, Main and Auxiliary Machinery and Related Systems (b) ABS Steel Vessel Rules Part 4, Vessel Systems and Machinery, Chapter 2 Section 1/7.5, Engine Appurtenances for Engines Driving Generators (c) 46 CFR Chapter I, Subchapter J Section 111.12-1(b), Generator Prime Movers (d) Marine Safety Manual, Volume II, COMDTINST M16000.7(series)</p>			

- A. Purpose. This work instruction provides guidance for alternative testing methods of overspeed protection on electronically controlled engines.
- B. Action. Coast Guard Marine Inspectors should use this guidance for alternative testing methods of overspeed protection on electronically controlled engines.
- C. Background.
 - a. Coast Guard Marine Inspectors witness the testing of overspeed devices on engines as a regular part of a vessel inspection. For standard mechanically controlled engines, Coast Guard Marine Inspectors witness a vessel engineer increase the speed of the engine past the set point of the overspeed device, triggering a shutdown, in order to verify the overspeed device’s proper operation.
 - b. Modern engines are often controlled by an electronic control unit (ECU) or electronic control module (ECM) instead of a mechanical governor. With the employment of an ECU/ECM, the engine speed often cannot be manually increased past the manufacturer’s ECU/ECM safety settings. This provides an added level of safety, but requires an alternative method of verifying that the engine will not overspeed.
 - c. Most engine manufacturers factory-test prototype engines and ECU/ECMs to ensure that the ECU/ECM both controls engine speed, in response to load demand, and prevents overspeed. Some manufacturers have classification society type-approval certificates for the ECU/ECM.

- d. Field verification of overspeed protection is necessary. However, intentionally subjecting engines with a ECU/ECM to 115% of rated speed creates unnecessary risk to the marine inspectors and equipment.
- e. The owner or operator may safely demonstrate the overspeed protection by changing the overspeed set point on the ECU/ECM in order to test the failsafe below 100% of rated speed.
- f. References (a) – (e) provide more detailed information and guidance regarding engine overspeed issues and electronic engine controls.

D. Enforcement Guidance.

- a. Coast Guard Marine Inspectors should continue to verify mechanical engine overspeed device operation as specified per reference (d) Section B, Chapter 1.
- b. Verification of the electronic overspeed protection device should be conducted not less than once every five years. This test should be conducted in accordance with the manufacturer's test procedures. Completion of verification shall be recorded in the MISLE narrative.

E. Appeals. Appeals of decisions made regarding inspections issues should follow the procedures outlined within 46 CFR 1.03.

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By direction