

mixture is discharged from the separated water outlet on the separator during the test, that observation is recorded.

(4) *Test No. 4A.* The separator is fed with water for 15 minutes. Samples of the separated water effluent are taken at the beginning of the test and after the first 10 minutes.

(5) *Test No. 5A.* The separator is operated automatically for 3 hours. During the test, the separator is continuously fed with an influent varying from water to a mixture of 25 percent Test Fluid A in water and back to water every 15 minutes. The Test Fluid A concentration in the influent is varied in at least five equal increments during each 15-minute period and the time intervals between the incremental changes are equal. During the last hour, the separator must be inclined at an angle of 22.5° with the plane of its normal operating position. During the last time increment in which the unit is fed a 25 percent Fluid A mixture, a sample of the separated water effluent is taken. If the separator stops at any time during this test, that observation is recorded.

(c) The following tests must be conducted using Test Fluid B:

(1) *Test No. 1B.* Repeat Test No. 1A in paragraph (b)(1) of this section using Test Fluid B; and

(2) *Test No. 2B.* Repeat Test No. 2A in paragraph (b)(2) of this section using Test Fluid B.

(d) The following tests must be conducted using Test Fluid C: *Test No. 1C.* The separator is fed with a mixture composed of 6 percent Test Fluid C and 94 percent water by volume such that the emulsified Test Fluid C content is approximately 3,000 ppm in the test water until a steady flow rate occurs. After the flow rate is steady, the influent containing the 6 percent Test Fluid C solution is fed to the separator operating automatically for 3 hours. Samples of separated water effluent are taken at 50 minutes and 100 minutes. At the end of the 3-hour period, the air cock on the test rig is opened and, if necessary, the oil and water supply valves are closed to stop the flow of influent. A sample is then taken of the

separated water effluent as the effluent flow ceases.

[CGD 76-088a, 44 FR 53359, Sept. 13, 1979, as amended by USCG-2004-18939, 74 FR 3388, Jan. 16, 2009]

**§ 162.050-25 Cargo monitor: Design specification.**

(a) This section contains requirements that apply to cargo monitors.

(b) Each monitor must be designed so that it is calibrated by a means that does not involve manually mixing a known quantity of oil and a known quantity of water to form a mixture and manually feeding the mixture into the monitor.

(c) The electrical components of a monitor that are to be installed in an explosive atmosphere must be approved by an independent laboratory as components that Underwriters Laboratories Standard 913 (dated April 8, 1976) (incorporated by reference, see § 162.050-4) defines as intrinsically safe for use in a Class I, Group D hazardous location.

(d) Each monitor component that is a moving part must be designed so that its movement during operation of the monitor does not cause formation of static electricity.

(e) A monitor must be designed to operate in each plane that forms an angle of 22.5° with the plane of its normal operating position.

(f) Each monitor must be designed in accordance with the applicable requirements contained in subchapters F and J of this chapter.

(g) Each monitor must be designed so that it records each change in oil content of the mixture it is measuring within 20 seconds after the change occurs.

(h) Each monitor must have a device that produces a warning signal and a signal that can be used to actuate valves in a vessel's fixed piping system, when—

(1) The oil content of the mixture being measured exceeds the concentration limit set by the operator of the monitor; and

(2) Malfunction, breakdown, or other failure of the monitor occurs.

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(i) Each monitor must have a means to determine whether it is accurately calibrated.

[44 FR 53359, Sept. 13, 1979, as amended by CGD 76-088c, 48 FR 45727, Oct. 6, 1983; USCG-2004-18939, 74 FR 3389, Jan. 16, 2009]

### § 162.050-27 Oil content meter: Approval tests.

This section contains requirements that apply to performing each test.

(a) *Test conditions.* (1) The tests and each step in the tests must be carried out in the order described in this section. Each test must be performed without time delay between steps in the test. No maintenance, including replacement of parts, may be performed on the meter during or between the tests described in this section.

(2) A test rig of the type described in § 162.050-19 must be used when performing each test.

(3) Each mixture used during the tests must be prepared by combining oil supplied from the oil injection pipe of the test rig and water supplied from the mixture tank of the test rig. However, if the flow of oil through the oil injection pipe becomes intermittent, oil and water may be combined in the mixture tank to form the mixture.

(4) A mixture may be circulated through a meter only once during testing.

(5) Unless otherwise provided in a specific test, the water used in each test must be clean, fresh water.

(6) The oil used in each test, except Test No. 2 in paragraph (c) of this section, must be Arabian light crude oil.

(7) Each test must be performed at an ambient temperature of between 10 °C and 30 °C.

(8) Unless otherwise provided in a specific test, each test must be performed at the maximum mixture pressure, the maximum flow rate, and the power supply ratings at which the meter is designed to operate.

(9) The particulate contaminant described in Test No. 5 in paragraph (f) of this section, if not attapulgate, must be of a type that does not lose more than 3 percent of its weight after ignition and must be insoluble in a 500 ppm mixture.

(10) In each test the meter must be operated in accordance with the proce-

dures described in its instructions manual.

(11) Unless otherwise provided in a specific test, the centrifugal pump shown in Figure 162.050-19 in § 162.050-19 must be operated at 1,000 revolutions per minute or more in each test.

(12) Whenever the oil content of a mixture is recorded, a sample of the mixture must also be taken. The oil content of the sample must be measured using the method described in § 162.050-39.

(13) A one-liter sample of each oil to be used in testing must be taken and provided for use in the sample analysis required by § 162.050-39.

(b) *Test No. 1 Calibration and Zero Test.* The meter is calibrated and zeroed to manufacturer's instructions. It is then fed with water for 15 minutes and then with mixtures in the following concentrations: 15 ppm, 50 ppm, 100 ppm, and each additional concentration, in increments of 50 ppm up to the highest oil concentration that can be read on the meter. Each mixture is fed to the meter in the order listed in Table 162.050-27(c) for 15 minutes. Water is fed to the meter for a 15-minute period between each mixture. At the end of each 15-minute period, an oil content reading is obtained and recorded, and a calibration curve must be created.

(c) *Test No. 2 Response to Different Oil Types Test.* (1) If the meter is designed for use with crude oils, it is fed with a mixture of water and the first oil listed in Table 162.050-27(c) at the following concentrations: 15 ppm, 100 ppm, and a concentration that is 90 percent of the highest oil concentration in water that can be read on the meter. Each concentration is fed to the meter in the order listed until a steady reading occurs and is recorded. After each steady reading is recorded, the meter is fed with water for 15 minutes. At the end of each 15-minute period of feeding the meter with water, an oil content reading is again obtained and recorded, and a calibration curve must be created.

(2) The steps described in paragraph (c)(1) of this section are repeated using each of the other oils listed in Table 162.050-27(c). A calibration curve must be created for each oil tested.