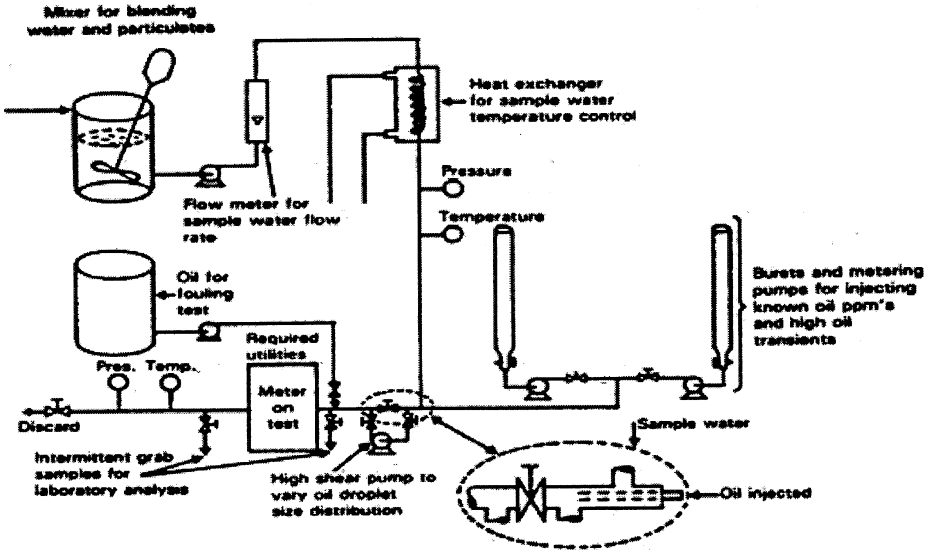

[CGD 76–088a, 44 FR 53359, Sept. 13, 1979, as amended by USCG–2004–18939, 74 FR 3385, Jan. 16, 2009]

§ 162.050–20 Separator and bilge alarm test fluids.

(a) Tests required in §§ 162.050–23 and 162.050–35 must be performed using the following three types of test fluids:

(1) Test Fluid A, which is a marine residual fuel oil in accordance with ISO 8217 (incorporated by reference, see § 162.050–4), type RMG 380 (density at 15 °C not less than 980 kg/m^3);

(2) Test Fluid B which is a marine distillate fuel oil in accordance with ISO 8217, type DMA (density at 15 °C not less than 830 kg/m^3);

(3) Test Fluid C must be a mixture of an oil-in-fresh water emulsion, where 1 kg of the mixture consists of:

(i) 947.8 g of fresh water;

(ii) 25.0 g of Test Fluid A;

(iii) 25.0 g of Test Fluid B;

(iv) 0.5 g of surfactant (sodium salt of dodecylbenzene sulfonic acid) in the dry form; and

(v) 1.7 g of iron oxides, a black ferrosoferric oxide (Fe_3O_4) with a particle size distribution of which 90 percent is less than 10 microns, the remainder having a maximum particle size of 100 microns.

(b) Test Fluid C must be prepared as needed for § 162.050–23 or § 162.050–35 by using the following procedures:

(1) Measure out 1.2 times the quantity of surfactant required from the WORKSHEET FOR DETERMINING CONSTITUENTS OF TEST FLUID C, see figure 162.050–20;

(2) Mix it with fresh water and stir well in a small container to make a mixture until the surfactant has been thoroughly dissolved, but use no more than the minimum amount of water necessary to make a complete solution;

(3) Fill clean test fluid tank with fresh water with a quantity 1.2 times the volume of the total quantity of water in Test Fluid C needed for the test described in §§ 162.050–23 and 162.050–35;

(4) Operate the centrifugal pump B running at a speed of not less than 3,000 rpm with a flow rate at which the volume of the test fluid has been changed out at least once per minute;

(5) Add the surfactant mixture from paragraph (b)(2) of this section first, followed by oil and suspended solids (iron oxides) respectively, both 1.2 times of the required amounts, to the fresh water in the tank;

(6) To establish a stable emulsion keep running the centrifugal pump B

for one hour and confirm no oil floats on the surface of the test fluid; and

(7) After the one hour stated in paragraph (b)(6) of this section, keep running the centrifugal pump B at reduced speed to approximately 10 percent of original flow rate, until the end of the test.

FIGURE 162.050–20

WORKSHEET FOR DETERMINING CONSTITUENTS OF TEST FLUID C:

1. Determine volumetric flow rate of separator in m^3/hr.

2. Determine net volume of fluid needed for testing with fluid C:

a. Multiply volumetric flow rate x 3 hours = Net volume (assumes conditioning time of approximately 30 minutes added to 2-1/2-hour test period)

3. Determine volume of Test Fluid C:

a. Multiply net volume * 0.06 = Fluid C volume

4. Determine amounts of constituents:

a. Volume of Test Fluid C: 1.2 x Net Volume;

b. Volume of fresh water in Test Fluid C: 0.9478 x volume of Test Fluid C;

c. Weight of Test Fluid A: 25 x volume of Test Fluid C;

d. Weight of Test Fluid B: 25 x volume of Test Fluid C;

e. Weight of surfactant: 0.5 x volume of Test Fluid C; and

f. Weight of iron oxide 1.7 x volume of Test Fluid C.

g. Specifications for tank of Test Fluid .C.

(1) The tank should be of a cylindrical shape, as illustrated in the diagram below. The level of the water should be: 2D ≥ H ≥ 0.5D, when preparing Test Fluid C.

(2) Outlet going to centrifugal pump B should be placed at as low a position to the tank as possible.

(3) Inlet to the tank should be fitted at the center of tank bottom so that the mixture flows upward to obtain uniform and stable emulsion.

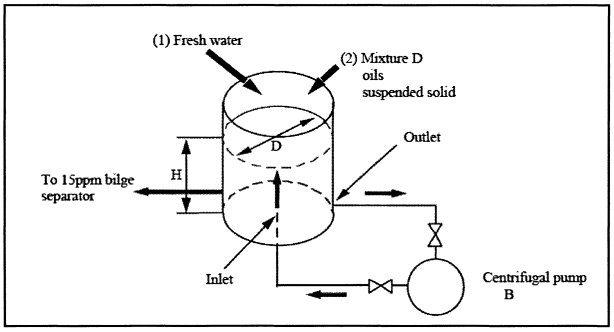

Figure 3 - Tank of Test Fluid "C"

Note:

(1) The tank should be of a cylindrical shape. The level of the water should be:

$2D \geqq H \geqq 0.5D$, when preparing Test Fluid "C".

(2) Outlet going to centrifugal pump B should be placed at as low a position to the tank as possible.

(3) Inlet to the tank should be fitted at the center of tank bottom so that the mixture flows upward to obtain uniform and stable emulsion.

Example:

1. Bilge separator is rated at $2m^3$/hr;

2. Net volume needed for the test: Volume of test water: $2m^3$ x 3 hours = $6m^3$;

3. Volume vest Fluid C: 6 percent of test water = 0.06 x $6m^3$ = $0.36m^3$;

4. Actual volume to be prepared:

a. Volume of Test Fluid C to be prepared: 1.2 times of the Net Volume of Test Fluid C = 1.2 x 0.36 = $0.432m^3$;

b. Volume of fresh water in Test Fluid C: (947.8g/1000g) of Test Fluid C =0.9478 x 0.432 = $0.4094m^3$;

c. Weight of Test Fluid A: (25g/1000g) of Test Fluid .C. = 25/1000 x 0.432 x 1000 = 10.8kg;

d. Weight of Test Fluid B: (25g/1000g) of Test Fluid C = 25/1000 x 0.432 x 1000 = 10.8kg;

e. Weight of surfactant: (0.5g/1000g) of Test Fluid C = 0.5/1000 x 0.432 x 1000 = 0.216kg; and

f. Weight of iron oxide: (1.7g/1000g) of Test Fluid C) = 1.7/1000 x 0.432 x 1000 x 0.734kg.

[USCG–2004–18939, 74 FR 3385, Jan. 16, 2009]

§ 162.050–21 Separator: Design specification.

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

(b) The electrical components of a separator 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.

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

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

(e) Each separator must be designed to be operated both automatically and manually. Each separator must be capable of operating automatically for at least 24 hours.