(2) The absolute value of Tn for one measurement may exceed 2.29 if the Tn values for the other eleven measurements are less than or equal to 2.23 at a confidence level of 0.05. If the Tn value for one measurement exceeds 2.29, that measurement is not used in the method described in paragraph (f)(3) of this section.

(3) The absolute value of X_d must be smaller than u based on the following analysis of paired observations:

(i) Calculate the value of $\bar{X}_d$ and S_d. This is the mean and standard deviation, respectively, of the differences between the known sample concentrations and the values obtained by the facility with their equipment. The value of $\bar{X}_d$ for the 12 measurements described in paragraph (e) of this section, or for 11 measurements if paragraph (f)(2) of this section applies, must be within the range $1 \leq \bar{X}_d \leq +1$.

(ii) Determine the appropriate critical value of the Student's t-distribution with (n-1) degrees of freedom for a confidence level of $\alpha = 0.01$. If all 12 samples meet the criteria of paragraph (f)(1) of this section then (n-1) = 11 and the critical value,

$$t_{1-\frac{\alpha}{2}},$$

is 3.106. If paragraph (f)(2) of this section applies, then (n-1) = 10 and

$$t_{1-\frac{\alpha}{2}} = 3.169.$$

=3.169.

(iii) Compute the value of u, where

$$u = t_{1-\frac{\alpha}{2}}\left(\frac{s_d}{\sqrt{n}}\right),$$

where n = 12 if all samples meet the criteria of paragraph (f)(1) and n = 11 if paragraph (f)(2) applies.

(iv) Compare the absolute value of $\bar{X}_d$ to the value of u. If $|\bar{X}_d| < u$, then the facility meets the criteria.

(g) To obtain authorization to conduct approval tests—

(1) A facility must have the management organization, equipment for conducting sample analysis, and the materials necessary to perform the tests;

(2) Each facility test rig must be of a type described in §162.050–17 or §162.050–19;

(3) The loss or award of a specific contract to test equipment must not be a substantial factor in the facility's financial well being;

(4) The facility must be free of influence and control of the manufacturers, suppliers, and vendors of the equipment; and

(5) The oil content measurements submitted to the Commandant must meet the criteria in paragraph (f) of this section.

(h) A facility may not subcontract for approval testing unless previously authorized by the Coast Guard. A request for authorization to subcontract must be sent to the Commandant (CG–ENG–3), Systems Engineering Division, 2100 2nd St., SW., Stop 7126, Washington, DC 20593–7126.

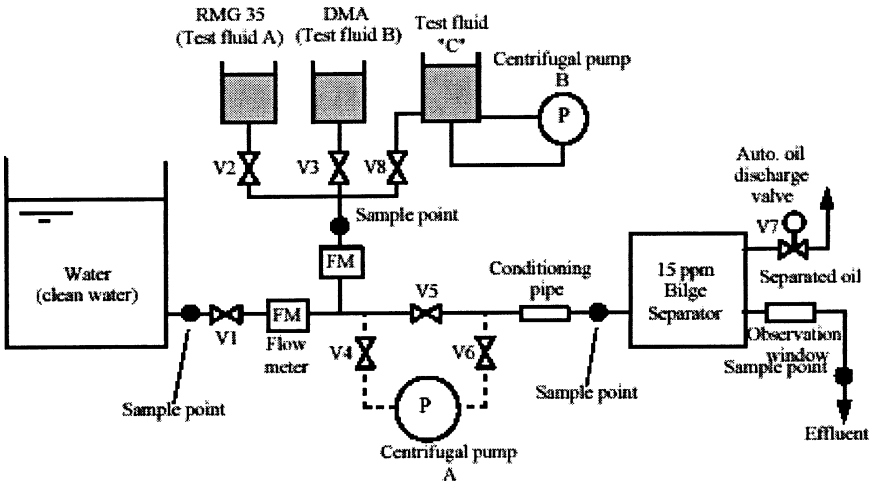
[44 FR 53359, Sept. 13, 1979]

EDITORIAL NOTE: For FEDERAL REGISTER citations affecting §162.050–16, see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and at *www.fdsys.gov*.

§ 162.050–17 Separator test rig.

(a) This section contains requirements for test rigs used in approval testing of separators. A diagram of a typical test rig is shown in Figure 162.050–17(a).

FIGURE 162.050–17(a)—SEPARATOR TEST RIG



(b) Each mixture pump on a test rig must—

(1) Be a centrifugal pump capable of operating at 1,000 revolutions per minute or more;

(2) Have a delivery capacity of at least 1.5 times the maximum throughput at which the separator being tested is designed to operate;

(3) Have a maximum delivery pressure that is equal to or greater than the maximum influent pressure at which the separator is designed to operate; and

(4) Have either bypass piping to its suction side or a throttle valve or orifice on its discharge side.

(c) The inlet piping of the test rig must be sized so that—

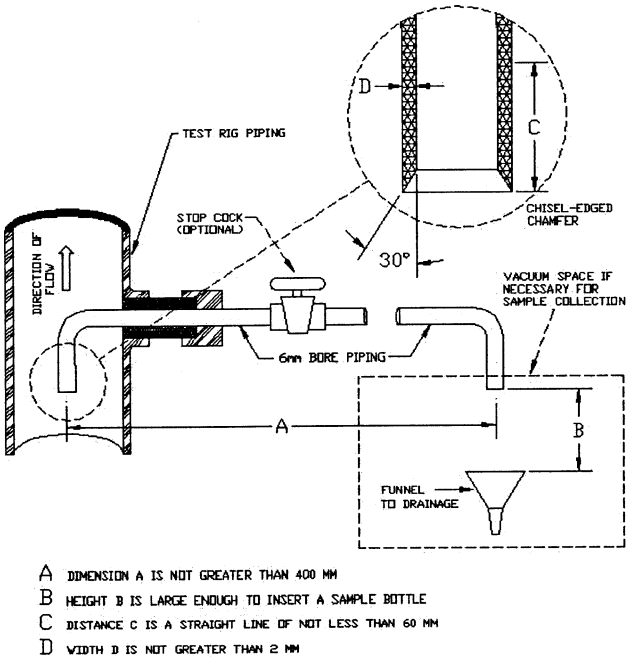
(1) Influent water flows at a Reynolds Number of at least 10,000;

(2) The influent flow rate is between one and three meters per second; and

(3) Its length is at least 20 times its inside diameter.

(d) Each sample point on a test rig must meet the design requirements described in Figure 162.050–17(d) and must be in a vertical portion of the test rig piping.

FIGURE 162.050–17(d)—SAMPLE POINT



[CGD 76–088a, 44 FR 53359, Sept. 13, 1979, as amended by USCG–2004–18939, 74 FR 3384, Jan. 16, 2009]

§ 162.050–19 Oil content meter and bilge alarm test rig.

(a) This section contains requirements for test rigs used in approval testing of oil content meters and meter. A typical test rig is described in Figure 162.050–19. The mixture pipe shown in Figure 162.050–19 is the portion of test rig piping between the oil injection point and the meter or bilge alarm piping.

(b) Each sample point on a test rig must be of the type described in Figure 162.050–17(e) and must be in a vertical portion of the test rig piping.

(c) Each test rig must have a centrifugal pump that is designed to operate at 1,000 revolutions per minute or more.

(d) The mixture pipe on a test rig must have a uniform inside diameter.

FIGURE 162.050–19—MONITOR AND BILGE ALARM TEST RIG