

**§ 69.63**

(g) Any space described in paragraphs (b) through (f) of this section which fulfills at least one of the following conditions is not an excluded space:

(1) The space is fitted with shelves or other means designed for securing cargo or stores.

(2) The opening that would otherwise permit the space to be excluded space is fitted with a means of closure.

(3) Other features of the space make it possible for the space to be closed.

**§ 69.63 Net tonnage.**

Net tonnage (NT) is determined by the formula:

$$NT = K_2 V_c \left( \frac{4d}{3D} \right)^2 + K_3 \left( N_1 + \frac{N_2}{10} \right),$$

in which:

$V_c$  = total volume of cargo spaces in cubic meters.

$K_2 = 0.2 + 0.02 \log_{10} V_c$ .

$$K_3 = 1.25 \left( \frac{GT + 10,000}{10,000} \right)$$

$D$  = molded depth amidships in meters, as "molded depth" is defined in § 69.53.

$d$  = molded draft amidships in meters, as "molded draft" is defined in § 69.53.

$N_1$  = number of passengers in cabins with not more than eight berths, as "passenger" is defined in § 69.53.

$N_2$  = number of other passengers, as "passenger" is defined in § 69.53.

$GT$  = gross tonnage as determined under § 69.57.

$N_1$  plus  $N_2$  must equal the total number of passengers the vessel is permitted to carry as indicated on the ship's Passenger Certificate. If  $N_1$  plus  $N_2$  is less than 13, both  $N_1$  and  $N_2$  are zero.

$\left( \frac{4d}{3D} \right)^2$  must not be greater than unity.

$K_2 V_c \left( \frac{4d}{3D} \right)^2$  must not be less than 0.25 GT.

NT must not be less than 0.30 GT.

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**§ 69.65 Calculation of volumes.**

(a) Volumes  $V$  and  $V_c$  used in calculating gross and net tonnages, respectively, must be measured and calculated according to accepted naval ar-

**46 CFR Ch. I (10-1-04 Edition)**

chitectural practices for the spaces concerned.

(b) The volume of the hull below the upper deck is determined as follows:

(1) If the number and location of sections originally used in making other calculations which relate to the form of the vessel (such as displacement volumes and center of buoyancy) are reasonably available, Simpson's first rule may be applied using those sections.

(2) If the number and location of stations originally used are not reasonably available or do not exist and the hull is of conventional design with faired lines, Simpson's first rule may be applied using a number and location of stations not less than those indicated in § 69.109(g)(1).

(3) If the hull is of standard geometric shape, a simple geometric formula that yields a more accurate volume may be used.

(4) If the lines of the hull are not fair, the volume may be measured by using a combination of methods under this section.

(c) The volume of structures above the upper deck may be measured by applying the superstructure provisions in § 69.113 or by any accepted method or combinations of methods.

(d) Measurements must be taken, regardless of the fitting of insulation or the like—

(1) To the inner side of the shell or structural boundary plating, in vessels constructed of metal; and

(2) To the outer surface of the shell or to the inner side of structural boundary surfaces, in all other vessels.

(e) When determining the volume of a cargo space, measurements must be taken without consideration for insulation, sparring, or ceiling fitted within the space.

(f) Measurements must be to the nearest one-twentieth of a foot.

(g) Calculations must be made on a worksheet and must be sufficiently detailed to permit easy review. The measurement procedures used must be identified on the worksheet.

**§ 69.67 Marking of cargo spaces.**

Cargo spaces used in determining volume ( $V_c$ ) for calculating net tonnage must be permanently marked with the letters "CC" (cargo compartment)