

Appendix 9

DEPARTMENT OF COMMERCE National Bureau of Standards CUSTOMARY SYSTEM OF WEIGHTS AND MEASURES Commercial Weights and Measures Units

In the FEDERAL REGISTER of July 27, 1968 (33 FR 10755), the National Bureau of Standards, in accordance with a recommendation of the House Committee on Science and Astronautics and pursuant to the responsibility of the National Bureau of Standards for "the custody, maintenance, and development of the national standards of measurement" (15 U.S.C. 272), published a listing of the common weights and measures used in normal commerce throughout the United States, and related them to the standards developed in accordance with existing law. In connection with the notice of July 27, 1968, the following explanatory material will assist in the proper interpretation and application of the data in column three under "Linear Measurement, U.S. Customary," and under "Area Measurement, U.S. Customary":

As the July 27, 1968 notice states, all U.S. Customary Units of linear and area measurement that will be found in ordinary commerce are derived from the yard. The yard was last defined in a notice in the FEDERAL REGISTER of July 1, 1959 (24 FR 5348), as being exactly equal to 0.9144 meter.

The foot defined by the equations:

$$\begin{aligned} 3 \text{ feet} &= 1 \text{ yard} = 0.9144 \text{ meter, exactly} \\ 1 \text{ foot} &= 0.3048 \text{ meter, exactly} \end{aligned}$$

is known as the International Foot. In addition, the July 1, 1959 notice defines the U.S. Survey Foot as follows:

$$1 \text{ survey foot} = \frac{1200}{3937} \text{ meter, exactly}$$

or

$$1 \text{ survey foot} = 0.30480061 \text{ meter, approximately}$$

Accordingly, it is necessary to differentiate between the international foot, used for engineering, and the U.S. survey foot, used for mapping and land measurement. The metric equivalents listed in the July 27, 1968 notice for land measurements: statute mile (U.S. survey mile), acre, square mile, section, and township are approximate; metric equivalents to more figures can be determined from the survey foot. For example, the U.S. survey mile equals 1.609 347 kilometers, approximately, whereas the international mile equals 1.609 344 kilometers, exactly. Metric equivalents of all surveyor's units, e.g., links, rods, and chains, are derived from the survey foot.

The relationship

$$1 \text{ international nautical mile} = 1.852 \text{ kilometers}$$

is exact, but the relationship

$$6\,076.115 \text{ international feet} = 1 \text{ international nautical mile}$$

is not exact.

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RICHARD W. ROBERTS,
Director.

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