



AWS D1.1 Interpretation

Subject: UT Transducers
Code Edition: D1.1-90
Code Provision: Subsection 6.15.6 and Table 6.3
AWS Log: I-91-01-05

Inquiry:

(1) Subsection 6.15.6 of D1.1 states in part that straight beam (longitudinal wave) search unit transducer shall have an active area of not less than $\frac{1}{2}$ in.² (323 mm²) nor more than 1 in.² (645 mm²). Areas of $\frac{1}{2}$ in.² and 1 in.² convert to diameters of 0.8 in. and 1.13 in., respectively. Since all commercially available straight beam transducers are round, the only transducers capable of meeting this requirement have a diameter of 1 in. Since a range of transducer areas is specified, can these dimensions be interpreted as diameters (1/2 in. to 1 in.) rather than areas?

(2) Table 6.3 of D1.1, procedure numbers 4 and 5, specify lower refracted angles (45° and 60°, respectively) for the top quarter of the weld than for the middle half and bottom quarter (70°) of the weld. This is contrary to the other procedures, and it appears to violate the intent of the inspection requirements.

Response:

(1) No.

(2) See Table 6.3 for the application of procedure numbers 4 and 5. The intent is to use a 10-in. screen.

AWS D1.1, Structural Welding Code—Steel, is prepared by the AWS Structural Welding Committee. Because the Code is written in the form of a specification, it cannot present background material or discuss the committee's intent.

Since the publication of the first edition of the Code, the nature of inquiries directed to the American Welding Society and the Structural Welding Committee has indicated that there are some requirements in the Code that are either difficult to understand or not sufficiently specific, and other that appear to be overly conservative.

It should be recognized that the fundamental premise of the Code is to provide general stipulations applicable to any situation and to leave sufficient latitude for the exercise of engineering judgment. Another point to be recognized is that the Code represents the collective experience of the committee; and, while some provisions may seem overly conservative, they have been based on sound engineering practice.