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 ½ in.² (323 mm²) nor more than 1 in.² (645 mm²). Areas of ½ 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.