**REVISED MANDATORY APPENDIX I**

**SUPPLEMENTS**

**SUPPLEMENT 1 CALIBRATION BLOCK MATERIAL AND THICKNESS**

(a) The material from which the blocks are fabricated shall be one of the following:

(1) a nozzle dropout from the component.

(2) a component prolongation; or

(3) material of the same material specification, product form, and heat treatment condition as one of the materials being joined.

(4) If calibration blocks of the same material specification, product form, and heat treatment condition as the material to be examined are not available, a technical justification shall be prepared detailing the technical basis and rationale for establishing that the proposed calibration block material is similar to the components to be examined. The technical justification shall contain the following:

(i) Description of Components to be Examined

The component design, material specification, product form, surface conditions, and ranges of sizes shall be documented.

(ii) Description of Component Ultrasonic Properties

The ultrasonic properties of the components to be examined shall be measured. These measurements shall be made for each mode of propagation intended to be used for examination and shall include the following:

(-a) velocity of ultrasound

(-b) amplitude responses from typical examination reflectors (e.g., back surface or other geometrical responses) for at least the upper and lower bounds of the ranges of angles and frequencies specified in the examination procedure

(iii) Calibration Block Properties

The ultrasonic properties of the proposed calibration block shall be measured for each mode of propagation intended to be used for examination, including the following:

(-a) velocity of ultrasound

(-b) amplitude responses from the procedure-defined calibration reflectors specified for at least the upper and lower bounds of the angles and frequencies specified for use in the procedure

(iv) Calibration Block Technical Justification Report

The calibration block technical justification report shall be prepared by a UT Level III and shall be reviewed and accepted by the Owner. It shall contain the information that has been acquired to establish equivalency between the components to be examined and the proposed calibration block. When comparing the ultrasonic measurements between the components to be examined and the proposed calibration block, the following tolerances shall be used to show equivalency for the same mode of propagation, and for the range of frequencies and angles specified by the procedure.

(-a) The measured angle shall be within 3 degrees.

(-b) The system sensitivity shall be within 2 dB.

(b) Where two or more base material thicknesses are involved, the calibration block thickness shall be of a size sufficient to contain the entire examination path.