4.2.1 Chemical Analysis: Samples for chemical analysis shall be selected as described in Method 111.1 or 112.1 of Federal Test Method Standard No. 151 to represent each consumable electrode heat in the shipment. The sample shall consist of not less than 2 ounces of material. Samples for chemical analysis may be waived provided that all of the material under inspection can be identified as being made from a heat previously analyzed and found to be in accordance with the chemical composition specified herein. In the event of dispute, analysis shall be by Method 111.1.

4.2.2 Hardness: Sufficient hardness tests shall be conducted to insure that all material in a shipment meets the hardness requirements specified herein. Hardness tests shall be conducted in the manner specified in Method 242.1, Federal Test Method Standard 151.

(C) 4.2.3 Grain Size: Sufficient samples shall be selected to represent the steel in each shipment. Grain size shall be determined by either of the methods of grain size determination specified in Method 311.1, Federal Test Method Standard 151. If the fracture method of grain size determination is used, the material shall be austenitized as follows:

(1) Austenitize at 1675°F to 1725°F for one (1) hour.

(2) Quench in circulating molten salt at 400°F maximum for 15 minutes.

(3) Air cool to room temperature.

4.2.4 Decarburization: Sampling requirements for decarburization testing shall be sufficient to insure that the decarburization limits specified herein have not been exceeded. Depth of decarburization below a surface shall be determined by examination of a metallographic specimen exhibiting at least one lineal inch of the original surface of the material. For material one inch or less in diameter or width, the metallographic specimen shall represent the entire cross section of the material.

4.2.5 Tensile Testing

4.2.5.1 Sampling: One bar, plate, sheet, extrusion, or billet, as applicable, of each thickness and heat in a shipment shall be sampled to determine conformance to the tensile property requirements of Paragraph 3.10. The test sample shall be of sufficient size to permit the fabrication of two tensile specimens for each heat treat level tested (Ref. Paragraph 3.10). Two tensile specimens conforming to Specimen Type R1, R2, or F2 of Method 211.1 of Federal Test Method Standard No. 151 shall be required from each test sample. Where possible, Specimen Type R1 and R2 shall be used with Type R1 being preferred. Tensile specimen direction and location shall be as follows:

(1) Billent Material: The test specimens shall be taken from the mid-radius location of the billet. The longitudinal axis of the test specimens shall be transverse to the grain direction. Rectangular billets, 3.5 inches and greater in thickness, shall be tested so that the longitudinal axis of the specimen will be parallel to the thickness of the material.

(2) Bar, Rod, and Extruded Material: Material 3.5 inches and greater in thickness or width (4.0 inches in diameter for solid rounds), shall be tested so that the longitudinal axis of the test specimens will be transverse to the grain direction. For material less than 3.5 inches in both thickness and width (4.0 inches in diameter for solid rounds), the longitudinal