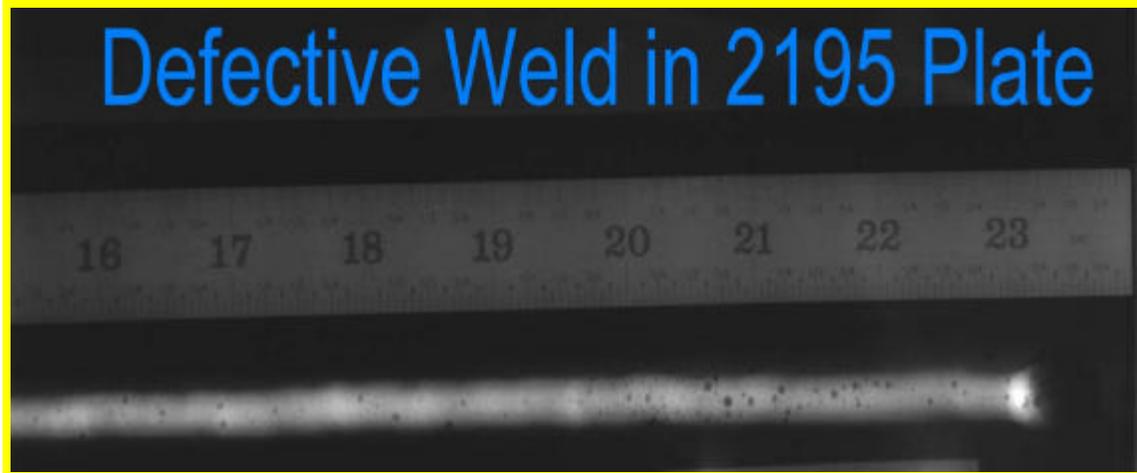




Development of Weld Acceptance Criteria for Defective Welds



Objective

This study will develop an acceptance criteria for welds with naturally occurring flaws, expand the existing database, and further characterize weld flaws and their effects on weld properties. This effort will also compare fracture strengths of flawed welds to artificially flawed strengths and update allowable flaw size limits in MSFC weld specifications if possible based on this study.

Why Needed

Welds will be made using the Gas Tungsten Arc (GTA) welding process on two materials. One thickness of 2219 aluminum and 304 stainless steel will be welded and nondestructively inspected. Because it is impossible to control flaw types and sizes, the flaws cannot be categorized until after the welds are made and inspected. The "lessons learned," for creating defect-free welds, will purposely be ignored in the attempt to make flaws. This effort will provide an improved understanding of the relationship between flaw size/type and the effect on mechanical properties, as well as the potential to increase allowable flaw sizes, thereby reducing the amount of weld repair. Additional benefits include the reduced cost of fabricating welded structures and the support to aerospace industry efforts for developing an industry-wide welding specification.

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Sponsor

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