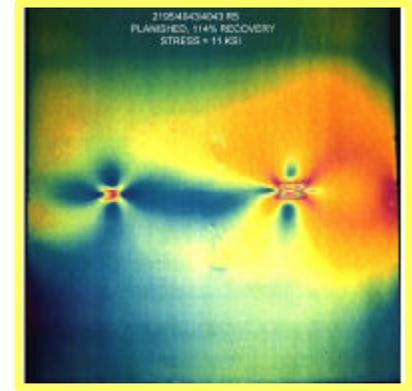
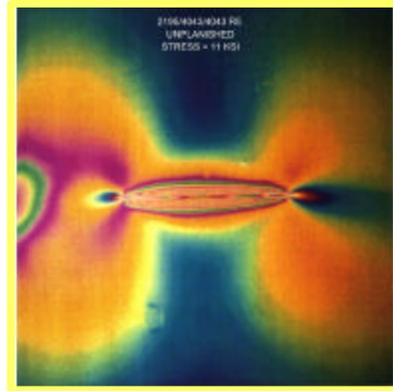




Development of Advanced Planishing Techniques for 2195 Weld Repairs



Objective

This study will expand the current knowledge base of planishing 2195 weld repairs. It is important to point out that planishing of weldments has been a necessary process also on 2219 structures, e.g. International Space Station, Solid Rocket Boosters, and other aluminum tankage. Therefore, a better scientific understanding of the process has far reaching implications. The plan for the proposed work is in phases: 1) to identify the thickness and aspect ratio variations for FEA (Finite Element Analysis) modeling and subsequent weld tests to confirm the model results, 2) to analyze the performance of the FEA and present the results, and 3) to perform welding tests including initial and repair welding of 2195 weldments and subsequent measurements and testing.

Why Needed

The relationship of the weld repair aspect ratio and planishing efficiency will be better understood as a result of this work. Planishing is currently required for nearly all weld repairs made on the super lightweight tank where incremental process improvements can result in substantial cost savings in tank manufacture. Current published literature indicates that controlling the aspect ratio of the weld bead prior to planishing will result in two improvements to the process. The first improvement is to minimize the weld buildup to only that required to accomplish planishing. This would improve the planishing efficiency in lighter gauge repairs and require less time in processing. Secondly, by increasing the area or "footprint" of the planishing process, planishing of thicker gauges may become possible.

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Sponsor

Center Director's Discretionary Fund (CDDF)