



## Nondestructive Evaluation Methods for the Ares I Common Bulkhead

By James Walker

BiblioGov. Paperback. Book Condition: New. This item is printed on demand. Paperback. 22 pages. Dimensions: 9.7in. x 7.4in. x 0.1in. A large scale bonding demonstration test article was fabricated to prove out manufacturing techniques for the current design of the NASA Ares I Upper Stage common bulkhead. The common bulkhead serves as the single interface between the liquid hydrogen and liquid oxygen portions of the Upper Stage propellant tank. The bulkhead consists of spin-formed aluminum domes friction stir welded to Y-rings and bonded to a perforated phenolic honeycomb core. Nondestructive evaluation methods are being developed for assessing core integrity and the core-to-dome bond line of the common bulkhead. Detection of manufacturing defects such as delaminations between the core and face sheets as well as service life defects such as crushed or sheared core resulting from impact loading are all of interest. The focus of this work will be on the application of thermographic, shearographic, and phased array ultrasonic methods to the bonding demonstration article as well as various smaller test panels featuring design specific defect types and geometric features. This item ships from La Vergne, TN. Paperback.



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