

Advanced Composite Structures and Materials Technologies for Launch Vehicles
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The NASA's Advanced Composites Technologies (ACT) Project has the potential to develop composite materials and structures technologies for the largest composite aerospace structures ever made. The objective the ACT Project of is to develop mid-technology readiness level (TRL) composite materials and structures technologies to TRL 6 for specific heavy lift Ares V launch vehicle and Altair lunar lander applications. To accomplish this objective, the ACT Project has four major technical elements: materials and manufacturing; structural concepts development and assessment of lightweight components; testing and evaluation; and highly loaded composite struts. The Project uses capabilities from across NASA to form multi-disciplinary, cross-center teams to meet the milestones of these technical elements.

This presentation will describe the activities and plans for the ACT Project. Studies from the first execution year of the project will be summarized including results from materials selection and structural concept evaluation studies. Plans for continuing activities include studies for nondestructive evaluation/structural health monitoring, damage tolerance, joints, and material and structural testing, and these studies will be described. A major emphasis this fiscal year is the start of work for a manufacturing demonstration barrel. This structure will be composed of six, 5-m-diameter, 3-m-long curved panels that when assembled, result in a 10-m-diameter barrel. Activities related to the development of this structure will also be described.