

Broad-Ranging Support of *Dream Chaser*[®] Development



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Case Study

OVERVIEW

Dream Chaser, Sierra Nevada Corporation's (SNC) multi-mission space utility vehicle designed to transport crew and cargo, was selected by NASA to provide cargo delivery, return, and disposal service to the International Space Station under the Commercial Resupply Service 2 (CRS-2) contract. The design of Dream Chaser makes it uniquely capable of returning precious cargo at less than 1.5 g during descent and reentry, and it is able to land at a variety of runways all over the world.

ATA supported several teams across the Dream Chaser program with our expertise in the design, analysis, and testing of high-performance aerospace systems. This support included performing system-level and component-level simulations to ensure that Dream Chaser designs would meet NASA requirements, developing custom software tools to manage immense amounts of engineering data to efficiently evaluate designs, and providing mentoring, formal software training, and technology transfer to strengthen the capabilities of the SNC team for years to come. ATA was recognized with SNC's Small Business Excellence Award for 2019 as a result of the quality and responsiveness of ATA's support on this program.

TASKS PERFORMED & KEY OUTCOMES

- Developed software tool for compiling system-level simulation data and creating subsystem and component load spectra for fatigue analysis
- Acquired data from wind tunnel testing to support derivation of vibroacoustic environments
- Performed system-level thermal modeling and simulation
- Performed fluid-dynamic and structural-dynamic analysis in support of propulsion system development
- Completed detailed thermal and structural-dynamic analysis of components, including flight control actuators, wing lock and deployment actuators, mechanisms, reaction control system (RCS) thrusters, and environmental control and life support system (ECLSS) and active thermal control system components