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NASA SUPPORT FOR COMMERCIAL CREW LAUNCH CAPABILITIES

Abstract

Since the earliest days of U.S. human spaceflight, NASA's Marshall Space Flight Center in Huntsville, Alabama, has played a key role in American crew launch capability, from engineering support for the first Mercury-Redstone launches, to the Saturn launches to the Moon, through Shuttle and now Artemis. Today, Marshall brings that expertise gained through decades of crewed space launches to NASA's Commercial Crew Program (CCP), providing launch vehicle engineering and programmatic support. The team's responsibilities have included human-rating certification of commercial launch systems for the CCP missions, including Atlas V and Falcon 9, and verifying each launch vehicle complies with flight certification. MSFC provides expertise in nearly all aspects of launch vehicle design and performance including solid motors and liquid engines, stage propulsion, thrust vector control, structural and dynamics, safety and mission assurance. During each commercial crew launch, an engineering support team is on console at Marshall's Huntsville Operations Support Center, which has provided launch operations support since Apollo, providing real-time oversight to safety standards for the vehicle and verifying data. Launch vehicle support for Commercial Crew has come as a paradigm shift for the MSFC team, inspiring new approaches that leverage expertise and best practices from past NASA-developed launch vehicle missions, while at the same time providing new synergies from work with commercial partners on CCP. This paper will explore the role that the Marshall launch vehicle services team plays in the Commercial Crew Program, as well as lessons learned from the program that will continue to benefit a new era of spaceflight partnerships.