

## **Dr. Luke A. Schutzenhofer**

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*A rocket is not an airplane. Let me explain what a rocket is. Imagine this: you have an eggshell that holds the propellant (tanks). You have a pinhead on top of the eggshell, that's the payload with the astronauts inside, and you have a stick of dynamite on the bottom of it, and it's the propulsion system. That's what a rocket is. That's my mental image of a rocket and how sensitive it is and how performance driven this thing is... It's breaking the chemical bonds to get to orbit. That's what it does. That's what a rocket is. It's not some airplane that's taking off all the time. Every time you see a space vehicle launch, you think of that picture: an eggshell, with a stick of dynamite on the bottom with a pinhead on top.*

Dr. Luke A. Schutzenhofer,

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Dr. Luke A. Schutzenhofer served more than 50 years as an aerospace engineer. He received his B.S. in Aeronautical Engineering from St. Louis University, in St. Louis, Missouri, his M.S. in Engineering from the University of Alabama in Huntsville (UAH), and his Ph.D. in Engineering Mechanics from the University of Alabama in Tuscaloosa.

In 1960, Schutzenhofer joined NASA's Marshall Space Flight Center and in his distinguished career has performed and managed projects that require expertise in a wide range of disciplines: structural design, structural analysis, vibrations and acoustics, unsteady aerodynamics, structural dynamics, rotordynamics, engine controls, computational fluid dynamics (CFD), space transportation system engineering and integration, and advanced technology strategic planning.

As the lead engineer for the Space Shuttle Main Engine (SSME) in the Systems Dynamics Laboratory, Schutzenhofer was responsible for the integration and management of propulsion activities. In that role, he participated in numerous SSME failure investigations. Concurrently, he served as Branch Chief for the Mechanical Systems Branch, where he established and benchmarked the state-

of-the-art rotordynamics and rocket engine control system analysis methods to understand and resolve engine failures and anomalous events

He organized and directed the development of the Computational Fluid Dynamics Branch, serving as Chief for 5 years during which he spearheaded the use of CFD codes within the rocket propulsion community resulting in significant cost reductions and increased confidence in the design, development, test, and evaluation of space hardware. As Chief Engineer of the Vehicle Integration for the Heavy-Lift Launch Vehicle Definition Office, Schutzenhofer was instrumental in implementing product development teams, Total Quality Management and Concurrent Engineering practices, and system engineering and integration software tools. Schutzenhofer also served as Chief of the Structural Analysis Division of the Structures and Dynamics Laboratory.

From 1972 until recently, Schutzenhofer has been a lecturer for the Mechanical and Aerospace Engineering Department at UAH. He was also an Adjunct Professor and a member of the graduate faculty. Since his retirement in 1995, he has been a technical coordinator at Marshall and conducted research with NASA to characterize the launch vehicle design process. He has trained, coached, and mentored engineers working on key NASA projects - Space Launch Initiative, Orbital Space Plane, Next Generation Launch Technology, Return to Flight, Constellation, and various Exploration studies -- and consults with aerospace contractors.

Schutzenhofer's awards include the Silver Snoopy<sup>1</sup>, NASA Exceptional Service Medal<sup>2</sup>, outstanding performance awards, and the Alumni Merit Award of St. Louis University.

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<sup>1</sup> The Silver Snoopy is the astronauts' own award for outstanding performance, contributing to flight safety and mission success.

<sup>2</sup> This medal is granted for significant sustained performances characterized by unusual initiative or creative ability that clearly demonstrates substantial Improvements or contributions in engineering, aeronautics, space flight, administration, support, or space-related endeavors that contribute to the mission of NASA.

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