

DAVID V. HAMPTON
Mechanical Engineer
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Professional Abstract:

Fifty years of mechanical engineering experience with a demonstrated record of superior performance –from 1974, two years structural analysis of strategic missile systems at TRW Systems Group, five years mechanical power transmission R&D at the Gates Rubber Company. Starting in 1981, over twelve years of experience in strategic missile and spacecraft mechanical survivability at Martin Marietta Astronautics Group. Followed by three years' experience as owner of a land development corporation specializing in the creation of luxury home building sites followed by ten years at Lockheed Martin Astronautics as a lead structural analyst serving the Titan Program and the Targets Element of the Ballistic Missile Defense Program. After retirement from Lockheed Martin Astronautics, 9 years consulting back to Lockheed Martin Astronautics on the BMD Targets Program followed by 8 years as a Partner in Frontier Astronautics.

Education:

MS in Systems Management, University of Southern California, 1976
MS in Mechanical Engineering, University of Colorado, 1974
BS in Mechanical Engineering, University of Colorado, 1972

Work History:

Partner, Frontier Astronautics, LLC

May 2016 – Present

Consulting to Lockheed Martin Astronautics

May 2007 – May 2016: Continuation of structural analysis on flight elements of the **Targets Element** of the **Ballistic Missile Defense Program**. Support provided to Ground Support Element components of the BMD program along with technical assessment of foreign missile systems – both reentry and boost.

Formal Retirement at Lockheed Martin Astronautics

May 2006

Lockheed Martin Astronautics

December 2005 – April 2006: Lead Stress Engineer for the **Targets Element** of the **Ballistic Missile Defense Program**. Tasks included supervision of a stress group supporting the design/development of structural components for the modification of C-4 missiles to launch simulated foreign RVs. The stress group was responsible for extensive modeling of the entire C-4 structure using I-DEAS and NASTRAN to support overall loads generation and adequate structural sizing.

January 1998 – November 2005: Stress Engineer for the Core Element of the **Titan Launch Vehicle Program**.

Performed structural analysis on core elements of the Titan II and Titan IV programs using I-DEAS, NASTRAN, ABAQUS and BOSOR along with numerous hand solutions. Participated in numerous launch redline reviews and expanded pedigree reviews in support of launches. On the last two years of the program, I was the primary stress engineer on the program in Denver.

October 1997 – December 1998: Lead Engineer for the Structural Design and Analysis group in the Spacecraft Element function of the **Space Based Laser Program**. Tasks include design and analysis of the structural component of the SBL spacecraft along with the integration of solid and finite element models of other spacecraft subsystems into a system level spacecraft model. Principal tools used were I-DEAS for the solid modeling and NASTRAN for the structural analysis.

Muniz Engineering, Inc.

February 1997 - September 1997: Contract engineering to Lockheed Martin Astronautics for development of an integrated structural dynamic finite element model of the Space Vehicle on the **Space Based Laser Program**. Tasks include the use of I-DEAS and NASTRAN to develop and exercise a system level FEM of the spacecraft structure while integrating subsystem FEMs from other contractors into the overall model.

SOS Technical Services

June 1996 - January 1997: Contract engineering to Lockheed Martin Astronautics for design and test support of thermal protection system test articles for the Sample Return Canister on the **Stardust Program**. Extensive use of I-DEAS to design the Thermal Protection System test samples, coordination of model shops for the fabrication of the samples and the evaluation of sample performance after testing.

Martin Marietta Astronautics Group:

June 1981 - November 1993: Mechanical design and analysis for various strategic missile and spacecraft programs. Program tasks and periods of performance are listed below:

February 1992 - November 1993: General short term technical support to following projects :

- **Minuteman III Guidance Upgrade Proposal** - NH&S Lead Engineer (mechanical & electrical)
- **REACT** - Design & execution of mechanical shock testing of system components
- **Superconducting Super Collider Spools Project** - Structural analysis of magnets and support hardware
- Former Soviet Union - **START II Compliance Proposal** - Architectural specification of compliance reporting system.

September 1990 - January 1992: NH&S Mechanical Effects Lead Engineer for the **REACT** contract with LORAL Aerospace. Duties included nuclear environment definition at the system level, allocation of requirements to subtier elements, computation of structural shock response spectra, along with providing design guidance to the customer's design engineers.

August 1989 - August 1990: Program Manager for the **Hypersonic Vehicle Technology System Implementation** contract with McDonnell Douglas. Performed mission analysis on a series of classified scenarios to determine overall performance requirements of the hypersonic weapon system. Subtasks included the evaluation of weapon survivability with an emphasis placed upon vehicle penetrability of enemy airspace, warhead lethality for both nuclear and non-nuclear payloads, and determination of accuracy requirements. This was a competitive study contract in which the Martin Marietta / McDonnell Douglas team judged by the customer as superior at contract closure.

February 1988 - July 1989: Space Craft Survivability Engineer for the **SABIR** and **SBR** programs. Duties included the evaluation of X-ray effects on spacecraft structural materials, the design and evaluation of a laser thermal shielding system for the radar antenna on the Space Based Radar spacecraft, and the definition and execution of X-ray above ground testing at Maxwell Labs in support of the **SABIR** spacecraft laser shielding system.

July 1986 - January 1988: NH&S Mechanical Effects Lead Engineer for the **Small ICBM AT&SS** contract. Duties included Supervision of system level hardness analysis of flight hardware involving the effects of thermal radiation, X-ray, air blast, and debris heating /erosion. Developed weapons environment test definition and test facility selection for both AGT and UGT testing. Task required substantial use of scientific programming skills, close customer interface and the direct supervision of 12 additional engineers.

July 1985 - June 1986: NH&S/EMC Survivability lead for the PBV/Shroud hardware element of the **Small ICBM**. Task included hardness analysis involving the effects of thermal radiation, X-ray, air blast, debris induced heating and surface damage effects. Responsibilities included weapons environment test definition and test facility selection along with the supervision of 4 additional engineers.

June 1981 - June 1985: NH&S mechanical effects engineer on the **Peacekeeper AT&SS** Contract. Performed hardness analysis involving thermal radiation, thermal and mechanical X-ray deposition, air blast loading, as well as

prediction of debris induced heating and surface damage effects. Position required substantial use of scientific programming skills, customer interface including briefing and reports, and coordination with several analytic disciplines.

Other:

Received numerous awards and commendations on the **Titan** and **Space Based Laser Programs** including the 2005 LMA Corporate Award for Technical Excellence on the Titan Program. Currently Inactive DoD Secret Clearance. Colorado Registered Professional Engineer (48 years).