**PAUL VARUGHESE**

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**Sr. Aircraft Structural Analyst**

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| EDUCATION | **THE AERONAUTICAL SOCIETY OF INDIA** New Delhi, India  BSc Aeronautical Engineering  **UNIVERSITY OF TENNESSEE** Knoxville, TN  Certification in Finite Element Analysis (FEA)  Certification in Aircraft Stress Analysis  Certification in Helicopter Aerodynamics  Certification in ACE Sikorsky Aircraft , CT  **DELFT UNIVERSITY OF TECHNOLOGY** Delft, Netherlands  Certification in Rotor / Wake Aerodynamics  **UNIVERSITY OF STANFORD**  Certification in Relativistic Mechanics  **UNIVERSITY OF GENEVA**  Certification in Particle Physics  **AMERICAN INSTITUTE OF AERONAUTICS AND ASTRONAUTICS**  Certificate in High Speed Air Breathing Propulsion  **GEORGIA INSTITUTE OF TECHNOLOGY**  Certification in Advanced Mechanics of Materials |

**SECRET CLEARANCE :** **Interim**

**EXPERIENCE**

**ALION SCIENCE AND TECHNOLOGY** Warner Robins, GA

October 2014 –

Jun 2017 **Sr.Stress / Mechanical Engineer (FEA)**

* + - Studied different kinds of aircraft loadings and the corresponding stress described in Lockheed report.
    - Reviewed Lockheed hand calculations and references include Structural Repair Manual (SRM)
    - Developed an analytical method to obtain an equivalent load or stress from aircraft loading conditions that can be used on 20 in x 20 in coupon / panel for the lab test.
    - Prepared an elaborate stress analysis reports, based on equivalent loadings or stress that includes free body diagram for the Finite Element Modeling as well as for Lab Load application.
    - Developed FEA models by using ANSYS Auto DYN version 16.1 of aluminum honey comb aircraft structures used in C-5 (Lockheed) to evaluate ultimate aircraft and failure loading effects. The stress / strain observed in the plastic region from the above loading conditions are used for the margin of safety calculation of the structure.
    - Prepared Margin of Safety Calculation reports along with stress / strain curve based on FEA results for different bending loads.
    - Margin of safety obtained from different types of damages caused by high speed flying objects on the structure is used to develop the dent limit expansion curve that shows the integrity and strength of the aircraft structure.
    - Create FEA models of thin-walled composite structures to study the nonlinear dynamic loads experienced at dents resulting from impact.
    - Participated in preparing C-5 dent limit expansion Phase 2 final report Document No. MS & 0- AES-xx-xxx Rev.-
    - Trained and led fellow engineers on dent limit research program for stress analysis and ANSYS auto DYN Software and make them productive within short period of time.
    - Successfully correlate the lab results with simulation results
    - Successfully completed the dent limit expansion research program Phase 3 on time.

**EAGLE AVIATION TECHNOLOGIES.** Hampton, VA

Jan 2013 -

Sep 2014 **Mechanical Structural Engineer**

* + - FEA analysis related to rotor blades of S-97 for vibratory as well as steady loads during different flight conditions using ANSYS 14
    - Composite Design using CPD
    - Conducted FEA Analysis for stress determination as well as deformation on the swash plate of AVX rotor systems due to bearing loads.

**SIKORSKY AIRCRAFT CORPORATION** Horseheads, NY

March 2009 -

Dec 2012  **Aerothermal Engineer :**

The present responsibility mainly focused on primary, and secondary structural analysis of light turbine helicopters (269D, Configuration 434C) and fixed wing aircraft (3-38B MCSA) using Sikorsky standard work procedures.

* + - Performed static analysis and margin of safety calculations for primary and secondary structures (conventional, metallic and composite) analytically as well as computer simulation methods to develop high strength to weight ratio.
    - Performed static analysis and margin of safety calculation for the drive system components of 269D, Configuration 434C aircraft.
    - Performed static analysis and generate finite element model using ANSYS Workbench 12.1 from CATIAV5 R18 of the main machined landing gear (Level Landing, Tail down Landing, and Side Load), forward engine fittings, seat mountings and the canopy of 338-B fixed wing aircraft to find Von Mises stress for the calculation of margin of safety.
    - CFD Analysis is performed by using ANSYS Fluent for the determination of dynamic pressure loads acting on the critical areas of the aircraft such as Windshields and Forward engine cowling.
    - Proficient in strain gauges, assisted in finding exact location for the installation of gauges with accurate measurement of strain at wings, pod, tail boom and the engine mount during the static test of the 3-38B MCSA aircraft.
    - Performed Bearing analysis and Bearing life (L**10**) calculation of tail rotor input and output shaft for a new tail rotor blade design on 269D, 434C aircraft during varies flight conditions.
    - Static analysis for the determination of margin of safety and new loads generated due the structural modification on UH60M aircraft for the installation of UHMMSS medical interior.
    - Wrote reports and documented all the analysis performed for the purpose of FAA certification as well as for future reference.
    - Supported project engineers through preliminary and detailed design of bulkhead assemblies, stringers, shear and tension clip supports of fixed wing aircraft (3-38B MCSA) program using CATIA V5 R18.
    - Proficient in design and analysis software like CATIA V5 R18, Auto CAD 2009, Solid Works 2010, CAD key 99, FEMAP, MSC NASTRAN, PATRAN, ANSYS 12.1, Mathcad14, Matlab6.5 and Microsoft Office 2010
    - Maintained a current knowledge of the FAA regulations 14 CFR part 23 and 25 pertaining to aerodynamics and structures.
    - Strong knowledge of beam, plate, membrane, buckling, crippling of compression members, stability theory and analysis methods.
    - Participated in ACE continuous process improvement program.
    - Conducted aerodynamics /performance analysis pertaining to the endurance of the main rotor blades used in Fire Scout VTUAV Model SHU-40B through a new design that includes incorporation of a next generation airfoil and optimization with respect to planes from cross section, twist rate and tip design.
    - Proficient in working with weight analysis of the entire aircraft by using mass properties, calculated analytically as well as the data extracted from the CATIA models.
    - FEA analysis related to rotor blades of S-97 for vibratory as well as steady loads during different flight conditions using ANSYS 14
    - Familiar with MMPDS / MIL-HDBK-5, E.F. Bruhn and Roark’s formula for stress and strain calculation.
    - Constantly interacted with design engineers for the design changes and suggest improvements in the existing design / during design phases in accordance with the corresponding results obtained from the stress analysis.

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| April 2008- March 2009 | **GEORGIA INSTITUTE OF TECHNOLOGY** Atlanta, GA  **Visiting Scholar:** The present research concerns the predication of aero elastic instabilities and post flutter behavior for high aspect ratio wings by using ANSYS and VABS (Variational Asymptotic Beam Sectional Analysis) implementation based on variational asymptotic method using finite element method. |

* + - Verify the experimental results provided by the DUKE University by using VABS and DYMORE ( results are so called VABS based results )
    - Compare the 3D experimental results provided by DUKE with ABAQUS 6.8 and ANSYS 3D Model
    - Investigate the possibilities to speed up DYMORE 3D analysis with equivalent sectional properties

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|  | ADDITIONAL DATA Passionate about aero-modeling.  Subjects of interest include Advanced Thermodynamics, Applied Aerodynamics, Mechanics of Fluids and Solids, Mechanics of Deformable Bodies, Advanced Strength of Materials and Material Science, Aircrafts, Rockets and Missile Propulsion, Aircraft Structures and Systems. |