



The Augustus Group
Robert Blackstone – Principal Engineer

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SUMMARY

Serious experience in stress analysis, fitness for service/failure analysis, finite element and fatigue analysis of structures, pressure vessels, ships, aircraft, pipelines, piping systems and other specialty equipment. Proven problem solver in the petroleum, chemical, aerospace, and nuclear power industries using both deterministic and probabilistic technology. Versant in use and application of AS SafeHull, MSC/NASTRAN, ANSYS, and STARDYNE

EDUCATION

MS, Mechanical Engineer
BA, Mechanical Engineer

PROFESSIONAL EXPERIENCE

1991 – 2001 ABS Americas, **Senior Engineer**

- Stress analyses using MSC/NASTRAN on global and local detail models of ships, offshore structures, pressure vessels, and machinery components
- Remaining fatigue life of large welded structures using both fracture mechanics and S/N curve based methods
- Potential for sudden rupture of damaged ship hulls using fracture mechanics
- Remaining strength and fatigue resistance of existing ships using the AS SafeHull program
- Failure analyses on both structural and machinery components using SafeHull, MSC/NASTRAN, and FractureGraphics

1990 – 1991 Aptech Engineering Services. Inc., Houston, TX, **Lead Engineer**

- Used finite element analysis and fracture mechanics to evaluate residual life of flawed pressure vessels and piping systems using both deterministic and probabilistic technique to support run/repair/replace decisions

1988 – 1990 Lockheed Engineering & Sciences Co., Las Cruces, NM, **Principal Scientist**

- Performed liquid and gaseous oxygen mechanical impact testing on space shuttle and space station materials, worked on improvements to mechanical and pneumatic impact tests, under NIST sponsorship, extended the mechanical impact test to metals testing
- Other projects included impact testing of LOX/aluminum gels, spray ignition testing of shuttle

1987 – 1988 McDonnell Douglas Helicopter Company, Mesa, AZ, **Member of Tech Staff III**

- Provided stress analysis for the main and tail rotor blade/hub systems of the AH-64A Apache, investigated fretting fatigue failures of the main rotor blade retention strap pack

using nonlinear finite element analyses, MSC/NASTRAN, investigated proposed design solutions 1987 – 1987 Garrett Fluid Systems Company, Tempe, AZ, **Senior Engineer**

- Used MSC/NASTRAN and ANSYS plus hand calculations to find proof and burst pressure limits for valves and actuator housings and the cause of fatigue failures during testing

1983 – 1987 Texas Tech University, Lubbock, TX, **Lecturer in Mechanical Engineering**

- Taught Jr./Sr. courses in machine design and engineering experimentation and using MSC/NASTRAN, Developed improved testing for the galling resistance of OCTG materials for ARCO, Amoco, Texaco, BP, and Sumitomo, Used nonlinear capability of MSC/NASTRAN to show the effect of tool bending stiffness on drill pipe fatigue in marine risers

1980 – 1983 Hydril Company, Houston, TX, Tubular Product Engineering, **Design Section Supervisor**

- Project leader for more than 100 full-scale performance tests of oil well casing and tubing connections, Loadings included tension and compression to failure, internal pressures up to leakage, bending, and thermal shock, Forces involved ranged from 1500 tons and pressures to 20000 psi, Finite element program ANSYS used extensively in designing end fixtures, predicting deformations and interpreting results

1979 – 1980 Southwestern ISD, Inc., Houston, TX, **Engineering Product Specialist**

- Consulted with offshore structures engineers using MSC/NASTRAN at ISD

1978 – 1979 Regal Tool & Rubber Co., Corsicana, TX, **Product Development Engineer**

- Designed and tested offshore structure fenders and blowout preventer elements

1975 – 1978 Brown & Root, Inc., Houston, TX, Offshore Structures Dept., **Senior Engineer**

- Supervised department computer program section
- Applied MSC/NASTRAN and STARDYNE to numerous design and structural failure problems, analyzed 30 feet. OD, 250 feet. atmospheric pipe still for extra stiffening during a single-point lift, Welding procedures for column/deck joints in fixed platforms and semi-submersibles, 42 inches welding tee failures during hydrotest, North Slope pipe support failures during service

1963 – 1975 Southwest Research Institute, San Antonio, TX, **Senior Research Engineer**

- Conducted finite element analyses and lab tests of BP Forties field platforms, semi-submersibles, jack-up rigs for Brown & Root, Sedco, Marathon Marine, Chicago Bridge & Iron, Petro-Marine Eng., Exxon, The Offshore Company
- Developed an impact test for materials in liquid oxygen, now ASTM Standard F371, Member of the Apollo 13 investigation team, Impact tests for glass for DOT, acetylene bottles of Union Carbide, LOXING mixtures for Conoco

SELECTED PUBLICATIONS

Over 10 Technical Publications and Reports, Some Examples:

- Hammer Peening to Extend Fatigue Life
- Probabilistic Fracture Mechanics Evaluation of Flawed Butane Storage Tank
- New Cyclic Symmetry Applied to Offshore Problems
- Discontinuity Stress Decay in Offshore Platform Joints, proceedings of the 1974 Offshore Technology Conference
- Finite Element Analysis of Complex Joints, proceedings of the 1973 Offshore Technology Conference
- Sensitivity and Reaction Intensity Studies of LOX-LNG Mixtures, Cryogenics and Gases: Test Methods and Standards Development, ASTM STP 537, 1973