

# Terry Brumback

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## SUMMARY OF QUALIFICATIONS

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- Twelve (12) years launch vehicle manufacturing experience including 6 years in Parts, Materials and Processes Engineering, 6 years in Propulsion Test Engineering, and cross training in Strength Analysis
- Two years experience in Parts, Materials and Processes Engineering Leadership
- Bachelor's Degree in Mechanical Engineering and Master's Degree in Chemical Engineering

## WORK EXPERIENCE

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### *Materials and Processes Engineering Leader 4*

#### *United Launch Alliance, Decatur AL*

April 2016 – July 2018

- Managed team of Parts, Materials and Processes Engineers in a matrix organization and three (3) laboratories performing chemical, metallurgical and perishable materials testing
- Identified critical resources and knowledge transfer plans to assure future work force resources were in place
- Oversaw the establishment of in-house perishable materials testing primarily intended for receiving testing and shelf-life extensions with capabilities extending to some qualification testing
- Lead cost reduction efforts to include thickening projects in PMP Engineering laboratories, chemical processing and critical cleaning and also projects to streamline production flow and meet ULA cost objectives
- Lead efforts to lean factory PMP Engineering tasks by reducing unnecessary testing and inspection points
- Lead interns with interest in and propensity for PMP Engineering to complete projects to reduce costs and to assure proper staffing for the future
- Established and continued to reinforce a strong safety and 5s culture
- Developed a team environment from a previously scattered group of Engineers and Lab Scientists
- Lead Causal Analysis teams to identify root cause of process issues

### *Materials and Processes Engineer 4*

#### *United Launch Alliance, Decatur AL*

June 2012 – April 2016

- Developed and maintained Process Specifications and Detailed Process Instructions for Critical Cleaning of Fluid Systems and Payload Components, Cleanliness Maintenance of those components, Cleanroom Operations, and Leak Testing
- Troubleshoot and Dispositioned Critical Cleaning Anomalies and Contamination Issues using techniques such as FTIR and SEM-EDX
- Led projects in Cycle Time Reduction and Cost Savings efforts including Reduction in Cleanliness Verification frequencies for test and purge gases and eliminating low risk/high cost requirements where merited
- Cross-trained as Strength Analyst primarily concentrating on the structural integrity of lift tools used in the manufacturing environment using PATRAN/NASTRAN and hand calculations

- Developed and maintained Detailed Lab Procedures and specified lab equipment for Particulate Analysis, UV Fluorescence, Volatile and Non-Volatile Hydrocarbon and Halocarbon Analysis, detergent concentration analysis, and detergent pH adjustment
- Assisted in the proposed development and testing program for Acoustic Emissions Testing proposed to replace post Hydrostatic Test X-Ray of large Tank Structures
- Oversaw establishment of in-house precision cleaning and pressure testing capability for tubes, ducts, detail parts and assemblies. Designed pressure test and solvent precision clean fluid equipment while specifying requirements for ultrasonic cleaning equipment, pressure washing equipment and aqueous tube flushing equipment. Identified and ordered other required equipment such as fittings, test hoses, test fixtures, etc.
- Participated in causal analysis efforts for silicone contamination and facility gas contamination
- Material Review Board (MRB) Certified

***Systems Test Engineer 3***

***United Launch Alliance (Boeing Heritage), Decatur AL***

April 2006 – June 2012

- Responsible for developing test procedures and conducting and troubleshooting pneumatic and hydrostatic pressure tests for fuel and oxidizer tanks and other Propulsion sub-systems and components and for vapor degreasing operations performed on oxidizer tanks
- Designed and maintained pressure test and cleaning equipment
- Performed fluid calculations related to leak testing and hydrostatic testing
- Developed processes for in-sourced booster tank hydrostatic testing and aqueous cleaning as part of the Atlas transition to Decatur
- Implemented new and modified in process tests as corrective actions for downstream failures of dome welds and DCSS Tanks

***Systems Test Engineer 1***

***The Boeing Company, Huntsville, AL***

October 2005 - April 2006

- Participated in the development of high level requirements documents for weapons systems
- Reviewed program-level test documents (ITEP, TEMP) for accuracy and coordinated comments from the Warfighting Systems IPT on the Future Combat System program
- Ensured horizontal integration of test and modeling and simulation activities for IPT managed systems

***Histology Technician, HT (ASCP)***

***Pathology Associates, PC, Huntsville, AL***

September 2002 – April 2006

- Described macroscopic characteristics of tissue samples for dictation and performed dissection of surgical specimens to prepare them for histological processing

***Histology Technician, HT (ASCP)***

***Huntsville Hospital Systems, Huntsville, AL***

January 1997 – September 2002

- Responsible for chemical processing, microtomy and chemical staining of tissue samples

***Histology Technician, HT (ASCP)***

***United States Air Force***

January 1994 – January 1997

- Responsible for chemical processing and chemical staining of tissue samples for microscopic identification of tissue elements such as minerals, fungi, bacteria, connective tissue, and glycogen

- Developed chemical staining and reagent preparation procedures
- Hazardous Chemical and Safety Officer for a large medical laboratory
- Managed report distribution for Department of Pathology
- Honorably Discharged

## EDUCATION

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***Master of Science in Engineering, Chemical Engineering***, Dec 2009

The University of Alabama in Huntsville, GPA 3.875/4.0

Thesis: Stochastic Modeling of Low Copy Molecule Chemical Reactions in Methane Combustion

Significant Courses: Advanced Thermodynamics, Statistical Thermodynamics, Transport Phenomena, Catalysis and Reactor Design, Rocket Propulsion, Graduate Engineering Analysis I and II

***Bachelor of Science in Engineering, Mechanical Engineering***, May 2005

The University of Alabama in Huntsville, GPA 3.176/4.0

Significant Courses: General and Organic Chemistry, Thermodynamics I & II, Fluid Mechanics I & II, Heat and Mass Transfer, Design of Thermal Systems, Statics, Dynamics

## PUBLICATIONS

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Brumback, T. E. and Chen, C. P., "Hybrid Modeling of Homogeneous Gas-Phase Reaction," Monte Carlo Methods and Applications, Vol. 17, pp. 99-116. 2011.

## REFERENCES

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Available on Request