

# Jason Robert Wolley

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## Summary

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Experienced electronics engineering professional with 10+ years in **R&D** of industrial and commercial equipment. Held critical roles in the design of **high reliability**, long life products operating in **high temperature** and **extreme environments**, and is an expert in all stages of the electronics design cycle. Broad **PCB design** experience, in addition to strong **firmware** and **bench skills**. Excellent communications and interpersonal skills, **project management exposure**, and a proven record of **high performance** on fast-paced, **results-oriented** development teams.

## Experience

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### 1st Detect Corporation

Senior Electrical Engineer

Webster, TX

April 2015 – Present

1st Detect Corporation, a division of Astrotech Corporation (NASDAQ:ASTC), designs and manufactures miniature mass spectrometry equipment developed in partnership NASA for use on the International Space Station. As a member of a small, highly-experienced engineering team, I design PCBs and write firmware to meet a variety of highly specialized needs in 1st Detect's line of chemical detection and analysis instruments.

- Responsible for taking complex electronics ideas from design to final product, including **requirements gathering**, **system level design**, **project planning**, **PCB design**, verification and validation (**V&V**), manufacturing release, and sustaining. Primary tools: **Altium**, **LTSpice**, **SolidWorks**, **CodeComposer Studio**.
- Designed **high voltage power supply board** with a continuously adjustable  $\pm 6\text{kV}$  supply featuring rapid polarity inversion and discharge, as well as four  $\pm 30\text{V}$  adjustable supplies, and a  $\pm 200\text{V}$  supply all under software control.
- Developed multi-channel, high performance **PID controller** capable of  $0.1\text{C}$  temperature regulation. PCB design included 10 synchronous **switch mode power supplies (SMPS)**, **high precision** temperature measurements, **high current design** (up to 40A on PCB), specialized **heat management** techniques, and **firmware development**.
- Designed several adapter boards for configuring instruments to customers' needs. Required techniques included **high voltage RF** signal management, **high speed digital signal routing**, and adherence to **IPC-2221** and **IPC-2222**.
- Worked closely with contract manufacturers to balance performance, cost, and manufacturability requirements, making extensive use of **quick-turn**, **rapid development techniques**, design for manufacturability (**DFM**), and design for testing (**DFT**).

### Baker Hughes Incorporated

Electronics Hardware Design Engineer

Houston, TX

July 2010 – February 2015

Baker Hughes Incorporated (NYSE:BHI) is a leading oilfield services company. As part of the Intelligent Production Systems group, I designed equipment for well monitoring and control, including high precision/low power gauges operating in extreme environments.

- Responsible for all aspects of printed circuit board (PCB) design, including architecture and **circuit design**, analysis, and **simulation**, **component selection**, breadboard testing, **prototyping**, debugging, schematic capture, PCB layout, bring-up, V&V, compliance and qualification testing, **documentation**, manufacturing support, and sustaining. Primary tools: Altium, **Matlab**, LTSpice, SolidWorks.
- Developed PCBs and wrote firmware for high-temperature, high-reliability **downhole** products, including **pressure/temperature gauges**, **vibration sensors**, position sensors, and flow meters. Targets included TI **MSP430**, Microchip **PIC**, Atmel **AVR**, and Philips **8051** microcontrollers, Actel MX-series **FPGAs**, custom **ASICs**.
- Designed **high-density**, **multilayer** PCBs for **subsea** and surface applications, including downhole interface cards, power supplies, and rapid-turn designs for testing, **prototyping**, and manufacturing and engineering support. **Key technologies**: USB, Ethernet, DDR, DSPs, FPGAs, ADCs/DACs, SPI,  $I^2C$ , RS-485, RS-232, Bluetooth, SMPS, low-noise and high-precision analog amplifiers and filters.
- Interfaced with marketing, reliability, manufacturing, external vendors, and other key stakeholders while guiding projects through **stage-gate** product lifecycle management (**PLM**) development process.

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- Collaborated with vendors on **multi-chip module** (MCM) design, and approved designs.
- Designed **test fixtures**, firmware, test procedures, and desktop software for **automated testing**.
- Performed mean time before failure analysis (**MTBF**), failure modes and effects analysis (**FMEA**), and highly accelerated life testing (**HALT**).

## The Applied Research Laboratories of The University of Texas

Austin, TX

*Engineering Scientist Associate*

January 2006 – June 2010

The Applied Research Laboratories (ARL:UT) is a research unit engaged in sponsored research in the areas of acoustics, electromagnetics, and information technology, primarily sponsored by the Department of Defense (DoD). As a member of the Advanced Technology Laboratory, I performed basic research, algorithm development, PCB design, and firmware development on miniature, high-resolution SONAR systems.

- Designed and implemented algorithms for processing and display of high-resolution **SONAR** data for desktop and **embedded** targets. Extensive use of Matlab, **OpenCV/C++**, National Instruments PXI Express and NIDAQ.
- Researched, developed, and prototyped a novel **3D imaging** SONAR system for diver and unmanned underwater vehicle (**UUV**) applications, significantly reducing electronics complexity over traditional designs. Design areas included piezo-ceramic **array design**, analog and digital electronics, firmware, and software.
- Developed embedded C code for handheld underwater imaging and navigation systems. Targets: TI MSP430, Analog Devices **Blackfin** and **SHARC DSPs**, Motorola 6800 series.
- Created and maintained technical documentation including requirements documents, architecture overview/block diagrams, manufacturing drawings, and test plans/procedures.
- Developed and implemented test plan for military standard (**MIL-STD-810**) compliance, **EMC** and **EMI** testing.

## Education

### The University of Texas at Austin

Austin, TX

*Master of Science, Electrical Engineering – Acoustics (GPA: 3.4)*

May 2010

- Transducer theory, underwater acoustics, ultrasonics, DSP, psychoacoustics, nonlinear acoustics

### The University of Texas at Austin

Austin, TX

*Bachelor of Science, Electrical Engineering (GPA: 3.0)*

December 2005

- Digital image & video processing, antennas & wireless communications, circuit design, power electronics

## Skills

- **Electronics:** Expertise in **analog** and **mixed-signal design**, **low-noise** amplifiers and filters, **SMPS**, **communications protocols**, high voltage PCB design, high reliability, **circuit analysis**, **sensor interfacing**. Strong understanding of details of **PCB fabrication** and **PCBA assembly process**.
- **Programming Languages:** Strong **embedded C** skills; C/C++; **Matlab**; **Python**; GUI development using Windows Forms, GTK+, and QT; HTML; Visual Basic; Bash and other scripting languages
- **Software:** Expert level user in **Altium**, **Solidworks**, and **LTspice**; familiar with **OrCAD Capture** and **PSpice**; IAR Embedded Workbench, CodeComposer Studio, Analog Devices Visual DSP++, Microchip MPLAB; **version control** software; Microsoft Visio, Project, Visual Studio, and Office suite; 10+ years using **GNU/Linux**
- **Professional Interests:** PCB design, digital signal processing, analog and mixed signal circuits, power supplies, embedded design, high-speed digital design, acoustics, transducer/array design, low noise, sound reproduction, SONAR and underwater acoustics, amplifiers and sound reproduction equipment
- **Projects & Hobbies:** See list at <http://www.jasonwolley.com/projects.html>; Building audio equipment including guitars, speakers, amplifiers, and effects, customizing motorcycles, woodworking, building espresso machines and coffee equipment, rapid prototyping and laser cutting, rock climbing, skiing

**Employability Status:** US Citizen, can obtain security clearance.