

Gregory J. Laughon

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SUMMARY: Cryogenic/Mechanical/Aerospace engineer with over 33 years of varied experience in design, development, operation, and managing of high technology programs emphasizing cryogenics.

ENGINEERING EXPERIENCE:

2013 to Present **Oak Ridge National Laboratory** **Oak Ridge, TN**
A multiprogram science and technology national laboratory

Lead Systems Engineer

- Lead engineer responsible for operation, maintenance, and development of the Cold Source cold neutron cryogenic moderator system for the High Flux Isotope Reactor (HFIR).
- Project technical lead for the HFIR Cold Source replacement moderator and HB-4 beam tube assembly.
- Project lead for the new cryogenic refrigeration system supporting the HFIR Cold Source.
- Cryogenic Engineer supporting operation and development of cold neutron cryogenic moderator systems at the Spallation Neutron Source (SNS).
- Responsible for the conceptual design and development of the SNS second target station neutron moderator cryogenic system.
- Cryogenic subject matter expert for the ORNL Neutron Sciences Division.

2002-2013 **AMERICAN MAGNETICS, INC.** **Oak Ridge, TN**
An industry leader in superconducting magnets, level sensors and instruments

Senior Cryogenic Engineer – Engineering and Sales Manager

- Senior engineer responsible for superconducting magnet and magnet cryostat design.
- Designed over 30 cryostats of various complexities for superconducting magnets and cryogenic applications using SolidWorks 3D modelling and FEA software.
- Designed cryogenic pressure vessels and vacuum chambers utilizing ASME and CGA code guidelines.
- Responsible for design and development of cryogenic equipment including liquid, conduction-cooled and recondensing cryostats, variable temperature inserts, magnet support structures, vapor cooled and HTS (High Temperature Superconductor) current leads.
- Responsible for design and development of cryogenic autofill systems, specialized liquid level measurement equipment and related cryogenic products.
- Manager of Engineering Group including cryogenic/mechanical engineering, electrical engineering, mechanical design staff and engineering technicians. Responsible for budgets, schedules and personnel requirements.
- Manager of Sales Group providing supervisory leadership and technical guidance to the AMI sales staff.
- Primary mechanical engineer supporting all AMI mechanical and instrumentation projects.

1991 to 2002

GENERAL ATOMICS

San Diego, CA

A diversified high technology company

Principal Engineer/Lead Cryogenic/Mechanical Engineer (1997 to 2002)

Accelerator Production of Tritium (APT) Program

- Lead engineer responsible for design, development, analysis, and eventual construction and commissioning of a large 15 kW – 2 Kelvin cryogenic helium refrigeration system supporting the APT superconducting linear accelerator.
- Responsible for developing and managing budgets in excess of \$800k/yr, schedules, proposals, work plans, and personnel requirements for the APT cryogenic system.
- Developed preliminary process and instrumentation drawings, component design and assembly drawings, facility layouts, transfer line designs, and documents covering operating modes and system design descriptions.
- Provided engineering support for linear accelerator cryomodule mechanical, cryogenic, and vacuum design.
- Assigned to the Thomas Jefferson National Accelerator Facility (TJNAF) in Newport News, Virginia to develop the APT cryogenic system with assistance from TJNAF staff.
- Operated the numerous cryogenic liquefaction and refrigeration plants at the TJNAF site.
- Responsible for negotiation of tasks and budgets, and coordination of TJNAF engineering and design support for APT.

Lead Cryogenic/Mechanical Engineer (1991 to 1997)

DIII-D Magnetic Fusion Research Program

- Lead engineer responsible for operation, upgrading, testing, and maintenance of the DIII-D cryogenic system including cryogenic liquefiers and refrigerators, helium compressors, gas and liquid storage and transfer systems, instrumentation and controls, and high vacuum systems.
- Managed team of specialized technicians to support the cryogenic system including 24-hour continuous plant supervision and maintenance.
- Designed and supervised fabrication and installation of complex liquid helium cryostats, vacuum jacketed transfer lines, valve boxes, and integrated control systems to support tokamak diverter cryocondensation pumps for fusion plasma density control.
- Designed and installed automated cryogenic fill systems for superconducting magnets supporting electron cyclotron heating systems and tokamak fueling systems.
- Developed a computer-based vibration analysis system for preventive maintenance of rotational equipment.

1990 to 1991

ROHR INDUSTRIES

Chula Vista, CA

An aerospace design and manufacturing company

Mechanical Design Engineer

International Aero Engines V2500 engine program

- Designed and developed heat shields and structural components for commercial aircraft engine nacelles.
- Utilized SIMCAD software for engine nacelle design.

1988 to 1990

GENERAL DYNAMICS SPACE SYSTEMS DIVISION

San Diego, CA

An aerospace and defense company

Test/Cryogenic Engineer

Titan/Centaur program

- Designed and supervised installation of a launch vehicle cryogenic fueling system utilizing liquid nitrogen as a simulated fuel, and an extensive, controllable inert gas purging system.

- Designed and supervised construction of a ground based propellant tank gas pressurization system for the Centaur upper stage vehicle.
- Provided engineering support for thermal and modal analysis testing of Centaur upper stage vehicles.
- Designed various mechanical support structures for launch vehicle and component mechanical vibration and cryogenic tests.

EDUCATION: B.S. Aerospace Engineering, 1987
San Diego State University, Emphasis in aerospace structures and propulsion

TRAINING: Cryogenic Process Engineering, High Vacuum Technology (AVS course)

PUBLICATIONS: Authored and co-authored technical papers for American and International Cryogenic Engineering and IEEE Conferences and the American Nuclear Society