

CURRICULUM VITAE

JORDAN LARSON, B.Sc., P. Eng.

ACADEMIC QUALIFICATIONS

2010 Bachelor of Science in Mechanical Engineering (First Class Standing),
Aerospace Engineering Elective Stream, University of Alberta

Emphasis on courses such as Fluid Mechanics, Fluid Dynamics, Applied
Computational Fluid Dynamics, Composite Materials, and Aerodynamics.

PROFESSIONAL ASSOCIATIONS

- Professional Member, Association of Professional Engineers and Geoscientists of Alberta (APEGA)
- Member, Fire Investigation Association of Alberta (FIAA)

PROFESSIONAL CAREER

2012 - Present **Anderson Associates Consulting Engineers Inc.**, Professional Engineer
2010 - 2012 **Air Hydraulic Mechanical Services**, Engineer in Training
Summer 2009 **Dacro Industries**, Engineering Summer Student
Summer 2008 **University of Alberta**, Undergraduate Researcher

AREAS OF EXPERTISE

Structural Assessment and Remediation of Buildings

Inspection, analysis, and repair recommendations per the applicable building code to determine the cause of loss and remediate residential and commercial buildings. Experienced in a variety of incidents such as:

- Structural remediation of residential buildings after fires;
- Water damage to buildings due to incidents such as product defects, water main failures, water pipe freezing, and sprinkler piping failures;
- Building envelope issues leading to mold and related structural damage;
- Vehicle impacts to residential and commercial structures; and
- In-situ repair of trusses damaged by fire, wind, lightning, and overloading.

Pipeline Release Investigations

Experience in a range of pipeline failure types, including the investigation, analysis, and review of the following:

- Microbial Induced Corrosion (MIC) pit growth study to investigate the release timeline, corrosion rate, and total release volume;
- Review of inline inspection reports and other documentation to determine the long-term settlement and movement of the pipeline that lead to a release;
- Review of SCADA (Supervisory control and data acquisition) information systems and archived data to determine the pipeline release timeline; and
- Finite Element Analysis of a pipeline with a defect under regular service conditions.

Engineering Design and Certification

Designed or worked with a team of designers to provide the structural and mechanical details required for the following equipment:

- Drawworks for service rigs, including brakes, clutches, gearboxes, transmissions, hydraulics, and other powertrain components;
- Downhole well stimulation tools;
- Prototype equipment including an aerial firefighting gel delivery system, pipeline induction heater, handheld conductor cart drive system, and automated internal sandblasting machine; and
- Design and certification of a variety of welded steel or aluminium assemblies including overhead lift equipment, tank stands, directional drill anchors, and modifications to off-road equipment.

Computer Modeling and Simulation

Broad range of experience in modeling and simulating of structural, thermal, and fluid mechanics problems.

- Extensive experience in drafting, 3D solid modeling, and Computer Aided Design software;
- Linear and non-linear structural finite element analysis;
- Projects include a thermal-structural analysis of a welded structure, rollover protective structures (ROPS) analysis, fluid mechanics simulation of downhole oil well stimulation tools, and pipeline leak rate studies; and
- Carbon monoxide production and migration study to quantify the production, movement, and accumulation of gases within a complex commercial environment due to an improperly vented natural gas appliance.

Specialized Testing and Data Collection

Experienced in a variety of specialized chemical and physical testing, as well as the development of custom testing procedures and equipment. Notable projects include:

- Fabrication of test apparatus for reviewing the performance of an electric speed sensor used in the engine and transmission of a mobile crane;
- Installation and monitoring of strain gauges, and prototyping of permanent torque monitoring solution for in-house testing equipment as part of a quality assurance program;
- Surface chloride testing throughout a facility for the purpose of providing post-fire corrosion mitigation recommendations;
- Carbon monoxide measuring and data logging in a residential setting;
- In-situ sound intensity measurements of improperly installed residential heating equipment;
- Discreet residential monitoring of wind speed, direction, and furnace flue pressure;
- High pressure fuel line testing up to 30,000 psi;
- Destructive wire rope assembly testing to around 70,000 pounds; and
- Characterizing the movement of water through fine-grain fracturing sand.

Industrial Equipment Investigations

Experience investigating incidents involving industrial facilities, heavy equipment, drilling rigs. Some notable projects include:

- Review of piping and instrumentation diagrams (P&ID), supervisory control and data acquisition (SCADA) data, and physical plant piping to troubleshoot repeated damage to gas compressors from liquid carryover, and provide recommendations for the Management of Change process;
- Cause investigation into the rollover of a drilling rig mast during highway transportation;
- Partial collapse of a drilling rig substructure during initial rig-up; and
- Explosion of an oil storage tank due to debris accumulation inside a low level switch.

Remediation Billing Analysis

Experience reviewing submitted invoices and interpreting them per the insurance policy to determine a recommended payment. Remediation billing analysis done in the past includes: the repair and redesign of a fleet of drilling rigs after collapse of the substructure, highway review and cost allocation of repairs to overpass damage caused by a vehicle impact, and review of costs to repair CNC equipment damaged due to a defective lubricant.

Personal Injury Investigations

There are many instances where an investigation and engineering analysis were used to better understand the circumstances surrounding a personal injury. Prior projects include factors such as: equipment malfunction, lack of preventative maintenance, poor design, and/or poorly implemented procedures that led to an incident.

COURSES AND CONFERENCES

- *House Full of Gas*, Global Forensics Inc., Red Deer, Alberta, April 2023.
- *Principles of Failure Analysis*, ASM International, Online Course, March, 2023.
- *Building Science Fundamentals*, Building Science Corporation, Online Presentation, May, 2021.
- *Vehicle Fire Investigation*, Fire Investigation Association of Alberta, Leduc County, September, 2019.
- *Fire Investigation - Essentials*, Fire Investigation Association of Alberta, Strathcona County, May, 2019.
- Completed 19 training modules offered online by CFITrainer.net created by the International Association of Arson Investigators (IAAI), (2016 - 2023). Full transcript available upon request.
- *CSA Z662 Oil and Gas Pipeline Systems Code*, PEICE, Calgary, Alberta, September 2017.
- *Asbestos & Mould Awareness*, EHS Partnerships Ltd. Edmonton, Alberta, May 10, 2017.
- *Pipeline Design and Construction*, International Pipeline Conference & Exposition, Calgary, Alberta, September 2016.
- *Forensic Photography*, Global Forensics Inc., Red Deer, Alberta, October 2015.
- *Autodesk Simulation Mechanical Part 1 - Static Stress, Heat & Linear Dynamics*, Imaginit Technologies, Edmonton, Alberta, December 2014.
- *Digital SLR I*, MacEwan University, Edmonton, Alberta, October 2014.
- *Building Codes in Alberta*, Lorman Education Services, Edmonton, Alberta, September 2014.

Jordan Larson, P. Eng.

July 22, 2024
Date