MARIA LABRUNA

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TECHNICAL SKILLS

NX, FEMAP, Ansys, MATLAB, Python, Solidworks, High Pressure Testing, Excel, Adobe Creative Suite, AutoCAD

SPACEX

July 2021 - 2025

Valves & Components Engineer (1 yr)

- Responsible Engineer for 7+ valve families including regulators, solenoids, and pneumatically piloted and actuated valves.
- Expanded hardware capability through development and execution of custom qualification campaigns meeting SpaceX and NASA standards, extending certified service life from 20 to 40 flights.
- Engineered tailored test fixtures and operations to replicate flight environments, safely executing tests in cryogenic, pressurized, and dynamic conditions.
- Spearheaded investigations of off-nominal hardware performance, integrating cross-discipline data review and testing to isolate root cause, implement corrective actions, and evaluate vehicle risk.
- Collaborated with vendors and internal manufacturing teams to resolve yield issues and downstream performance variation through direct site support and cross-team coordination.

Propulsion Engineer (3 yrs)

- End-to-end owner of flight-critical fluid systems, responsible for design, analysis, performance, and reliability from build through launch operations to support record-breaking SpaceX launch cadence.
- Owned full lifecycle of the Starlink V2 Mini Deploy Propulsion System, supporting initial design and analysis, and leading the complete Block 3 redesign from tube routing and tray layout (NX) to qualification testing, and production rollout
- Supported rapid manufacturing, integration, and test operations across production, test, and launch sites, quickly resolving emergent issues and challenging requirements to ensure flight hardware readiness within accelerated schedules.
- Conducted structural and fluid analyses (ANSYS/FEMAP) to verify design integrity, mitigate vehicle risk, and resolve critical-path issues

SWN Leadership & Volunteer (1 yr)

- Created and hosted 3 campus wide events to foster community within the SpaceX Women's Network (Hawthorne campus); supported 6 additional initiatives as a Leadership Committee member.
- Inspired interest in STEM by engaging 40+ students in aerospace-themed activities at Zela Davis Elementary School
- Volunteer mentor for the GirlsWhoCode Hackathon individual project advice, guidance, and encouragement

COMMUNICATION & POWER INDUSTRIES

January - June 2019

Mechanical Engineering & Design Co-op

- Created and updated 100+ new mission critical components in Solidworks, developed test fixtures, generated technical drawings using GD&T principles, and properly documented design developments via ECOs
- Performed and reviewed experimental procedures for testing of radar protection devices, generated data and communicated findings with R&D team to inform future designs.

NORTHEASTERN UNIVERSITY

B.S., Mechanical Engineering; Minor: Mathematics 2017 - 2021

Supersonic Wind Tunnel (Senior Capstone) - Boston, MA 2020 - 2021

- Designed and constructed an original supersonic wind tunnel capable of Mach 1.8 flow and Schlieren shock visualization
- Applied compressible flow theory to generate initial designs of converging-diverging nozzle and diffuser sections
- Identified the pressure contour with ANSYS Fluent and quantified effects of distributed loads through hand calculations
- Specified tunnel materials including cast acrylic for the test section walls and butyl gaskets based on hand calculations and CFD

NEU Formula SAE Electric - Boston, MA 2019 - 2021

- Designed and fixtures a steering system optimized for efficient track maneuverability under dynamic loads, manufacturability (DfM), and congruence with Formula SAE rules
- Analyzed data from interfacing subsystems in combination with system parameters to determine the maximum steering moment and identify critical locations under maximum load conditions
- Coordinated with Ergonomics, front suspension, and chassis teams to ensure seamless vehicle and driver interface
- Manufactured 12+ steel subcomponents using a two-axis mill, tube notcher, angle grinder, Sawzall, and MIG and TIG welder
- Rebranded organization with 30+ new graphics, designs, and ideas to grow the organization from 15 to 72 members