Margaret O’Hara Junior Electrical Engineer

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PROFILE SUMMARY

- **Junior Electrical Engineer** with **3 years** at **Schweitzer Engineering Laboratories**, designing and testing **input boards for protective relays** used in power substations, after a summer internship in **smart meter hardware** at Itron.
- Draws schematics in **Altium Designer**, simulates in **LTspice**, checks data in **MATLAB**, scripts bench tests in **Python**, and runs a **Keysight DAQ**, oscilloscopes and an Omicron relay test set.
- Knows the **analog input chain** from current transformer to ADC, the **surge and fast transient** tests a relay has to survive and the **IEC 60255** standards behind them, and writes a test plan before every bench session.
- Works with **PCB designers**, the **EMC lab** and **manufacturing test** engineers on site in Pullman, and presents her boards at the weekly **hardware design review**.
- Mentored **2 interns** on lab safety and the bench scripts in 2025, wrote the team’s **surge test checklist**, and is **EIT certified** (FE Electrical and Computer, 2023).

TECHNICAL SKILLS

Schematic & PCB Tools:	Altium Designer, OrCAD Capture (coursework), KiCad
Simulation & Analysis:	LTspice, MATLAB, PSpice (coursework), worst-case tolerance sweeps
Power Conversion:	Flyback supplies, wide-input DC-DC converters for 24 to 250 Vdc, TVS and MOV surge protection
Analog & Signal Chain:	Op-amps, sigma-delta ADCs, anti-aliasing filters, current and voltage transformer inputs, optocouplers
Interfaces & Microcontrollers:	SPI, I2C, UART, Modbus, IEC 61850 basics
Lab & Test Equipment:	Oscilloscopes, Keysight DAQ970A, Omicron CMC 356, surge generator, Python
Compliance Standards:	IEC 60255-26, IEC 60255-27, IEC 61000-4-4, IEC 61000-4-5, IPC-2221

EDUCATION

Washington State University — **B.S. in Electrical Engineering** — Pullman, WA · Aug 2019 to May 2023

WORK EXPERIENCE

Schweitzer Engineering Laboratories — **Associate Electrical Engineer** — Pullman, WA · Jul 2023 to Present

- Drew the schematic for an 8-channel contact input board in **Altium Designer**, sizing optocouplers and surge parts for 250 Vdc station batteries, and cleared design review with only **3** minor comments.
- Characterized the current and voltage input front end of a new relay platform from -40°C to 85°C, traced a gain drift to one resistor’s tempco and cut measurement error from 0.4% to **0.15%**.
- Modeled the input board’s surge clamp and RC filter in **LTspice** with worst-case tolerance sweeps, found a TVS diode that would overheat, and replaced it before the first build, saving a **4-week** respin.
- Ran surge and fast transient tests to **IEC 61000-4-5** and IEC 61000-4-4 in the in-house EMC lab for the relay’s IEC 60255-26 report, with all **46** test points clear on the first run.
- Wrote **Python** scripts that drive the relay test set and a **Keysight DAQ970A**, cutting a full input board characterization from 2 days to **5 hours**.

Itron — **Electrical Engineering Intern** — Liberty Lake, WA · Jun 2022 to Aug 2022

- Measured a smart meter’s **flyback** supply from 85 to 265 VAC and built the rail-by-rail power budget for the next board revision, which found **0.4 W** to cut from the radio rail.
- Checked a **4-layer** meter board layout against **IPC-2221** spacing and the team’s grounding rules, and caught **11** clearance problems on the line-voltage nets before fabrication.
- Wrote a **Python** test sequence for the meter board’s production fixture that checks **27** test points in under 50 seconds a board.