



JOB DESCRIPTION

Job Title: Electrical Engineer – SCADA and Communications **Position Number:** 95-26

Incumbent: Vacant **Effective Date:** October 2026

Employment Status: Permanent **Bargaining Unit:** Yes ☒ No

Supervisor's Title: Manager, Electrical Engineering **Department:** Engineering & Capital Projects

Subordinate Positions: May provide technical leadership, project oversight, and supervision to trades staff, engineering technologists, engineers, EITs, and external contractors or consultants during design, construction, commissioning, and maintenance activities.

SUMMARY

Under the supervision of the Manager, Electrical Engineering, the Electrical Engineer – SCADA and Communications provides specialized engineering, operations, and maintenance (O&M) support for Yukon Energy's supervisory control, automation, and communication systems across its generation, transmission, and distribution assets.

This role focuses on field-level systems—RTUs, PLCs, IEDs, HMIs, and other process equipment—that form the lower tiers of the communications hierarchy linking plants and substations to the System Control Centre (SCC). The incumbent acts as Project Engineer or Subject Matter Expert (SME) on capital and O&M initiatives requiring reliable data acquisition, equipment control, and communication between field assets and the SCADA host.

While the OT and IT teams manage backbone networks, servers, and cybersecurity architecture, this position ensures that process-level control and communications systems are properly designed, commissioned, and maintained to meet YEC's engineering, reliability, and safety standards.

DESCRIPTION

1. SCADA, Automation, and Communications Engineering

- Design, configure, and maintain process-level control and telemetry systems, including RTUs, PLCs, HMIs, and field IEDs for generation, transmission, and substation applications.
- Develop and review control narratives, logic diagrams, data point lists, and communication mapping between local devices and SCC.
- Implement and maintain communication links over fiber, copper, and licensed/unlicensed radio systems between process-level equipment and SCADA gateways.
- Coordinate with the OT and IT teams to ensure proper integration and segregation of field networks from corporate infrastructure in accordance with cybersecurity requirements.
- Maintain accurate configuration records, firmware inventories, and communication network diagrams for process-level equipment.
- Support data validation and telemetry accuracy for metering, protection, and control systems.

2. Operations and Maintenance Support

- Provide engineering and troubleshooting support for field communication, control, and RTU/PLC issues affecting visibility, alarm reporting, or equipment control.
- Assist field technicians with diagnostic procedures, testing, and configuration recovery for RTUs, communication devices, and local HMI systems.

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- Maintain and update SCADA point lists, control logic, and local database configurations for existing facilities.
- Participate in outage investigations where communication or control failures are suspected; conduct root-cause analyses and recommend corrective actions.
- Develop standard maintenance procedures for RTUs, PLCs, and communication devices.
- Support Operations with configuration updates following capital project integration or system upgrades.

3. System Reliability, Integration and Cyber Security

- Collaborate with the OT and IT teams to implement secure communication practices at the process level, including VLAN segmentation, firewall configurations, remote access, and user authentication.
- Support the development and maintenance of standardized communication templates and configuration procedures for RTUs and PLCs.
- Participate in grid modernization initiatives, including the deployment of advanced substation automation, remote monitoring, and predictive maintenance systems.
- Provide technical input to long-term plans for SCADA infrastructure renewal, field communication upgrades, and automation standardization.

4. Capital Project and Commissioning Support

- Act as **SME** for SCADA, automation, and communication scopes on capital projects, ensuring seamless integration between new field devices and the SCC.
- Review vendor documentation, logic diagrams, RTU/PLC configurations, and interface definitions for compliance with YEC standards.
- Lead and/or participate in Factory Acceptance Tests (FATs) and Site Acceptance Tests (SATs) for process control and telemetry systems.
- Support commissioning and energization activities in both greenfield and brownfield environments, validating data points, control functions, and alarm reporting.
- Ensure all process-level devices and data pathways are fully documented and functionally verified prior to handover.
- Coordinate with consultants, vendors, and the OT and IT teams to ensure that communication topologies align with YEC's approved network architecture

5. Project Engineering for Generation and Substation Projects

- Serve as Project Engineer for generation, transmission, and substation projects involving SCADA, automation, protection, and communications components.
- Develop and define project scopes of work and support the Project Manager in developing project schedules, budgets, and resource plans.
- Coordinate multidisciplinary design reviews ensuring electrical, civil, mechanical, and control systems integrate effectively.
- Lead technical evaluations for contractor and equipment selection, ensuring compliance with YEC standards and regulatory requirements.
- Provide construction and commissioning support to ensure field installations conform to design intent and YEC procedures.
- Liaise with project managers, Operations, and System Control to plan outages, switching sequences, and cut-overs for brownfield upgrades.
- Ensure as-built drawings, configuration files, and commissioning records are complete and archived in accordance with YEC's document-control processes.

6. Documentation, Standards, and Continuous Improvement

- Develop and maintain engineering standards and templates for process control and communications design.
- Prepare technical reports, specifications, and as-built documentation for capital and O&M projects.
- Ensure that configuration changes, logic revisions, and firmware updates are reviewed and controlled under Engineering document management procedures.
- Contribute to lessons-learned reviews, post-event analysis, and continuous improvement initiatives to enhance reliability and standardization.

7. Collaboration and Leadership

- Work closely with Engineering, Operations, OT, and IT teams to ensure new systems are compatible with operational and cybersecurity requirements.
- Provide technical mentorship and guidance to engineers, technologists, and field staff.
- Liaise with vendors, contractors, and consultants to verify compliance with YEC standards and ensure timely issue resolution.
- Participate in safety meetings, JSAs, and tailboard discussions for commissioning and field work.
- Promote a culture of teamwork, safety, and knowledge sharing across Engineering and Operations.

8. Other related duties

QUALIFICATIONS, SKILLS, AND EXPERIENCE

1. Education and Registration

- Bachelor's degree in electrical engineering (Power Systems focus preferred).
- Eligible for registration as a Professional Engineer (P.Eng.) in the Yukon.
- *Alternatively:* Diploma in Electrical Engineering Technology with a minimum of eight (8) years of relevant utility experience, and eligible for or holding a Limited License (L.L.Eng.) to practice in Yukon or another Canadian jurisdiction, or a demonstrated ability to obtain such a license in Yukon.

2. Experience

- Minimum five (5) years of relevant experience in process control, SCADA integration, and field communications within a utility or industrial setting.
- Experience with RTU, PLC, and HMI configuration, testing, and commissioning.
- Demonstrated ability to support O&M troubleshooting, root-cause analysis, and event investigation.
- Experience leading or supporting capital projects involving automation or communication upgrades.
- Familiarity with generation and substation systems, protection integration, and remote telemetry.

3. Technical Skills

- Strong knowledge of process-level SCADA and automation systems, including DNP3, Modbus, and IEC 61850 communication protocols.
- Proficiency with:



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- SEL RTACs, DPACs, and relays
- Emerson RX3i PLCs and Quick Panel Plus HMI
- Survalent SCADA (Host, Scout RTU, SmartVU)
- Industrial switches, cellular modems, and serial/Ethernet converters
- Understanding of communication infrastructure and backhaul (fiber, microwave, licensed radio, cellular).
- Familiarity with cybersecurity principles, secure remote access and device management at the process control layer.
- Experience in greenfield and brownfield commissioning environments.
- Proficiency with SEL AcSEerator QuickSet and RTAC software, Wireshark, and related tools.

4. Other Skills

- Strong analytical and problem-solving abilities, particularly under operational pressure.
- Strong technical writing and documentation skills.
- Effective communication and coordination across multidisciplinary teams.
- Ability to manage multiple priorities under operational or project constraints.
- Valid Class 5 driver's license and ability to travel (10–25%) to remote sites

WORKING CONDITIONS

- Work is primarily performed in an office environment, with periodic fieldwork at substations, generating stations, and other utility sites.
- Field assignments may involve exposure to outdoor weather conditions, including extreme cold, heat, and noise.
- Must maintain the confidentiality of corporate and operational information at all times.
- Required to adhere to all corporate safety, environmental, and administrative policies, procedures, and guidelines.
- Travel within Yukon (10–25%) is required to support project, maintenance, and commissioning activities in remote locations.