

Summary of Experience

Over 40 years of experience in the power industry. Worked in various capacities that include experience in field maintenance, testing, startup, electrical and power system design, system modeling, equipment specification, short circuit studies and analysis, protective relay coordination and settings development, incident analysis, power electronics (FACTS and HVDC) systems, technical procedure writing, project management, power system operation, load-flow studies and analysis, development of operating procedures and guides, technical and operator training, compliance and auditing, supervisory and management functions.

Employment Experience

Vermont Electric Power Company, Inc.

2022 – Present, Project Manager and Technical Advisor

- Responsible for the project management of assigned capital projects that include a new Florence substation upgrade, VELCO-Global Foundries substation upgrades, and a Tafts Corner substation upgrade.
- As needed, performing training for newer employees on electricity and power system fundamentals.

2021 – 2022 Retired for nearly one year

2020 – 2021, Director of Special Projects

- As part of succession planning, over time turned over Director of Operations and Energy Management Systems (EMS) responsibilities to my successor, and transitioned into a new role until retirement. Responsible for supporting the VELCO Chief Operating Officer on a variety of assignments that included navigating through the COVID-19 pandemic, and performing condition assessments for the purchasing of Global Foundries transmission assets.

2013 – 2020, Director of Operations and EMS

- Same Operations area responsibilities as stated below, with the added responsibility of overseeing the EMS functions. EMS is responsible for the engineering and maintenance of a Supervisory Control and Data Acquisition (SCADA) system with advanced network power model applications used in real-time operations for ensuring the system security of the Vermont power system.

2012, Director of Operations and Compliance

- Same responsibilities as stated below, less the System Protection responsibilities.

2010 – 2011, Director of Operations, System Protection and Compliance

- Responsible for a full range of activities that support the operational effectiveness of the VELCO System Operations, System Protection and Compliance departments. Provide the direction, staffing and resources for the VELCO power system Operation, System Protection

and Compliance functions. At the director's level, interface with ISO-NE, NPCC, out-of-state interconnected utilities and Vermont distribution utilities for power system operation and regulatory "reliability" compliance matters. Oversee operation of the VELCO control center and support functions, with focus on safety and system reliability, along with maintaining compliance with all applicable NERC reliability standards, NPCC requirements and criteria, and ISO-NE requirements and procedures. Oversee the system protection field services that are responsible for the installation, commissioning, preventative maintenance of protection/control systems, high voltage power equipment, and HVDC systems. Serve as VELCO/VT Transco's Chief Compliance Officer in meeting the FERC Standards of Conduct.

2008 – 2010, Manager of Operations

- Manage the daily operation of the VELCO control center and the System Operator staff involved with the 24 hour-a-day operation of the VELCO power system, following procedures, guides, standards and instructions for the safe and reliable operation of the VELCO power system. Interface at the manager level with the ISO-NE Control Center and the control centers of interconnected regional utilities and among the Vermont distribution utilities for system operation purposes. Ensure adequate System Operator staffing by maintaining detailed schedules that define shift coverage, training requirements, and any special projects or initiatives. In coordination with the VELCO Trainers, define and evaluate the required training for ensuring that all System Operators maintain their NERC certification, and maintain the skills and knowledge necessary to safely and reliably operate the VELCO power system. Ensure that the System Operators have the necessary operating tools and instruction required to successfully perform their operating function. Ensure that the VELCO control center is operated in full compliance with all FERC, NPCC, NERC and ISO-NE standards, requirements, procedures and guides. Represent VELCO as a Subject Matter Expert for various FERC approved reliability standards.

2006 – 2008, Operations Engineer

- Responsible for developing and maintaining operating procedures, guidelines, standards, instructions, and other materials for the safe and reliable operation of the VELCO transmission system. Perform and coordinate impact analysis and operational studies in the support of the day-to-day operation of the VELCO control center. Ensure all work products comply and are maintained with all applicable NERC reliability standards, NPCC requirements and criteria, and ISO-NE requirements and procedures. Provide support and analytical guidance for the VELCO system operators, operations trainer, system planners, field technical personnel, and the VT Distribution Utilities. Coordinate or perform the necessary load-flow studies for operating the transmission system in an efficient, safe and reliable manner. Support the VELCO Outage Coordinators by performing or coordinating contingency/impact analysis (load-flows) for planned system outages in assessing, understanding and managing risk. Coordinate system changes and modifications with the VT Distribution Utilities, VELCO Planning, Engineering, EMS and Field Services. Work closely with the Operations Trainers on the development of training programs and the assessment of training needs for the VELCO system operators and support staff. Assist in the training of the VELCO system operators and support staff on new or modified systems.

2005 – 2006, Engineering Project Manager

- Responsible for managing assigned projects, that included the Lamoille County Project involving the construction of approximately 10 miles of 115kV line, 6 miles of 34.5kV line, installation of a new 115-34.5kV substation, a new 115kV switching center, and upgrade of an existing substation. Managed the Highgate Substation upgrade as part of the Northern Loop Project that required upgrading existing 48kV assets and the installation of an 115kV ring bus to facilitate connection of a new 115kV “looped” line from Irasburg, Vermont.
- Served as the PMO Lead Engineer responsible for supporting the PMO engineering staff. This support included project scope development, contractor specification, equipment specification, technical and study reviews, interface and coordination with internal VELCO and external engineering staff.

2004 – 2005, Manager of Construction and Projects Coordination

- Responsible for overseeing the engineering, environmental compliance, construction and final commissioning for the Sand Bar Phase Shifting Transformer (PST) Project, Northern Loop Project, Northwest Reliability Project, Lamoille County Project, and other capital projects in the planning stages. This assignment was short lived with a new management approach in implementing a Program Management Organization (PMO) under the direction of professional management firm.
- Managed the Sand Bar PST project that was successfully commissioned in June of 2004.

1998 – 2004, Manager of Electrical Engineering and System Protection Field Services

- Responsible for the engineering, design, specification, analysis, studies, and coordination for: system protection, teleprotection, controls, instrumentation, revenue metering, remote SCADA primary apparatus (power transformers, breakers and etc.), secondary (AC and DC systems), electrical apparatus, short circuit coordination studies and development of protection settings and system ratings. Management oversight of the Highgate Converter HVDC station and Essex FACTS facility for all engineering, maintenance and capital improvements.
- Responsible for the maintenance, installation, and commissioning of transmission systems. Developed specifications for power transformers and performed factory performance testing of new and repaired transformers. Managed assigned capital projects, many protection and control related. Developed resource plans, and both O&M and capital budgets.

1996 – 1998, Manager of Transmission Protection, Design and Analysis

- Managed Engineering group responsible for the same System Protection Engineering responsibilities noted below, with additional responsibilities for the engineering and design of all protection/control, teleprotection, SCADA systems and revenue metering, as well as overseeing the commissioning of facilities.

1989 – 1996, System Protection Engineer

- Responsibilities included the planning, development of criteria, engineering, design, calibration, and analysis of protection, relay control and instrumentation required for operation of the bulk transmission system and its supply points. Designed protection, teleprotection, fault monitoring, instrumentation and control systems. Modeled the VELCO transmission and underlying subtransmission system components and maintained a detailed short circuit model with all protection settings and line constants for use by the Vermont distribution utilities and interconnecting utilities. Performed system protection coordination studies, developed relay settings, and maintained a detailed relay protection setting database with all criteria. Developed detailed testing and switching procedures required for the

functional testing of the VELCO and Vermont Yankee transmission assets. Developed detailed cutover and commissioning procedures for capital projects.

- Performed analysis of system faults and the performance of associated protection and control, developed detailed reports, and presented recommendations for system improvements based on documented performance. Performed training for VELCO and Vermont Yankee technical and operations personnel on electrical, protection and control systems. Specified protective relays, teleprotection, control systems, instrumentation, fault monitoring equipment and other electrical apparatus and systems.
- Represented VELCO by serving on, or coordinating with, various organizations and/or task forces at NEPOOL and regional levels with respect to system protection matters. Responsible for presenting and seeking approval on new projects to the NPCC Task Force on System Protection, and a member of the NEPOOL System Design Task Force.

1982 – 1989, System Protection Field Technician

- Responsibilities included the installation, commissioning, preventative maintenance, troubleshooting, and repair of protection/control systems, telecommunications systems, SCADA systems, fault and power quality monitoring systems, revenue metering, power supply systems (AC and DC systems), high voltage power equipment, and HVDC systems at the Highgate Converter.

United States Air Force

1975 – 1979, Missile Facilities Specialist

- Stationed in Cheyenne, Wyoming following training on electrical, power generation, and environmental systems. Major responsibilities included providing quick-react maintenance for all support facilities serving Minuteman III ICBM missiles and their manned launch control facilities.

Education

Vermont Technical College, Randolph, Vermont - ASEET Degree, 1982