ROGER E. CLAYTON, P.E.

RESUME

Roger Clayton has more than thirty five years of experience in the electric utility consulting business in the Americas. He has worked for some of the leading consultants in the United States as a technical specialist, as a developer of software tools and methods, and as a manager of professional engineers engaged in power system planning and economic analyses. He has excellent communication skills as evidenced by his publications and teaching assignments. He founded Electric Power Resources, LLC to provide engineering support services to the electric power industry. He most recently was Senior Vice President at Conjunction LLC with responsibility for all electrical engineering aspects of the 2,000 MW HVDC Empire Connection Project. At PG&E NEG he was heavily involved in project development and market assessment activities such as fundamental forecasting, congestion analyses and due diligence studies. As Manager of GE's T&D Consulting Group he led a twenty strong team that provided consulting services internally to GE Power Systems and GE Capital, and externally to the utility industry.

EXPERIENCE

Electric Power Resources, LLC **2005-present**
Founder

Electric Power Resources provides engineering support services to the electric power industry: direction of technical studies for generation and transmission projects; due diligence analysis of third party system planning and interconnection studies; representation in ISO and regulatory forums; project review and management. Chairs the New York State Reliability Council Reliability Rules Sub-Committee.

Conjunction, LLC
Senior Vice President, Electrical Engineering **2003-2004**

Directed all electrical engineering activities associated with the development of the largest HVDC transmission project in the United States, the 2*1,000 MW, +/-500 kV, 130 mile Empire Connection Project from upstate New York to New York City. Responsibilities included development of feasibility options, coordination of all technical studies (transmission planning, EMF/corona, converter specifications, aerial/cable design, statistical availability analysis), negotiation with vendors, and preparation of regulatory filings.

PG&E National Energy Group, Market & Portfolio Analysis
Director, Power System Assessment **1998-2003**

NEG internal consultant supporting fundamental forecasting activities, congestion analysis, data development, restructuring projects, due diligence analysis for potential acquisitions and tolling agreements, analysis of interconnection and transmission service for the development of new generation sites, analysis of the impact of market rules and tariffs on NEG's portfolio and hearing testimony, as well as participation in FERC, PSC and ISO forums with respect to market restructuring. Represented Wholesale Suppliers on the NYSRC Executive Committee and chaired the NYSRC Reliability Rules Sub-Committee.

General Electric, Power Systems Energy Consulting
Manager, T&D Consulting Group **1994-1998**

Leader of an engineering team that provided consulting services internally to GE Power Systems and GE Capital, and externally to the utility industry. Market development of consulting services in support of the deregulation of the electric power industry in the U.S. Performed and directed generation site

evaluation, system impact studies, generation integration/islanding studies, development of wheeling algorithms, hearing testimony and transmission congestion analyses. Developed and taught PSEC's graduate level Power System Analysis and Transmission Planning courses.

Electric Power Consultants, Inc.
Principal/ Co-Founder **1986-1994**

Provided power system analytical services and products to the electric utility and industrial power sectors. Software products included the Positive Sequence Load Flow (PSLF), Symmetrical Components Short Circuit (SCSC), Positive Sequence Dynamic Simulation (PSDS), Overhead Line Constants (OLC) and EMF (EBFANRI) programs. Led EPC's consulting activities. Heavily involved in IPP interconnection and wheeling analyses. Managed the company's operations and successfully negotiated the company's sale to GE Power Systems.

Power Technologies, Inc.
Project Engineer **1972-1986**

Worked on transmission line design studies involving economic optimization, electrical performance and EMF analysis. Taught PTI's courses on transmission line theory and insulation coordination to utility engineers. Project Engineer for major transmission system planning studies in Mexico, Venezuela, Argentina and Peru. These studies involved the analysis of power flow, short circuit and stability performance for various system expansion options. Two-year assignment with EDELCA in Venezuela leading their transmission planning studies for the GURI 11,000 MW generation project.

General Electric, Electric Utility Engineering Operation
Analytical Engineer **1968-1972**

Engaged in studies of power system transients and transmission line design. Taught GE's courses on insulation coordination, transmission line design, and utility practice. Liaison engineer with GE's protective equipment department with special interest in station arrester application.

AFFILIATIONS, PATENTS, PUBLICATIONS

Registered Professional Engineer in the State of New York.
Senior Member of IEEE.
Published numerous technical articles and papers.

EDUCATION

Master of Science, Power System Engineering. Aston University, Birmingham, U.K., 1968
Bachelor of Science, Electrical Engineering, Honors. Aston University, Birmingham, U.K., 1966
Student apprentice program. Midlands Electricity Board, Birmingham, U.K., 1968

PERSONAL

Married for 34 years with two children. Keen tennis player and rugby football fan. Enjoys sailing, hiking, gardening, traveling and reading.