

## ***Biography and LNG Project Development Transcript for Thomas G. Quine***

Thomas G. Quine is a Partner in New Energy Development Corporation and provides project development, strategic and financial advisory services in LNG, natural gas, and energy relating to his more than forty years of experience in LNG and natural gas project development, company leadership, complex LNG plant operations, systems design and mechanical engineering, and project planning and control.

Mr. Quine began his career working full time in civil structural and utility construction, in the late 1970's, while attending college classes evenings and weekends. During that time, he earned a bachelor's degree in electrical engineering as a Tau Alpha PI Honor Student and graduated with highest honors from Wentworth Institute of Technology. He also earned a bachelor's degree in legal studies from the University of Massachusetts because of his passionate interest in US history and law.

Mr. Quine began his professional career at Essex County Gas Company based on a recommendation for an engineering position by the Dean of Engineering at Wentworth Institute of Technology to the vice president at Essex County Gas Company. Mr. Quine progressed through the ranks and eventually led areas of gas engineering, network analysis, gas supply projection, SCADA, gas dispatch, M&R facilities, district regulators, and all customer metering along with the annual O&M and CAPEX budgets of approximately \$30 million year.

As power and gas utilities began to form in the United States, Stone and Webster Management Consulting (SWMC) was an integral player in the initial creation of electric and gas utilities. SWMC placed numerous board members on many natural gas and electric companies in North America, including Essex. Mr. Quine was recruited by an Essex County Gas SWMC Board Member to join Stone and Webster Engineering/Stone and Webster Management Consulting where he spent four years on LNG and natural gas EPC projects and international Consulting assignments in natural gas, LNG and CNG projects.

In 1996, Mr. Quine founded and served as CEO of Northstar Industries, LLC to provide project development formulation, engineering, procurement, prefabrication, and field construction for LNG, natural gas, gas storage, and CNG projects. Over the next 20 years, Mr. Quine and Northstar earned a reputation for providing safe, reliable, and cost-effective systems. Mr. Quine created patentable technology which focused on module design for all sizes of LNG and natural gas projects. Northstar's customer base was historically gas transmission, gas local distribution companies, electric power producers, gas storage customers, and LNG customers.

During this time, Mr. Quine created a great deal of client value by developing project ideas for customers as a paid service. After building this successful EPC business, Mr. Quine left Northstar in order to devote the balance of his career specifically toward complete LNG project development, from concept and capitalization to commercial operations.

## ***LNG Project Development Transcript***

### **I. Essex County Gas 1982-1992**

**Gas Operations Management** - Lead Plant Operator LNG/Propane Air Peak Shaving Facility: .5 BCF LNG facility and 1MM USG propane/air facility as peak shaving supply, along with gas operations management

**Engineering Services Management** - Along with responsibility for managing salaried and bargaining unit people in gas load forecasting, network analysis, pipeline/services system engineering, gas pipeline replacement programs, new construction, M&R, district regulators, SCADA, gas dispatch, and customers metering:

### **II. Stone and Webster Engineering and Stone and Webster Management Consulting: Project Management, Project Engineering and International Management Consulting 1992-1996**

**Peoples Gas Light and Coke** - Project Engineer from conceptual engineering, pre-feed, feed, final engineering, procurement and construction (EPC) for 300,000 DT/day vaporization facility in Fisher Illinois.

**AGL Resources** - LNG Project Manager and Project Engineer for an early version of HAZOP/HAZID for a 2BCF LNG facility designed and constructed by S&W in 1986.

**Essex County Gas Company** – LNG Feed Engineering, EPC contract of LNG pump addition, controls upgrades, and 40,000 DT/day vaporization facility in Haverhill, MA

**Granite State Gas Transmission** – Project Manager LNG facility Conceptual engineering, prefeed engineering, site selection, feed engineering, FERC permit resource reports for 2 BCF storage and 200,000 DT/Day vaporization LNG facility in Wells Maine. Included pretreatment and optional liquefaction. This design by order of FERC in the event that Portland Pipeline Gas supply was cancelled.

**Management Consulting Services for the International SWMC affiliate** - Management consulting to include conceptual engineering, technical studies, gas supply planning, load duration curves, network analysis, business modelling: natural, LNG, gas storage, SCADA, LDC's, and gas transmission companies. Most of the assignments for Mr. Quine were in North America, South America and Europe.

### **III. As CEO of Northstar Industries, LLC 1996-2019:**

**US Patents Holder** – Several U.S. LNG and Natural Gas Patents

- US Patent # 6,176,046 Modular/Pre-manufactured LNG and NG facilities. Designed prototypes and submitted applications.

- US Patent # 6,474,101 LNG high to high pressure (up to 10,000 psig) natural gas batch processing system with no pumps or compressors. Designed prototypes and submitted applications.

**Greenville Utilities Commission** - Grassroots LNG plant and Expansions

- Conceptual, pre-feed, feed, EPC, Fire Safety Plans, O&M manuals and training four phases of grassroots LNG plant and 20-year expansions.
- Greenville Utilities Commission for next 20-year LNG facility Pre- Feed Engineering up to 1 BCF LNG facility with 120,000 USGPD liquefaction.

**Berkshire Gas Whately, MA Grassroots LNG Plant** - LNG Project Development and Engineering / Design Services

- Conceptual, feed, EPC contract and MA EFSB adjudication for grassroots 350,000 USG LNG plant.
- Optional rail siding for LNG by rail and virtual supply of LNG.

**Granite State Gas Transmission LNG Vaporization Facilities** - Feed engineering and EPC contract for high pressure (1,440 psig) portable vaporizer for Lewiston Maine as hedge for PNGTS delay along with boil off compression system and controls upgrades for plant.

**Tennessee Gas Pipeline** - Performed pre-feed engineering and site selection for grassroots 3 BCF LNG plant with 30,000 DT/d liquefaction and 300,000 Dt/D vaporization.

**Repsol YPF** - LNG Project Development and Engineering / Design Services

- Performed Pre-feed Engineering and siting/code analysis for 10 BCF LNG marine terminal in Canada.
- Provided pre-feed engineering, ROW route selection, rate calculations, and network analysis for the 90-mile Canadian pipeline to connect with the LNG plant and M&N at US border.
- Performed network analysis and rate negotiation for pipeline and compression upgrades on M&N system and joint facilities for 750,000 DT/D vaporization capacity from LNG plant to Dracut, MA .

**AGL Resources** - LNG Project Development and Engineering / Design Services

- Provided Pre-Feed Engineering, site selection, and owners engineer services for 4 BCF LNG marine terminal with 400,000 Dt/day vaporization.
- Included pre-feed on 2 mile channel crossing and multiple interconnects as outlet of plant.

**United States Department of Energy** - LNG Project Development and Engineering / Design Services

**United States Department of Energy Funded Efforts – LNG Engineering, Design and Build**

- Designed and built 400,000 Dt/day open loop water vaporizer as a prototype design which took warm lake water and vaporized LNG at an AGL existing plant.
- Provided an extensive engineering analysis of the crossover point of natural gas geological storage, LNG, man-made CNG storage, gas pipeline.

**Energy Capital Partners** – On paid multi-year retainer, assisted in the start-up of ECP with investor relations origination of projects, due diligence of several natural gas, LNG, and gathering system investments.

**Jersey Natural Gas** – Provided Feed Engineering and full EPC for customized 120,000 USGPD liquefaction system and custody transfer truck loading systems.

**Confidential US Client 1 – LNG Project Development and Engineering Services**

- Provided feed engineering one for marine terminal for LNG production, storage, bunkering, marine pier, and interconnecting pipelines and appurtenances. Included costs for CAPEX, OPEX, fuel and electricity.
- Provided second feed engineering for second marine terminal for LNG production, storage, bunkering, marine pier, and interconnecting pipelines and appurtenances. Included costs for CAPEX, OPEX, fuel and electricity.
- Provided third feed engineering and CAPEX, OPEX, fuel, and electric for grassroots 1 BCF LNG facility with pretreatment/liquefaction, storage, trailer loading, and vaporization.
- Provided fourth feed engineering and CAPEX, OPEX, electric drive fuel for pre-treatment/Liquefaction/trailer loading facility for existing plant.

**Confidential US Client 2 – LNG Project Development and Engineering / Design Services**

- Conceptual first prefeed engineering for 3.3 BCF LNG facility with 30,000 Dt/D liquefaction and 500,000 Dt/D vaporization.
- Second prefeed for 1 BCF LNG peak shaving plant at terminus of pipeline systems with 100,000 Dt/D vaporizer and truck unloading systems with optional rail siding for LNG by Rail.

**Dominion Energy – LNG Project Development and Engineering Services**

- Feed engineering and EPC contract for 100,000 USGPD pretreatment and liquefaction facility in PA. Also includes O&M contract for future operations.

**Northeast Energy Center - LNG Project Development and Engineering / Design Services**

- Developed project concept provided conceptual engineering, site selection, financial modelling, off take customer P&A's, EFSB submittals, pre-feed engineering all in accordance with MA EFSB.
- Facility originally conceptualized up to 3 BCF, 30,000 Dt/d and 300,000 Dt/D vaporization.

**Maine Energy Center** – LNG Project Development and Engineering Services in response to state of Maine RFP for lower energy cost: Prepared project concept, financial modelling, Pre-feed engineering, CAPEX, OPEX, fuel, Electricity and cost of service for various offerings. The proposal was rated number 1 by the third-party consultant engaged by State of Maine.

- Pretreatment, Liquefaction, trailer loading
- Short term operational storage as part of liquid sales.
- Vaporization
- Longer term seasonal LNG Storage

**Numerous Clients Thousands of LNG, natural gas, underground storage, energy storage projects.:**

- LNG upgrades, surface facilities of all kinds, pipeline alignment sheets, fire safety Plans, Emergency Plans, Training, SCADA systems, Odorization systems up top 10,000 USG in enclosures.

#### **IV. Energy Project Consulting 2019:**

**Confidential Client 1** - LNG Project Development Services

- Grassroots LNG production, storage, liquid supply and vaporization: 3.3 BCF storage, 200,000 Dt/Vaporization, 30,000 Dt/D liquefaction.
- Prepared project concept, Pre-feed engineering, site selection, CAPEX, OPEX, financial modelling, fuel, electricity and cost of service for various offerings. Conducted customer meeting to present offerings and form of precedent agreements. Currently negotiating agreements.
  - Pretreatment, Liquefaction, trailer loading to include short term operational storage as part of liquid sales.
  - LNG on demand Vaporization to include longer term seasonal storage services.
  - Longer term seasonal LNG Storage for liquid customers needing winter refill.

**Confidential Client 2** – LNG Project Development and Engineering / Design Services

- LNG Concept Engineering, CAPEX, OPEX, Life Cycle, Fuel, Electric and business modelling for LNG Peak Supply Grassroots LNG production, Storage and Vaporization.
- 3.3 BCF storage, 300,000 Dt/Vaporization, 30,000 Dt/D liquefaction.