

---

**BRUCE J. GEDDES, P.E. (President)**

---

**EXECUTIVE PROFILE**

A senior technical consultant and operations executive with over 40 years of experience in technology and engineering service businesses. Responsibilities have included large complex projects from a first of a kind nuclear power plant safety system upgrade to multiple upgrade or engineering service projects, ranging from \$5M to \$175M for various nuclear utilities and NSSS design centers in the US and abroad. A hands-on and field-oriented leader.

Have demonstrated the ability to build and manage technical organizations under a variety of difficult circumstances. Have developed proven strategies for revitalization of existing products, development of new products, and deployment & licensing of these products and services in nuclear power plant facilities for resolving complex operational problems. Have researched and developed methods and guides for safe, efficient, and compliant deployment of instrumentation and control technologies in nuclear facilities.

**EDUCATION/TRAINING**

Bachelor of Mechanical Engineering - Georgia Institute of Technology, 1983  
Executive Leadership Development Program - Areva University, 2003-2005

**PROFESSIONAL CERTIFICATIONS**

Engineer in Training - Georgia  
Professional Engineer - North Carolina License Number 045357

**EXPERIENCE**

<b>President</b>	<b>2006-Present</b>
<b>Southern Engineering Services, Inc.</b>	

Established SES, Inc. as an engineering consulting and services business in the US commercial nuclear power market. Provide expert engineering, consulting, management and R&D services in the areas of product development, project planning, licensing, design, implementation, training and assessment of major nuclear power projects, with an emphasis on Instrument and Control (I&C) systems. Positioned to support the development and construction of new nuclear power plants, as well as large scale upgrades of existing systems in operating plants. SES clients and projects include:

**Georgia Institute of Technology**

Guest lecturer at the "*Management of the Nuclear Enterprise*" course for Masters and PhD level students. Lecture topics include state of regulatory and industry affairs on digital upgrades, cyber security, common cause failure, and human factors engineering issues in operating plants and new plants in the US and abroad.

**Westinghouse Electric Company**

Independently assessed ITAAC closure associated with protection system diversity and defense in depth commitments on Vogtle 3 and 4. Supported an internal QA audit centered on design control in the nuclear automation business. Provided expert technical witness services for an international arbitration case.

## **Exelon**

Independently assessed a proposed combined turbine control system and rod control system upgrade at the Byron and Braidwood facilities that are applying Ovation technology, with an emphasis on common cause failure (CCF) susceptibility and associated claims to be made under a 50.59 evaluation.

Independently assessed a digital containment isolation system upgrade for the Nine Mile Point facility, with the same emphasis on CCF susceptibility and 50.59 implications.

Provided digital I&C training to the I&C engineers across the fleet.

## **Dominion**

Independently assessed a proposed turbine control system at the North Anna facility applying Ovation technology, with an emphasis on the quality of functional specifications, system architecture, and system reliability.

## **Pennsylvania Power & Light**

Independently assessed Integrated Control System basic design, using Foxboro I/A technology, and associated 50.59 evaluation to aid Susquehanna station personnel in preparation for NRC inspection. Also assessed internal procedures and self-assessments associated with digital I&C engineering practices, relative to generally accepted industry standards and guideline.

## **Mitsubishi Heavy Industries**

Provided consulting and authoring support for design certification (DC) and construction & operating license (COL) activities for the US-APWR, with emphasis on digital I&C systems, post-accident monitoring, advanced setpoint methods, QAP, and cyber security policies and procedures.

## **Mitsubishi Electric Corporation**

Provided consulting and authoring support on commercial grade dedication, software program manuals, and topical reports with an emphasis on the MELTAC digital I&C platform.

## **Duke Energy**

Provided independent assessments of test plans and outage readiness for the McGuire and Catawba 7300 upgrade projects applying Ovation technology.

Provided principal consulting support of engineering and licensing activities on the Oconee digital RPS/ESFAS upgrade, using the Areva Teleperm XS platform and the Harris and Robinson turbine control system upgrades using the Triconex and Honeywell DCS platforms. Have performed detailed assessments on various aspects of these projects, including outage readiness, regulatory risk, and compliance with procedures, external codes and standards, and industry best practices.

Completed a 3 year assignment (2006 thru 2008) in support of the Duke Energy Oconee Major Projects team as Manager of Engineering. Responsible for the engineering activities and deliverables produced by a 60 person team of engineers and designers. Delivered engineering and supported successful installation of major plant upgrades across all three Oconee units, including a digital RPS/ESFAS system, raw water piping replacements in containment, main generator automatic voltage regulators, secondary system instrument loop upgrades using foundation fieldbus, main turbine supervisory instrumentation, low temperature overpressure protection instruments, digital control rod drive control systems, 600V MOV replacements, containment electrical penetration replacements, Alloy 600 projects, and control room chart recorders.

## **Electric Power Research Institute**

Principal Investigator for the EPRI report on “*HAZCADS: Hazards and Consequences Analysis for Digital Systems*” (Spring 2021), bringing modern methods to the nuclear industry for assessing risk and safety of complex systems.

Principal Investigator for the EPRI report on “*DRAM: Digital Reliability Assessment Methodology*” (Spring 2021), bringing risk-informed methods to the nuclear industry for assessing CCF and reliability issues in digital systems.

Instructor for EPRI-U course on EPRI Digital Engineering Guide (ongoing).

Principal Investigator for the EPRI “*Digital Engineering Guide*” (November 2018), a guideline that complements the nuclear industry Standard Design Process and facilitates more efficient and repeatable digital I&C upgrade projects.

Principal Investigator for development of EPRI reports on systems engineering; “*Systems Engineering, a Feasibility Assessment*” EPRI 3002005368 (November 2015) and “*Systems Engineering Process: Methods and Tools for Digital Instrumentation and Control Projects*” EPRI 3002008018 (December 2016).

Principal Investigator for development of EPRI reports on configuration management in the generation sector (fossil and hydro); “*Generation Configuration Management: State of the Industry*” EPRI 3002007305 (January 2016) and “*Configuration Management Guideline for Generation Facilities*” EPRI 3002008577 (April 2017)

Principal Investigator for development of EPRI report “*Methods for Assuring Safety and Dependability when Applying Digital Instrumentation and Control Systems*” which emphasizes best practices for assessing CCF susceptibility and coping analysis if a CCF in a digital I&C system is credible. Delivered EPRI 3002005326 (June 2016).

Principal Investigator for development of EPRI report “*Requirements Engineering for Digital Instrumentation & Control Systems*” EPRI 3002002843 (November 2014).

Principal Investigator for development of EPRI report “*Digital Instrumentation & Control Design Guide*” EPRI 3002002989 (October 2014).

Principal Investigator for development of EPRI report “*Advanced Nuclear Technology: Guidance and Methodologies for Managing Digital Instrumentation & Control Obsolescence*” EPRI 3002002852 (October 2014).

Principal Investigator for EPRI guidelines on digital I&C system hazard analysis; EPRI 1022985, “*Failure Analysis of Digital Instrumentation and Control Equipment and Systems - Demonstration of Concept*” (December 2011) and EPRI 3002000509, “*Hazard Analysis Methods for Digital I&C Systems*” (June 2013).

Principal Investigator for EPRI 1025283, “*Commercial-Grade Digital Equipment for High-Integrity Applications: Oversight and Review of Evaluation and Acceptance Activities*” (August 2013)

Contributing Author for EPRI Technical Update 1025824, “*Cyber Security Procurement Methodology*” (September 2012)

Principal Investigator for EPRI Technical Report 1022991, “*Guideline on Configuration Management for Digital Instrumentation & Control Equipment and Systems*,” (December 2011).

Principal Investigator for developing computer-based digital I&C training modules for stakeholders involved in new nuclear plant activities, via EPRI Product 1023013 (December 2011).

Principal Investigator for upgrading the EPRI digital engineering training materials circa 2012. Delivered the upgraded training to several EPRI member organizations, including Rolls Royce (UK), Almaraz-Trillo, A/E (Spain), PSE&G, Luminant, Dominion, Exelon, Southern Company, APS, and Eskom (Koeberg Plant, South Africa).

Principal Investigator for the 2008 white paper on “*U.S. Commercial Nuclear Power Plant Digital I&C System Operating Experience*,” in support of the Nuclear Energy Institute’s Digital I&C and Human Factors Working Group.

Principal Investigator for EPRI Technical Report 1016731, “*Operating Experience Insights on Common-Cause Failures in Digital Instrumentation and Control Systems*” (December 2008).

Principal Investigator for EPRI Technical Reports 1016722 (December 2008) & 1022247 (December 2010), “*Digital I&C System Operating Experience Lessons Learned - Case Studies*,” featuring 10 individual digital event case studies using interactive, multimedia, web-enabled technology for desktop delivery.

Contributing Author for the 2008 update to Volume III, Chapter 10 of the Utility Requirements Document (URD), “*Passive Plants - Man Machine Interface Systems*.”

#### **Vice President, I&C Systems**

**2003 - 2006**

##### **Framatome ANP (Areva Group)**

Responsible for \$40M in annual sales of Instrument & Control products and engineering services to the American nuclear power market, with a 200 person group distributed across 3 regional offices and several field offices. Responsible for regional Profit & Loss operations, including sales & marketing, project management, and resource cost center management for multiple product lines in multiple US locations, with emphasis on local implementation and licensing of global I&C technologies.

#### **Manager, I&C Engineering**

**2001 - 2003**

##### **Framatome ANP (Areva Group)**

Responsible for profit and loss and delivery of engineering services to the American nuclear power market. Managed a group of 90 electrical and I&C engineers engaged in various capital and O&M projects for US nuclear power plants. Responsible for growing and developing the group to match emerging demands in the Electrical and I&C engineering market.

#### **Engineering Consultant**

**1991 - 2001**

##### **Calvert Cliffs Nuclear Power Plant (Constellation Energy Group)**

Responsible for engineering and delivery of large capital I&C upgrade projects, including development of standards and assisting site organizations for engineering and installation of emerging technologies within the plant infrastructure.

- Developed a strategic plan for a \$60M Instrument & Control Modernization Project.
- Advised Combustion Engineering Owner Group (CEOG) I&C working group on generic qualification of the Common Q platform, and successfully completed plans, functional specifications and detailed engineering for a Post-Accident Monitoring (PAM) system using Common Q at Calvert Cliffs.
- Successfully delivered plans, functional specifications, and detailed engineering for advanced I&C projects, including a new Plant Data Network (PDN) using multilayer switches and fiber optic technology, and a new reactor core monitoring system.
- Developed and maintained standards for software engineering and design scoping studies. Provided advice and consulting services to other CCNPP project teams, departments, and other nuclear plants in the US and abroad.

- Chairman, EPRI/NEI Task Force on Revising the EPRI Guideline for Licensing Digital Plant Upgrades (TR-102348 Rev 1, aka NEI 01-01; March 2002) for the new 50.59 Rule issued by the NRC in 1999.
- Chairman, EPRI Working Group on developing TR-106439, a Guideline on Evaluation and Acceptance of Commercial-Grade Digital Equipment for Nuclear Safety Applications (November 1996).

### **Senior Engineer**

**1986 - 1991**

#### **ABB Impell Corporation**

At various power plants around the southeast or in the Atlanta office, responsible for preparing, reviewing and approving various engineering activities. Provided leadership, coordination, control and production of numerous projects.

- Baltimore Gas & Electric, Calvert Cliffs Site Office (1991) - Delivered various mechanical and I&C modification projects associated with resolving extended safety outage issues.
- Florida Power & Light, Turkey Point Nuclear Plant (1988 - 1990) - Control Room Green Tag Reduction Project. Team leader among 5 engineers; completed over 60 projects to resolve control room design deficiencies.
- Tennessee Valley Authority, Sequoyah Nuclear Power Plant (1987) - Delivered various engineering activities associated with resolving extended safety outage issues.
- Carolina Power & Light, Brunswick Steam Electric Plant (1986) - Delivered an FSAR commitment verification project. Verified Chapter 7 and Chapter 8 commitments.

### **Engineer**

**1983 - 1986**

#### **Naval Underwater Systems Center, AUTECH Detachment**

Assigned at the Atlantic Undersea Test and Evaluation Center (AUTECH), Andros Island, Bahamas.

- Responsible for day-to-day activities regarding test and evaluation of torpedo and sonar weapons system technologies.
- Managed activities related to providing mobile, underwater targets for US and Royal Navy submarine weapons training and certification exercises.

### **PUBLICATIONS (Available on Request)**

Field Editor, Control Magazine (several feature articles)

Various IEEE, EPRI and ANS Papers

Contributing Author, Instrument Engineer's Handbook (by Bela Liptak, CRC Press)