



Beckman & Associates, Inc.

Statement of Qualifications

2009

Nuclear Engineering, Licensing and IT Services Since 1985

*Beckman & Associates
A Woman-Owned Small Business
Belle Vernon, Pennsylvania*

Belle Vernon, PA • Las Vegas, NV • Atlanta, GA
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Company Profile

Beckman & Associates, Inc (**BAA**) provides engineering, IT, management consultancy, and staff support to the nuclear industry. Formed in 1985, the company has 24 years of corporate professional engineering experience in supporting the USNRC, USDOE, and nuclear utility clients. We are a Small, Woman-Owned Business with corporate headquarters in Belle Vernon, Pennsylvania (near Pittsburgh). BAA maintains a large operations office in Las Vegas along with an additional office in the greater Atlanta area.

Reputation --- Cost-Effective, High Performance

The company is reputed for its highly-experienced nuclear/IT personnel, quality of service and timeliness of deliverables. Over 85% of our work is based on referrals and contract extensions. Our reputation is our most important differentiator. BAA is able to provide cost-effective quality services based on high utilization of our personnel and minimization of company overhead expenses. With our principals actively engaged in ongoing projects, we are able to maintain currency on the industry issues and provide consistency on our delivered services.

Services --- Engineering, Licensing, QA, IT, Management

- **Engineering**
 - Process Analysis
 - Modeling for Seismic Damage
 - Hydrologic and Geochemical Processes
 - Technical Evaluations/Analyses
 - Design Control
 - Configuration Management
- **Licensing/Regulatory Compliance**
- **Operational Readiness Planning/Assessment**
- **Scientific Analysis and Support**
- **Nuclear Safety/Independent Oversight**
- **Quality Assurance/Quality Control**
- **Safety Basis Authorization/Evaluations**
- **Inspections/Audits of Nuclear Facilities**
- **IT Support**
 - Project Management
 - Network/Systems Architecture
 - Software/Hardware Applications
- **Records Management/Document Control**
- **Management Analysis**
- **Technical/Fiscal Management of Scientific Programs**

Example Current Projects

- **USNRC Technical Support Services** --- Engineering/Technical Support to the USNRC for operating reactor plant engineering and inspection services
- **NRC Regulatory Guide Updates** --- Contracted through Dade-Moeller to rewrite selected NRC Reg Guides
- **New Reactor COLA Reviews** --- Contracted through Energy Research Incorporated to support selected technical/licensing reviews
- **Yucca Mountain Licensing Project** --- Technical support to Sandia National Lab and Bechtel-SAIC, LLC for engineering/licensing/IT services as part of the USNRC Licensing Process
- **Hanford – Waste Treatment Plant**--- Technical support and oversight to Bechtel/Washington Group for effectiveness of quality aspects of management processes and technical requirements
- **Oak Ridge Operations** --- Oversight and support of the DOE assist team involved with the U233 downblending process evaluation
- **State Of Vermont** --- Technical management and oversight for the state mandated comprehensive reliability assessment of Vermont Yankee for licensing renewal considerations



Resources – More Than 300 Qualified and Experienced People

In addition to our permanent staff, we have a network of over 300 professional employees who prefer to work on a part time basis for short and extended time periods. The majority of these employees are either retired personnel (USNRC, USDOE, commercial nuclear) or company consultants. All of our personnel resources are coordinated through a large data base that allows BAA to identify and provide niche experts quickly to respond to critical customer demands.

Beckman & Associates, Inc

“Providing Large Business Expertise with Small Business Attention to Our Clients”



Example Project Experience Overview

Projects	Description
<p>Technical Support Contract (ongoing) USNRC</p>	<ul style="list-style-type: none"> • Prime Contractor since 1998 • Subcontractor since 1985 • Performed over 250 tasks <ul style="list-style-type: none"> - Operational Readiness and Restart - Design Basis Inspections and Audits - Engineering Evaluations for 10CFR50 and 10CFR52 licensing activities
<p>Yucca Mountain Licensing Project (ongoing)</p> <ul style="list-style-type: none"> - Bechtel/SAIC (Pre-Closure Focus) - Sandia National Lab (Post-Closure Focus) 	<ul style="list-style-type: none"> • Support to Bechtel/SAIC since 1985 • Support to SNL since 2006 • Over 50 permanent engineering/IT personnel • BAA management integrated with clients in a matrix organization • Support areas <ul style="list-style-type: none"> - Project Management & Strategic Planning - Software Management and Planning - Nuclear Criticality Analysis - Seismic and Mechanical Analysis - Scientific Model Development/Deployment
<p>Engineering/Licensing Support</p> <ul style="list-style-type: none"> - Nuclear Utilities - Commercial Clients 	<ul style="list-style-type: none"> • Support services to 10 utilities since 1985 • Engineering/Licensing/Regulatory <ul style="list-style-type: none"> - Program and Procedure Development - Technical/Quality Audits/Assessments - Regulatory Consultation - Failure/Root Cause Analysis - Training • Spent Nuclear Fuel (Cask Storage/Transport) • Litigation Support (prudence, capital cost issues, and response to USNRC)
<p>Additional DOE Projects</p> <ul style="list-style-type: none"> - ORNL, Y-12, ORO - INEL - Rocky Flats - Hanford WTP - SRS 	<ul style="list-style-type: none"> • Provided services since the early 1990's • Operational Readiness and Restart • Technical Audit and Assessment • Training • Quality Assurance • Program Development



Personnel Areas of Nuclear-Based Expertise

Areas of Expertise		Areas of Expertise	
Management		Quality	
<ul style="list-style-type: none"> • Project / Program Management • Business Mgt / Planning/Analysis • Cost Control / Trending Analysis • Nuclear Safety Oversight 		<ul style="list-style-type: none"> • QA/QC/Data Verification • Inspect/Assess/Performance Audit • QA Program Effectiveness Review/Assessment 	
Licensing and Licensing Review		Safety	
<ul style="list-style-type: none"> • Licensing Preparation/Review • Tech Specs / SARs • Safety Basis Authorization 		<ul style="list-style-type: none"> • Engineering • Safety Culture • Accident / Emergency Response • Radiological / Health Physics 	
Engineering		Regulatory	
<ul style="list-style-type: none"> • Design Basis/Design/Test/Verify • Mechanical • Electrical / I&C • Civil/Structural • Piping • Thermal • Fluid Mechanics • Nuclear Systems • Configuration Management • Material / Metallurgical • Stress/Vibration • Seismic • Criticality • Construction / Fabrication • Fire Protection • Emergency Systems • HVAC / IVAC • Decontamination/Decommissioning • ASME Codes / Testing • Procedure Writing 		<ul style="list-style-type: none"> • Compliance (NRC/DOE/NEPA) 	
		Information Technology	
		<ul style="list-style-type: none"> • Project Management • Network Architecture/Testing • Software Devp / Application • Hardware • Document Management 	
		Additional Areas	
		<ul style="list-style-type: none"> • Waste Management • Fuel/SNF/Dry Cask Storage • Environmental • Geologists / Hydrogeologists • Chemistry / Geochemistry • Emergency Planning • Security • Human Factors Performance • Communications • Human Relations • Litigation Support 	



Event/Incident Analysis	
<ul style="list-style-type: none">• Risk / Probability Analysis• Event Evaluation / Root Cause Analysis• Corrective Action	
Operations	
<ul style="list-style-type: none">• Startup/Restart/ORRs• Nuclear Operations (mainly NPP)• Nuclear Conduct of Operations (DOE)	



Key Personnel

The following are experience summaries of the Key BAA Management Personnel; in addition, a more detailed resume can be provided upon request.

Vicki Beckman – Chief Executive Officer

Ms. Beckman has over twenty-five years of business management experience as both CEO and Project Manager for BAA. Currently, she manages the company's USNRC Technical Support Contract wherein she reports directly to the USNRC, assigns BAA project personnel, develops and submits Task Order proposals, and other project administrative duties. Previously, she was the BAA General Office and Administrative Office Manager with responsibility for financial management, contract administration, and human relations. Ms. Beckman holds a BS in Mathematics and a Masters Degree in Supervision.

Don Beckman – President

Mr. Beckman has over thirty-five years of experience in the nuclear industry, including the past 24 years associated with the startup and growth of Beckman & Associates, Inc. During his tenure, the company has grown to annual revenue of over \$10 million and has expanded the company from strictly NRC-related work to providing services to the DOE and commercial nuclear clients. Previously, Mr. Beckman worked for the USNRC for ten years as a resident inspector at nuclear power plants. Currently, he is the Program Manager for the two Yucca Mountain Project contracts. In addition, he is further expanding the company into new service areas including IT support to nuclear-related clients. Mr. Beckman possesses a BS in Marine Engineering and served onboard the NS Savannah, the nation's only nuclear-powered commercial vessel (an ASME Engineering Landmark).

Technical Expertise

He is recognized by our clients and peers as an Expert in the following areas:

- Failure/Root Cause Analysis (MORT-Certified Root Cause Evaluator)
- Nuclear Engineering Assessment and Evaluation
- Nuclear Facility Inspection and Audit
- Nuclear Criticality and Safety
- Nuclear-Related Training Development/Implementation
- USNRC Nuclear Power Operations Policy and Regulations
- DOE Conduct of Operations
- Litigation Support

Bruce Hinkley– Vice President, Engineering and Regulatory Services

Mr. Hinkley has over thirty years of broad-based experience in the nuclear industry which includes executive level responsibilities with nuclear utilities, architect engineers, and nuclear services companies. He is responsible for the management and direction of BAA's engineering and regulatory business areas. Mr. Hinkley has extensive experience performing management consulting activities with the DOE, NRC, and commercial nuclear clients. Examples of Mr. Hinkley's previous major projects include: Project Manager for the Independent Assessment of



Yucca Mountain QA Programs; member of an expert panel assembled to evaluate science, engineering, and operational aspects of Hanford WTP Project; President of engineering and construction joint venture responsible for the completion and restart of Pickering Unit 4; and Team Leader for over 25 separate nuclear utility safety system reviews. Additionally, Mr. Hinkley has been recognized by the American Nuclear Society for his efforts in System Engineering and inspection/assessment methodologies. Currently, he is providing technical management and direction to the State of Vermont Department of Public Service in their legislatively mandated reliability review of the Vermont Yankee nuclear plant as well as providing management oversight services at the Hanford WTP project. Mr. Hinkley possesses a BS in Analytical Management from the U. S. Naval Academy and was a Certified Chief Engineer of a nuclear submarine.

Technical Expertise

He is recognized by our clients and peers as an Expert in the following areas:

- Nuclear Engineering Programs -Assessment and Evaluation
- Nuclear Facility Inspection and Audit
- Quality Assurance Program Reviews and Effectiveness Assessments
- Major Project Engineering/Constructability Reviews
- USNRC Nuclear Power Operations Policy and Regulations
- DOE Conduct of Operations, Orders, Guidelines
- Prudency and Litigation Support
- Independent Assessment Team Leadership/Project Management

Kathleen Lloyd Forte – Vice-President, Operations

Ms. Forte has twenty years of experience in business management and accounting, including the past seven years as Vice-President of Beckman & Associates, Inc. She is responsible for the day-to-day operations of the company overseeing more than \$10 million in annual revenue. Her duties include Finance, Contract/Project Management, Budget Preparation, and Human Resources. Ms. Forte is responsible for managing the company's DCAA-auditable cost program. Her previous experience includes Division Management for the University of Pittsburgh, as well as, various financial management and accounting positions with several companies. Ms. Forte possesses a BS in Accounting and a MBA.

Al Atkisson – Chief Information Officer

Mr. Atkisson has over twenty years of broad-based nuclear-related information technology and nuclear engineering experience including the past five years as the CIO of Beckman & Associates, Inc. Currently, he is the BAA Senior Manager for IT support for the Yucca Mountain Project (YMP) contracts including the management of a 25 person IT staff. Previously, Mr. Atkisson served as CIO for TVA and HL&PC. In addition, he was the Supervisor of Systems of Engineering for HL&PC, and a Power Shift Supervisor for US Naval Reactors Program in Idaho. He possesses a BS in Civil & Electrical Engineering and a MS in Nuclear Engineering. As a Captain in the USMC, Mr. Atkisson was a member of the EOD/Bomb Squad and a Paratrooper.



Technical Expertise/Experience

- Director of Enterprise Technology (Marathon Consulting) --- development and implementation of regulatory policies/practices for design/implementation/submittal of YMP Site Recommendations and License Application for Construction
- Senior Manager, Enterprise Technology Support/CIO Power Operations (TVA) – responsible for management of a 300-person team and \$31 million OM budget for providing IT support to 4 NPPs, 11 fossil, and 22 hydro plants
- Chief Information Officer (HP&LC) --- CIO for the South Texas Project NPP responsible for supporting ongoing power operations and upgrading IT/IS to enhance plant performance
- Power Division IT Project/Licensing Manager (FP&L) --- responsible for the development and implementation of a \$32 million EAM project; implemented company's first electronic document management and workflow system
- Corporate IT Project Manager (TVA) --- responsible for the design/implementation and operation the integrated Power Procedures System, a PC-based effort to control configuration and quality, and track NRC requirements

Marty Bryan – Vice President, Licensing Services

Mr. Bryan has over twenty-five years experience in nuclear licensing, engineering, operations, and project management activities with licensing management experience for both commercial nuclear and DOE facilities with emphasis on initial project licensing (Watts Bar, Sizewell B-UK, Yucca Mountain). He also has significant project management experience for commercial nuclear and DOE facilities with responsibilities for implementing DOE order 413.3 on project management. Mr. Bryan currently serves as the License Application Process Integration Manager on the Yucca Mountain Project. Responsible for managing the processes and resources (over 40 individuals) to maintain the License Application up to date by preparing and submitting updates to the NRC, as well as ensuring that responses to NRC Requests for Additional Information are provided in a timely, and accurate manner. Mr. Bryan has a BSNE from University of Tennessee at Knoxville and was certified as a Station Nuclear Engineer and Shift Technical Advisor while working with TVA.

Technical Expertise

He is recognized by our clients and peers as an Expert in the following areas:

- Nuclear Facility Licensing and Regulatory Compliance
- DOE 413.3 Project Management
- DOE Conduct of Operations, Orders, Guidelines
- Nuclear plant Operations and Technical Specifications
- Technical and Management Assessments
- Safety System Inspections



Recent Project Experience

Yucca Mountain Project Support

Client: Bechtel-SAIC, LLC, 1995 – Present

Client: Sandia National Lab, 2006 - Present

BAA is supporting Bechtel-SAIC, LLC and Sandia National Laboratory for the Yucca Mountain Project Design and Licensing Project. We have been engaged in the project since the mid-1990's and provided key managers/staff to the past two M&O contractors, as well as, Sandia National Laboratory in its Lead Laboratory role. Currently, BAA is providing 75 engineering, scientific, and IT personnel in our Las Vegas Operations Office to support the following activities:

- **Project Management**
- **Strategic Planning**
- **Software Management and Engineering**
- **Nuclear Criticality Analysis**
- **Seismic & Mechanical Analysis**
- **Scientific Model Development**

Project Management & Strategic Planning

BAA company principals and senior employees are integrated into a management matrix with the M&O contractor with Mr. Don Beckman (BAA President) reporting directly to the M&O President/General Manager responsible for the Safety Analysis Report (SAR). Each of our senior managers has been responsible for developing and managing approximately \$100 million budgets.

Our team has planned/budgeted/performed the following tasks:

- Development of needs/requirements for scientific/engineering analyses, calculations, and licensing documents
- Engineering/scientific modeling
- Development of lab and field testing to support model development/validation
- Software development/qualification/verification/validation
- Probabilistic analyses
- Systems engineering
- Develop/incorporate regulatory strategies to ensure USNRC licensing compliance
- Preparation of a 5,000+ page license application

From Planning to Action

- Project needs and requirements were translated into detailed work scope statements
- SOWs were mapped to a DOE work breakdown structure
- Prepared detailed estimates and compared to budget allocations
- Budgets periodically adjusted to support project priorities
- SOWs/budget were incorporated into fully inter-connected logic frag-nets, and entered into a Primavera 3 computerized schedule/cost management program
- A technical/fiscal baseline change proposal (BCP) was established and submitted for Bechtel-SAIC and DOE management approval
- Subsequent to initial implementation of the annual baselines, additional BCPs were prepared and submitted in response to evolving work scope needs.



Yucca Mountain Project (continued)

Software Management & Engineering

Company employees have been/continue to be directly responsible for the details of procuring, developing, and managing software products related to the following tasks:

- Use of applicable engineering and scientific modeling software codes
- Identification of software life-cycle methodologies including development of requirements, design specifications and validation test cases
- Software development, qualification, verification, and validation
- Software and hardware procurement
- Systems implementation and maintenance
- End of life-cycle disposition

Buy/Develop Approach -- past and current approach

- Identify preferred methodologies for the development/procurement of scientific and engineering software packages, as well as the associated hardware platforms
- Develop needs and requirements analysis including cost-benefit and build-buy analyses (including the development and incorporation of regulatory strategies to ensure USNRC licensing compliance)
- Solicit competitive bids for buy and compared to internal development costs
- Select the best cost/value for the project and submit for M&O/DOE approval

Nuclear Criticality Analysis

BAA develops and manages criticality analyses in support of the license application to include engineering and scientific studies as well as, support software development and qualification.

Processes involve the implementation of the criticality strategy to prevent any credible criticality event for normal operations and for accident events. Where practicable, our strategy is to rely on moderator exclusion and equipment design that uses passive-engineered controls (e.g., geometry control, fixed neutron absorbers) rather than reliance on administrative controls.

However, administrative controls on fissionable material mass (or other reliable and verifiable reactivity control methods) are used when passive engineering controls alone are impractical or insufficient. One such example is to establish minimum burn-up requirements on commercial spent nuclear fuel.



Yucca Mountain Project (continued)

Seismic and Mechanical Analysis of Repository Components

BAA is providing technical guidance and integration for a team of specialists in finite-element analysis and rock mechanics analysis in support of the license application. A BAA company employee functions as the senior engineering manager as part of the matrix organization. Our activities include engineering analyses and studies related to potential failure modes of the engineered components.

The ultimate purpose of these activities is to develop damage abstractions for the mechanical response of engineered components to seismic hazards at the repository. The seismic hazards addressed include vibratory ground motion, fault displacement, and rock fall induced by ground motion. Engineered components are the spent fuel package, drip shield, and fuel rod cladding.

The process involves performing finite-element calculations for the mechanical response of engineered components, and performing discrete-element calculations for the mechanical response of the host rock to seismic hazards. These analyses consider the response of all components as an integrated system.

In this situation, engineering judgment is required to develop computationally practical models that represent the dynamic response and potential for failure of multiple components with acceptable accuracy for post-closure probabilistic risk assessment. The inputs to the calculations (including ground motions, hazard curves, and mechanical failure criteria) are generated by several technical groups within the YMP and thus, require close coordination and integration with the ongoing efforts.

Computational results are documented in reports that present an integrated picture of system response under multiple seismic hazards (vice a single component or seismic hazard)

Scientific Model Development

BAA provides principal investigators and independent technical reviewers for mathematical model planning, requirements development, implementation, testing, and analysis. Activities include planning, defining, monitoring field and laboratory testing activities and integration of results into technical analysis and mathematical models in support of the licensing activities.

Geochemical testing activities support the analysis and modeling of the environmental conditions, as well as, how these conditions will react with the waste package and internal waste forms of the repository. The testing activities are based on input requirements of the geotechnical analysis and models. Specific geochemical test cases and validation methodologies are developed/implemented in the field and laboratories; our approach ensures that requirements and design specifications are implemented and meet their intended purpose.

The testing and evaluation process is documented; the results are published in final data validation reports and submitted to the technical data management system. Final geochemical data sets are independently reviewed, qualified, and accepted by the data qualification organization. The final completed data packages are added to the qualified data baseline for use in the waste form, waste package, and near-field analysis and model reports.



Additional DOE Projects

Over the past 24 years, BAA has provided engineering, scientific, and management services to DOE including ORNL, INEL, Hanford, and Rocky Flats including the following activities:

- Operational Readiness and Restart
- Technical Audit and Assessment
- Training
- Quality Assurance
- Program Development

Operational Readiness and Restart

- Developed and assisted with implementation of Operational Readiness Program procedure (meeting requirements of DOE Order 5480.31), prepared guidance document for incorporation into M&O contractor procedures, and training for the Oak Ridge Y-12 DOE Site Office.
- Conducted independent restart assessment and readiness for the High Flux Isotope Reactor following Technical Specification Violations in 1993.
- Provided support for Y-12 DOE Site Office resumption activities following stand down for Defense Facility Nuclear Safety Board Recommendation in 1994 and continuing into CY 1995. Support includes providing team leaders, quality assurance specialists, management specialists, nuclear safety specialists, readiness assessment specialists, and others.
- Participated in the ES&H Operational Readiness Review of the Rocky Flats Plant, responsible for review of procedures programs and engineering interfaces.
- Team member support for the Rocky Flats Operational Readiness Review of Limited Plutonium Operations in Building 771.
- Performed portions of the restart readiness review of the Tower Shielding Reactor including safety analysis and engineering reviews, and program development. Specific areas reviewed included organization, administration, operations and operator training, systems engineering, safety analyses, configuration control, and testing.
- Consultant utilized as team member and general legal counsel for the DOE Readiness Assessment Review of the WIPP's environmental compliance, emergency preparedness, and the overall management structure.
- Provided assistance to the Under Secretary for Environmental and Health for pre-restart evaluation of training at the Advanced Test Reactor
- Provided assistance to the DOE Idaho Field Office for oversight of the Advanced Test Reactor Core Internals Change-Out Outage and associated Restart preparations. Assessed contractor's planning and performance in the areas of project management, outage planning, maintenance and modifications.



Technical Audit and Assessment

- Development of DOE assessment program and facility representative (resident inspector) training programs for the Oak Ridge DOE Reactor Operations Division responsible for oversight of the High Flux Isotope Reactor.
- Assisted with incident investigation/review of tritium production program problems for ORO.
- Technical Advisor to the U233 Downblending Assist Team (ORO) with a focus on conduct of operations during decommissioning/dismantlement and construction
- BAA personnel participated in the critical flow sheet review of Hanford WTP in 2005. The review was an assessment of the science efforts, their translation into design, and the overall maintainability and operability of the proposed facilities and systems.

Training

- Developed and delivered training to the Y-12 Site Office Restart Team in the planning and conduct of restart assessments and reviews per DOE Order 5480.31 and in Conduct of DOE Operations per DOE Order 5480.19.
- Developed and taught special training on "Walking the Spaces" to identify performance and safety problems for the staff of the DOE Oak Ridge Y-12 Field Office.
- Provided instructor and training material development services for "Conduct of DOE Operations Training" through ten, one-week sessions provided by the Oak Ridge Field Office at Oak Ridge and Portsmouth facilities.
- Developed and delivered an Executive Management training course on "Conduct of DOE Operations" for the Oak Ridge Associated Universities executive council.
- Developed and delivered a training course of "Conduct of DOE Operations" for transportation, waste packaging, and training operations for Analysas Corporation.

Quality Assurance

- Provided assistance to the DOE Oak Ridge Operations Office, Assistant Manager for Energy Research and Development (AMERD) to prepare the organization for a Tiger Team visit and to author and establish the first AMERD quality assurance program.
- Developed and assisted with implementation of Quality Assurance Program, procedure implementation, and training for Oak Ridge Y-12 DOE Site Office.
- Provided program development support for Quality Assurance Program and Management Plans for the TRANSCOM waste transportation satellite-tracking program for DOE managed by Analysas Corporation. Subsequently, assisted with development of Transportation Division QA program and its implementation. Supported company during DOE performed operational readiness review.
- Provided Oversight and independent review services in evaluating quality issues related to technical requirements flow down at Hanford WTP.
- BAA personnel performed the Quality Programs Assessment at Yucca Mountain for DOE-OCRWM that encompassed the QA programs for Sandia, DOE, and Bechtel-SAIC. Assessment involved the review of programs for readiness for license application as well as implementation effectiveness and organizational and management review for quality culture and nuclear licensee readiness.



Program Development

- Management consulting support to the Yucca Mountain Project Office involving regulatory affairs, management planning and systems, and problem resolution.
- Provided assistance to the Yucca Mountain Project Office in evaluating and improving engineering, design control, and quality assurance performance
- Development of Facility Representative Qualification Programs and support material including examination bank development for the Y-12 Site Office and the DOE-ORO generic qualification program.
- Provided extended support to Rocky Flats DOE Office for oversight of M&O contractor maintenance and modification activities. Provided substantial input into DOE preparations for ORR for Building 707 in the maintenance, quality, and conduct of operations areas.

USNRC Technical Support Since 1985

Since 1985, BAA has an extensive record of technical support to the USNRC including participation and/or leadership on essentially every type of team field inspection, as well as, engineering support of both 10 CFR 50 and 10 CFR 52 licensing activities. Typical projects have included the following areas:

Operational Readiness and Restart

- Provided extended onsite support to the Watts Bar NRC Resident Inspector Office for review of readiness for plant startup, including closure of TVA Corrective Action Packages and Employee Concerns, Quality Program upgrades, Preoperational Testing, and overall Operational Readiness, and other areas.
- Provided team members for multiple pre-Operating Licenses "Operational Readiness Inspections" at Comanche Peak Unit 1.
- Participated in an NRC Region I Operational Readiness Inspection at Nine Mile Point 2 to support a determination of readiness for escalation to full power operation.
- Participated in the NRC Operational Readiness Assessment at Sequoyah NPP Reviewed management, oversight, and corrective action programs.
- Provided a "turn key" team for pre-Operating License (Pre-Startup) evaluation of surveillance and in-service test program readiness for licensed operations at Millstone, Unit 3. BAA provided Team Leader and all team members, coordinating the inspection through the NRC resident inspector and technical liaison.
- Provided NRC senior level expert support of restart activities at Millstone Nuclear Station. Areas of involvement included engineering, quality assurance, employee concerns and safety conscious work environment.
- Provided five team members for the NRC Operational Readiness Assessment Team (ORAT) review of the Browns Ferry 2 restart.
- Provided NRC senior level expert support in preparations for the Restart & Operations of the Davis Besse Nuclear Power Plant. Areas of involvement included corrective actions, safety culture assessment, and safety conscious work environment.



Inspections and Audits

- Participated in a special independent task force established by the NRC Executive Director for Operations for evaluation of inspector allegations regarding the Comanche Peak NRC Inspection Program.
- Conducted team inspections for verification of Technical Specification conformance with license application and as built plant. These inspections were conducted as "turn key" engagements with the company planning, conducting, and staffing the entire inspection with Regional Office liaison. These were conducted at Millstone Unit 3, Hope Creek Unit 1, Nine Mile Point Unit 2, Limerick Unit 1, Seabrook Unit 1, and Beaver Valley Unit 2 between 1984 and 1987.
- Provided nearly total inspection of pre-op and startup testing at Millstone Unit 3 and Seabrook Unit 1 for NRC Region I.
- Inspected plant modifications and procedure changes resulting from NUREG 0737 (Three Mile Island Action Plan) implementation for NRC Region III at Zion, Units 1 and 2, including equipment qualification and 10 CFR 50, Appendix R issues.
- Retained for extended engagement by NRC Region V for follow-up of licensee events and prior NRC inspection findings at Rancho Seco, including equipment qualification and 10 CFR 50, Appendix R, issues.
- Provided team members for NRC HQ Operational Safety Team Inspections (OSTIs) at Fermi-2, Crystal River, Davis Besse, Perry 1, Rancho Seco, Fort Calhoun, Arkansas Nuclear One, Wolf Creek and Fort St. Vrain. Team assignments have included operations, surveillance, maintenance, management oversight, ISEG and review committees, QA/QC activities, and others.
- Provided team members for NRC HQ Safety System Functional Inspections and similar "vertical slice" engineering inspections at Nine Mile Point Unit 1, Oyster Creek, Peach Bottom, and Turkey Point.
- Provided team members for NRC Construction Assessment Team inspection at Browns Ferry and Watts Bar NPPs.
- Provided team members NRC HQ Safety System Outage And Maintenance Inspections (SSOMI) at Wolf Creek, Indian Point 3, South Texas Project (Balance of Plant Maintenance), Vogtle, WNP-2, and North Anna. Team assignment included maintenance, modification installation, post modification testing, and engineering, including equipment qualification and 10 CFR 50, Appendix R issues.
- Prepared detailed inspection plan and assisted NRC Region III in special review of High Pressure Coolant Injection and Reactor Core Isolation Cooling System failures and reliability at Quad Cities Units 1 and 2.
- Multiple Inspections at Browns Ferry, Sequoyah, Watts Bar, and Comanche Peak for NRC Office of Special Projects and Office of Nuclear Reactor Regulation, including long-term assignments.
 - Plant Modifications & Engineering
 - Employee Concerns & Allegations
 - Equipment Environmental Qualifications
 - 10 CFR 50, Appendix R, Fire Protection Programs and modifications
 - Quality Control Implementation
 - Quality Assurance Program
 - Controlled of Purchased Material, Equipment, and Services



- Provided on-demand inspection support to NRC Region III for the D.C. Cook Nuclear Station steam generator replacement project and associated plant restart testing.
- Provided special inspection team members in management and organization, maintenance, operations, and engineering for NRR sponsored management inspections of Calvert Cliffs and Nine Mile Point NPPs.
- Provided specialized management and organization consulting specialists for NRC AEOD Diagnostic Team Inspections at Brunswick, Perry, Fermi, Palo Verde, and Fitzpatrick NPPs.
- Provided extended support to NRC Region III for special review and inspection of engineering, maintenance and operational issues at the Palisades NPP
- Performed special inspection of engineering and quality assurance at Bingham-Sulzer pump design and manufacturing facilities.
- Performed special inspections of engineering, manufacturing, and quality assurance at the Cooper Enterprise (TDI Enterprise) and Cooper Bessemer emergency diesel engine manufacturing and parts facilities.
- Performed special inspections of engineering, manufacturing, and quality assurance for manufacturers of mechanical, electrical and electronic nuclear power plant components (such as Westinghouse Electric Co., Southern Testing Co.) for the NRC Vendor Inspection Branch. Provided technical experts to accompany NRC personnel.
- Participated in special Integrated Performance Appraisal Team (IPAT) inspection at Indian Point 2 in support of NRC Region I. Inspected quality assurance, management, and organization areas.
- Participated in special IPAT inspection at Calvert Cliffs NPP in support of NRC Region I. Inspected engineering and technical support activities.
- Participated in special IPAT inspection at Peach Bottom NPP; inspected areas of surveillance and testing.
- Participated in Maintenance Team Inspections at Cooper Nuclear Station and Salem Generating Station, Catawba, Seabrook, and Comanche Peak Steam Electric Station.
- Developed inspection procedures and NRC-internal training for review of licensee programs for the engineering, maintenance and testing of check valves.
- Participated in the Calvert Cliffs and Peach Bottom Independent Performance Assessment Team Inspections
- Participated in Special Management Team Inspection at Indian Point 3, evaluating management and organizational issues.
- Performed evaluation of engineering and design programs as part of Integrated Performance Assessment Inspection at Calvert Cliffs.
- Participated in Operational Safety Team Inspection at Cooper Nuclear Station; reviewed management and organizational issues, corrective actions programs, and surveillance programs.
- Participated in Safety System Design & Performance Capability Inspections at Fermi, Wolf Creek, TMI, DC Cook, Watts Bar, Waterford, Prairie Island, Millstone 3 and Braidwood.



Engineering Evaluations

- Performed a detailed evaluation of existing custom Technical Specifications at Rancho Seco for NRC Region V. This study involved analysis of the existing Technical Specifications for completeness and efficacy, comparison to current generation standard B&W Technical Specifications, and comparison to next generation technical specifications currently under development. BAA developed a computerized relational data base format for the study and delivered recommendations which resulted in major NRC initiated license amendments for operational and regulatory performance improvements.
- Special event follow-up for NRC Region III at Fermi-2 for turbine driven reactor feed pump failure power, including effectiveness of licensee response, adequacy of licensee root cause determination and corrective actions, and recommendations for return to power operation, including pump/turbine vendor support and performance.
- Performed synergistic computer analyses for NRC Region I of fluid dynamics and destructive flow patterns similar to those causing piping failures at Surry. Analysis included systems at Susquehanna, Beaver Valley, Peach Bottom and other facilities for NRC Region I.
- Provided long term electrical engineering review of plant engineering, modifications, and construction at in support of the NRC Office of Special Projects at the Comanche Peak station.
- Participated in nationwide program for review of emergency operating procedure (EOP) evaluation. Projects include Fermi 2, Fitzpatrick, Quad Cities, Millstone, Cooper, Browns Ferry, Hope Creek, Vermont Yankee and Duane Arnold NPPs. Provided support to regional office EOP inspections and follow-ups at Comanche Peak and Cooper Nuclear Stations.
- Participated in one-year nationwide evaluation of utility, NSSS vendor, and architect engineer practices for nuclear plant design and design basis management. Contributed to and provided principal report assembly services for draft NUREG resulting from the evaluation.
- Provided team members for special review engineering, maintenance, and procurement support of Zion NPP emergency diesel generators.
- Developed inspection procedures and NRC-internal training for review of licensee programs for the engineering, maintenance and testing of check valves.



Nuclear Utility Projects

BAA is as well-known and respected company throughout the commercial nuclear industry. Our utility contracts have included the following areas of expertise:

- Program and Procedure Development
- Technical/Quality Audits and Assessments
- Feasibility Studies
- Regulatory Consultation
- Failure/Root Cause Analysis
- Nuclear Safety System Reviews
- Training
- General Plant Activity Support
- Conduct of Operations

Program and Procedure Development

- Provided business planning and senior management support and mentor services to the Chief Nuclear Officer and Staff at Beaver Valley Power Station, Cooper Nuclear Station Vice President-Nuclear, and to the Commonwealth Edison LaSalle Stations Site Vice President and staff. Projects included oversight of performance improvement activities, regulatory affairs consultation, development of strategic initiatives, and support to business plan development activities. Also provided training in business plan development, regulatory affairs, and assessment skills and techniques.
- Developed plans, methods, and coordinated staffing and execution of the first Diagnostic Self Assessment performed by the Nebraska Public Power District as an alternative to the NRC's performance of an NRC Diagnostic Evaluation Team Inspection, which became the model process of choice with NRC.
- Assisted Public Service Electric and Gas of NJ in development of procedures and training to support an enhanced self-assessment program in response to the 1995 Salem plant shutdown. Drafted procedures and delivered classroom training to managers responsible for its implementation.
- Developed quality surveillance program checklists for all functional areas.
- Assisted Carolina Power & Light's preparations for NRC operational readiness and management inspections at the Brunswick Steam Electric Plant during 1992-3.

Technical/Quality Audits and Assessments

- Performed organizational and management programs assessment of utility quality audits and monitoring department for department management. Provided specific recommendations for performance improvement and assisted in their implementation.
- Developed an audit department administrative procedure and implemented procedure replacing obsolete departmental procedures. New procedures were based on the processes description and regulatory requirement search.
- Provided technical expert auditor services for audits of plant operations, technical specifications, refueling and outage activities, fuel procurement and fuel reload safety analyses, and related subjects.
- Provided lead auditor for a performance based maintenance audit based on NRC Maintenance Team Inspection and INPO standards and guidelines.



- Provided technical assessment services to the corporate Nuclear Safety Group. Performed corrective action and internal oversight program assessments.
- Assisted the utility in assessing existing quality trending programs and charting a strategy and implementation plan for program improvements.
- Independently performed a management assessment of the utility contract department's quality related functions.
- Design and engineering assurance review of Combustion Engineering's core reload design. Conducted long-term follow-up review of corrective actions.

Feasibility Studies

- Key personnel performed a comparative analysis of next generation light water reactor technologies for a private industry client as part of their due diligence on teaming with a consortium to build nuclear plants in South Africa.
- Key personnel project managed the constructability review/assessment in South Africa related to the design and construction of Pebble Bed Reactors. Key assessment factors included waste management, number of shared systems and facilities to support a multiple unit site, transportation infrastructure to support logistics, environmentally controlled nuclear safety component storage, available skilled work force, long lead procurements, etc.
- Key personnel were members of a Westinghouse led team that evaluated the feasibility of completing and restarting the Philippines Nuclear Power Plant
- Key personnel were members of the team that evaluated the restart options of the Zion nuclear plant.

Regulatory Consultation

- Assisted utility in development of their first nuclear facility business plan and resolution of open regulatory concerns involving declining organizational performance.
- Developed process description of the audit process including identification of regulatory requirements and commitments, internal management standards and expectations, and undocumented practices. Prepared process flow diagrams and text descriptions and developed and delivered classroom training to the audit staff.

Failure/Root Cause Analysis

- Led a team of utility personnel in performing an assessment of shutdown operations and outage planning and management functions. Used Error Modes and Effects Analyses to evaluate refueling-related procedures for shutdown safety vulnerabilities.

Nuclear Safety System Reviews

- Beckman and Associates has conducted over 100 safety system assessments which covered the areas of maintenance, operations, design, inspection and testing, training and qualification.
- Beckman and Associates supported the design verification efforts at Maine Yankee and Vermont Yankee in accordance with 10CFR 50.54f. This effort required the verification that existing plant systems and components met the design and licensing basis for the



plant. The final report was required to be signed under oath and affirmation by the utility's senior nuclear executive.

Training

- Developed and delivered formal and ad hoc classroom training in audit processes; performance based audit strategies and methods; identification of regulatory requirements, commitments and guidance; audit preparation techniques; audit interview and observation techniques; and inter-personal audit skills.
- Provided individual on-the-job training to full and part time auditors assigned to the above maintenance audit.
- Developed and delivered a two-day Assessment Skills Training Program for Independent Safety Engineering, Quality Audits, and Design Basis Reconstitution personnel.



Additional Commercial Projects

BAA's principals and consultants have conducted and participated in major management and organizational analysis projects for private sector clients, DOE and NRC.

In addition to classical management audit techniques, our staff is trained and experienced in applying Management Oversight Risk Tree, Kepner-Tregoe, and similar root cause analysis methods in both engineering and management environments. Our experience in quality assurance, licensing, and compliance activities also provides a special sensitivity to the effect of management issues on regulatory and safety performance.

Spent Nuclear Fuel Support

We have provided regulatory affairs, engineering design program, and quality assurance program consulting support to BNFL Fuel Services (BFS) in their efforts to remediate NRC identified problems and obtain licenses for nuclear spent fuel storage and transportation systems.

Litigation Support

BAA has provided technical and management analysis support to law firms involved in utility commission related litigation support involving utility prudence, nuclear power plant capital cost issues, and utility response to NRC regulatory requirements and initiatives.

Evaluations have included analysis of licensing bases, design and construction performance, and related issues.

Management Reviews

BAA's principals and consultants have performed constructability assessments of the Pebble Bed Modular Reactor in South Africa as well as performing technology comparisons for South African architect engineers and constructors related to the latest light water reactor plant designs. Aspects of the technology comparison included financial aspects, manufacturing activities in country, availability of in country qualified resources, licensing, and overall project management experience of vendors.

Troubled Plant Restart Experience

BAA's principals and consultants have been involved in the restart of Brunswick 1& 2, Maine Yankee, Millstone, and Dresden units. Additionally, they were responsible for the leadership and direction of the engineering and construction efforts during Ontario Power's Pickering Units 1 and 4 return to service. Responsibilities included independent technical reviews of engineering responses, public meeting presentations, craft/union discussions, and overall restart process management.

Support to State Public Safety/Service Departments

BAA was selected by the Vermont Department of Public Service to support the State Nuclear Engineer to implement the requirements of Act 189 of the General Assembly of the State of Vermont. The purpose of the act was to provide for a thorough, independent, and public assessment of the reliability of the systems, structures, and components of the Entergy Nuclear



Vermont Yankee facility. The primary objectives were to assess the conformance of the facility to its design and licensing bases for operating at up to 120% of its originally intended power production level, and assess the facility's operational performance and the facility's reliability for continued power operation, giving risk perspectives where appropriate.

A previous Act (No. 189 of the Acts of the 2005 Adj. Session (2006) reconfirmed the obligation and authority of the general assembly to examine the reliability of the nuclear power station of Entergy Nuclear Vermont Yankee (ENVY) in order to determine if it should be authorized to operate in Vermont beyond the expiration of ENVY's current operating license on March 21, 2012.

Support to Prime Contractors on NRC New Reactor Licensing and Regulatory Guides

BAA is supporting Energy Research, Incorporated in the electrical system reviews for ESBWR COLA and Design Certifications for various licensee submittals.

BAA is supporting Dade-Moeller, Inc. as subject matter experts in the revision and updating of selected NRC Regulatory Guides in such varying topics from Emergency Preparedness to Diesel Generator Fuel Oil Systems.

