

Barry Keys

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SUMMARY: Experienced professional with diverse professional growth and experience. Previous positions include Director, Senior Engineering Manager, Operations Manager, Production Manager, Project Engineering and Planning Manager, Construction Project Manager, Business Development Manager, and Regional Engineering Manager. Breadth of career covers plant operations and maintenance, engineering management, business development, liquid and gas pipeline construction, gas processing facility construction and commissioning, full fiduciary responsibility, and company governance. Work experience spans Department of Defense, commodities manufacturing, industrial equipment manufacturing, and oil and gas industries.

CRITICAL SKILLS:

- Strategic Planning, Critical Thinking and Analysis, Decision Framing, Analysis, and Execution
- Program and Project Development, Management, Engineering, and Construction
- Engineering Management, Cost and Schedule Execution and Controls
- Plant Engineering, Quality Standards, Process Controls, Piping and Instrumentation, SCADA, PLC's
- CAPEX/OPEX Budget Development, Manufacturing Process Improvement, and Lean Manufacturing
- Leadership and Team Development

WORK EXPERIENCE:

MOMENTUM MIDSTREAM, LONGVIEW, TX Director of Engineering Services 9/22 – Present

- Provide overall technical oversight for 9 operating, OSHA-regulated (PSM), treating and processing facilities, including 5 cryogenic natural gas processing plants with combined processing capacity of ~550 MMSCFD. In addition, provide overall technical oversight of field treating, compression, and pipeline systems with a treating capacity of ~ 950 MMSCFD and transport capacity of ~ 2,500 MMSCFD.
- Provide overall engineering, construction, and project management for ~\$10MM in treating and cryogenic plant process equipment upgrades.
- Develop and optimize process models for amine treating, glycol dehydration, and cryogenic processing of natural gas in addition to modeling and analyzing various natural gas pipeline systems for liquid dropout.
- GPA Technical Executive Committee member

MIDCOAST ENERGY, LONGVIEW, TX Director of Engineering Services 8/18 – 9/22

- Provide overall technical oversight for 9 operating, OSHA-regulated (PSM), treating and processing facilities, including 5 cryogenic natural gas processing plants with combined processing capacity of ~550 MMSCFD. In addition, provide overall technical oversight of field treating, compression, and pipeline systems with a treating capacity of ~ 950 MMSCFD and transport capacity of ~ 1,600 MMSCFD.
- Provide overall engineering, construction, and project management for ~\$45MM relocation project of a 200MMSCFD treating station and installation of 650MMSCFD compression facility in addition to successful completion of several plant turnarounds valued at ~\$15MM.
- Developed overall strategic plan to bring mechanical integrity program to fruition and ensure excellent compliance with OSHA 1910.119 program requirements.
- Develop and optimize process models for amine treating, glycol dehydration, and cryogenic processing of natural gas in addition to modeling and analyzing various natural gas pipeline systems for liquid dropout.
- GPA Technical Executive Committee member

ENBRIDGE GAS GATHERING and PROCESSING, LONGVIEW, TX Engineering Manager
4/12 – 7/18

- Project and Discipline Engineering Manager, Construction Manager, Project Controls Manager, and Facility Integrity Manager for multi-disciplinary engineering and construction team consisting of chemical, mechanical, electrical, pipeline, project engineers and construction supervisors and inspectors.
- Planned, scheduled, and executed ~ \$450MM in capital improvement projects over 5 year period
- Commissioning manager for ~\$145MM, 150 MMSCFD cryogenic natural gas processing plant. Plant came on-line at full rate within 3 days of turning over to Operations.
- Provide overall technical oversight for 14 OSHA-regulated (PSM) treating and processing facilities, including 5 cryogenic natural gas processing plants with combined capacity of ~550 MMSCFD. Coordinated multi-disciplinary team efforts to resolve and close out over 2,000 action items and MOC's that were hampering Operations efforts to achieve improved up-times for plants.
- Overall Construction Manager providing pipeline construction services in East Texas.
- Led several initiatives regarding plant turnarounds, mechanical and facility integrity, process modeling, etc. to improve working relationship with Operations, reduce costs, increase plant up-time, and lower overall operational risk.
- Developed and optimized process models for amine treating, glycol dehydration, and cryogenic processing of natural gas in addition to modeling and analyzing various natural gas pipeline systems for liquid dropout.
- Chairman of GPA Facilities Integrity working group, a workgroup chartered to provide guidance on fixed equipment inspections throughout the mid-stream industry.

REFCHEM EPC, PASADENA, TX Engineering Manager ***10/11 – 4/12***

- Project and Discipline Engineering Manager for 20+ multi-disciplinary engineering team consisting of chemical, mechanical, electrical, civil, I&E, and project engineers.
- Developed project work scopes, workload and forecasting reports, and performed Front-End Engineering and Design for various industrial projects including, but not limited to, natural gas compressor station design, engineering, construction, and project management, and various capital improvement project upgrades at solids and liquids processing facilities.
- Coordinated overall discipline and project engineering efforts in support of projects.

GEMINI MANUFACTURING, ROCKWALL, TX General Manager ***3/11 – 7/11***

- General Manager for new joint venture company formed to serve as regional manufacturing center of specialty lubricants and automotive coatings.
- Developed comprehensive strategy, project schedules, capital and operational cost estimates and budgets for design and build of new, \$50M manufacturing center.
- Led site selection activities to select community for new manufacturing center. Developed cost models to compare various community economic incentive programs, interviewed local officials, etc. to prioritize and select appropriate community providing over \$4M in economic incentives to company.
- Led manufacturing and process redesign activities to capitalize on common production processes leading to 80% capacity utilization, 50% reduction in waste, and doubling of production over a 5 year period with minimal capital expenditures while reducing cost of associated engineering study by over 35%.

SHELL LUBRICANTS, HOUSTON, TX Regional Engineering Manager ***2/10 – 2/11***

- Led and managed distributed technical support team for Shell's Western US and Canada Lubricants Division. Responsibilities include providing engineering and business solutions to over hundreds of Account, Channel, and Sector Manager's organizations in addition to Authorized and Alliance Distributors.
- Work closely with sales and marketing personnel to drive success in sales and marketing, complex lubricant implementations, and provide problem resolution for a customer base producing over \$130 Million in revenue.
- Directly responsible for preventing loss of several key accounts by conducting site visits, providing problem identification and resolution, and by providing assurance as to product quality and performance expectations.
- Accompany Distributor Sales Managers and Representatives on sales calls and site visits to various industrial customers.
- Provide product technical training to Distributor and end-user personnel.

- Conducted on-site customer visits, and interfaced directly with, plant management teams for resolution of lubrication related equipment failures and extension of machinery useful life.
- Directly managed alignment of technical solutions to Shell Customer Value Propositions to increase Shell market share and protect the current, \$130M Shell portion of business, in the lubricants industry.

SHELL PIPELINE COMPANY, HOUSTON, TX Joint Venture Director 1/09 – 3/10

- Chief Executive Officer of Ship Shoal Pipeline Company, Ursa Oil Pipeline Company, and Gaviota Terminal Company in addition to serving on the Board of Directors for the Explorer Pipeline Company. Combined asset base of \$600 million.
- Provided unifying strategies to allow the combined companies to achieve \$50 Million in profits on \$150 Million in revenue and resulting in the first dividend payments after almost a year of poor performance.
- Worked closely with external partners and internal interfaces for the proactive management of opportunities and risks presented by each company thereby maintaining and improving the value of Shell's investment and ensuring alignment with overall Shell strategy and business objectives.
- Developed overall strategic plan and direction for the Gaviota Terminal Company following years of neglect and inaction thereby allowing shareholder companies to achieve alignment
- Developed and implemented "Go Forward" plans to complete end-of-life work associated with dismantlement and disposition of GTC plant, property, and equipment located at the site.
- Full P and L and corporate governance responsibility.
- Developed and implemented CAPEX/OPEX strategies leading to +\$10MM dividend distributions after nearly a full-year of poor performance.
- Audit Committee member and consultant for Compensation Committee.

SHELL EXPLORATION & PRODUCTION COMPANY, Houston, TX Business Manager 9/04 – 12/08

- Directly responsible for the complete commercial, technical, logistics, and systems design of implementing new down-hole technology in support of North American unconventional oil projects. The project included site selection, process design, risk mitigation, cost modeling, and development of state-of-the-art automation.
- Developed overall strategic vision and performed associated tactical planning and execution for robust development (low cost, highly reliable, and timely delivery) of overall commercial heat delivery system supply chain.
- Provided resources and structure to lead team through structured Decision Framing and Analysis processes to analyze "make" vs "buy" decisions, Low Cost Country sourcing, supplier network design, manufacturing plant decisions, and all other aspects of the Plan, Source, Make, and Deliver value chain.
- Led, managed, and directed nominal 25 member, high performance, interdisciplinary team and executed annual \$10 million budget in support of multi-billion dollar unconventional oil projects.
- Designed and optimized systems and processes for mass manufacturing of high power / high temperature subsurface technology resulting in 40% cost reduction including complete development of commercial, technical, logistical, and systems design for commercial manufacturing.
- Performed site selection, process design, risk mitigation, cost modeling, and development of state-of-the-art manufacturing processes and procedures to support planned, multiple, 300,000 square foot, \$150M manufacturing facilities.
- Successfully bridged product development gap between R&D and commercial industrialization.
- Integrated DFM, LEAN, 6-sigma, value-stream mapping, and other process improvement initiatives into the commercial business development program, manufacturing process design, and systems development activities.

SHELL PIPELINE COMPANY, HOUSTON, TX Project Manager 6/01 – 8/04

- Project Manager for \$1million Variable Frequency Drive installation and pump station electrical upgrade project. Project completed 1 month ahead of schedule and 5% under budget.
- Directly contributed to the establishment of Shell Offshore Gas Pipeline Co. and transfer of Operator of Record from Shell Gas Transmission to Shell Pipeline Co.
- Project Manager for combined projects of over \$4 million to install line integrity metering equipment on 60 Gulf of Mexico platforms. All projects completed 2 months ahead of schedule and 20% under-budget.

- Project Manager for \$3 million pump station rebuild in Bakersfield, CA and for \$150,000 Variable Frequency Drive installation at 2 separate Texas locations.
- Proficient user of SAP - PS (Project Systems), Document Management Systems, Project Cost and Schedule Control Systems, Pipeline Monitoring Systems, and Microsoft Office tools including MS Project.
- Supervise up to 10 direct reporting, contract inspectors and first-line supervisors.
- Technical Mentor for new-hire engineers and other Shell employees.
- Process discipline champion for Electrical and Automation Group.
- Proficient and proactive champion of Health, Safety, and Environmental procedures and practices for assigned projects.

Engineering Duty Officer United States Navy

6/78 – 8/09

- Managed, supervised, and trained over 500 sailors and officers over the course of two (2) Executive Officer and four (4) Commanding Officer tours of duty at various US and Far East locations.
- Full responsibility and accountability for all aspects of military performance, training, health, and morale while providing resources for seamless integration of Naval Reserve personnel with active duty commands throughout US and Far East. Winner of prestigious Leo Bilger award for mission readiness and operational effectiveness.
- Personal awards include two (2) Navy Commendation Medals and four (4) Navy Achievement Medals.
- Nuclear trained, Engineering Watch Supervisor, Leading Petty Officer, and mechanical operator responsible for proper operation and maintenance of naval nuclear reactor plants onboard USS LONG BEACH (CGN-9).
- Engineering Watch Supervisor responsible for proper operation and maintenance of main propulsion systems onboard USS Pledge (MSO-492), USS PELELIU (LHA-5), and USS BELLEAU WOOD (LHA-3).

WASHEX, WICHITA FALLS, TX

Electrical Engineering Manager

3/00 – 6/01

- Electrical Engineering Manager for industrial laundry equipment manufacturer.
- Reduced overall machine component material costs.
- Performed research and design to develop new drive systems. Supervised incorporation of ergonomic considerations.
- Project Manager for new side-loading, 1100-pound capacity, dumping, dual motor - single VFD, industrial washer.
- Supervised electrical engineers, drafters, research and development testers, and designers.

GOODYEAR TIRE & RUBBER COMPANY, LAWTON, OK

Plant Engineer

6/98 - 2/00

- Plant Engineer and back-up Team Leader for world's largest tire manufacturing plant (60,000 tires per day and ~1.3 million sq ft) supervising maintenance technicians, equipment operators, and engineers in a 225,000 sq ft production area.
- Revised and improved engineering training program for new engineer accessions.
- Installed \$500,000 of capital equipment resulting in improved performance and higher tire component quality produced by component preparation equipment (beam shears, circular shears, ply cutters, bead formers, etc.)
- Revised machinery maintenance schedules and programs thereby allowing equipment maintenance to be performed without adversely impacting plant production. Increased equipment uptime by 10% and reduced reject rates by 20%.
- Proactive and proficient contributor to ISO 9000 processes and procedures. ISO/QS 9000 award winner.

PUGET SOUND NAVAL SHIPYARD, BREMERTON, WA

Project Engineering & Planning Manager

9/88 – 6/98

- Project Engineering and Planning Manager responsible for four (4) back-to-back overhaul, conversion, and repair packages onboard 1 submarine in Pearl Harbor, HI and 3 submarines in San Diego, CA.
- Project Engineering and Planning Manager for non-nuclear overhaul, conversion, and repair of a guided missile destroyer.
- Nuclear reactor servicing engineer responsible for issuing technical work packages for disassembly and disposition of naval submarine pressurized water reactors.

- Nuclear electrical engineer responsible for preparation and issue of technical work documents in support of various nuclear electrical work packages on different projects throughout PSNS.
- Production Manager for overhaul, conversion, and repair of a \$250 million work package onboard the USS ABRAHAM LINCOLN.
- Nuclear Planning Supervisor for overhaul, conversion, and repair of a \$300 million work package onboard the USS NIMITZ.
- Led overhaul of planning processes at a Naval Shipyard directly contributing to \$45MM profit over 4 years.
- Project Engineer for Nuclear Total Quality Leadership implementation at PSNS.
- A4W and C1W Nuclear Propulsion Plant Instructor.

EDUCATION

Bachelor of Science, Electrical Engineering, University of Washington, Seattle, WA

Professional Engineer, Electrical Engineering, Washington and Texas

Master of Science, Engineering and Technology Management, Oklahoma State University, Stillwater, OK

Distinguished Executive Professor Award, Mays Business School, Texas A&M University

Adjunct Professor, LeTourneau University, Graduate Level: Systems Engineering, Undergraduate Level: Project Management

PUBLICATIONS and PAPERS

GPA Midstream Publication P FIIG-18, *Facilities Integrity Inspection Guidance*, 2018. Print.

Arreola-Risa, Antonio and Barry Keys. *Modeling Cost Impacts of Supply Chain Disruptions While Performing Supply Chain Design for New Product Development*. Production and Operation Management Journal, 2018. Print, Electronic. (pending approval)

Keys, Barry. *A Comprehensive Approach Towards Facilities Integrity for OSHA 1910.119 (j) Regulated Natural Gas Processing Facilities*. 2018 GPA Conference. Print.

Keys, Barry. *Standard for Mechanical Integrity*, MEP–STD-MI-001, MidCoast Energy Partners. 2018. Print.

Keys, Barry. *Standard for Flange Bolting*, MEP –STD-GEN-510, MidCoast Energy Partners. 2017. Print.

Keys, Barry and Kyle Ross. *Strategies to Maximize Ethane Recovery with High CO₂ Feeds*. 2017 GPA Conference. Print.

Keys, Barry. *A Practical Approach Towards Mechanical Integrity Programs for Gas Processing Plants*. 2014 GPA Conference. Print.

Arreola-Risa, Antonio and Barry Keys. *Designing Supply Chains for New Product Development*. New York: Business Expert Press, 2013. Print, Electronic.

Abatan, A. A., Arora, D., Harvey, A. D., and Barry Keys. *Optimized Thermal Performance of the Pipe-in-Pipe Electrical Heater with Ribb*. 2009. Print (Internal to SEPCO – EPW-U).

COMMUNITY INVOLVEMENT

UT Tyler Department of Chemical Engineering – Mentor / Guest Lecturer

Mays Business School, Texas A&M University – Guest Lecturer

Adjunct Professor, LeTourneau University, Systems Engineering, Project Management

Coach – Youth Basketball, Adult Softball

Sports Official, High School and Collegiate Level Basketball

HOA Officer (President, VP, Secretary, Treasurer, Member-At-Large)

Local Church Ministries and various charities including foreign child sponsorship