In performing work involving standard of care matters, our consultants have advised legal teams on a wide range of technical and economic issues across the hydrocarbon processing industries. Typical assignments include: (a) prudent design, engineering, operations, and maintenance; (b) assessment of management processes; (c) training; (d) documentation of procedures and adherence to the procedures; and (e) adherence to generally accepted industry practice and industry regulations. Our clients have included oil and gas companies, law firms, underwriters, and brokerage houses. Our analyses and conclusions have been presented at court proceedings where our expert testimony has been relied upon by judges, juries, and arbitrators.
EXPERT WITNESS AND DISPUTE SUPPORT

Standard of Care

PRIMARY CONTACTS

Charles J. Hirst
Senior Vice President
Dallas

William D. Jackson
Consultant
Dallas

J. David Morgan
Vice President, Houston Office Manager
Houston

Melvin M. Sinquefield
Consultant
Houston
RELATED EXPERIENCE

- **Air Emissions Dispute**
  Reviewed air emissions data and categorized events; provided understanding and analysis to air events with respect to process equipment and refinery and chemical plant operations.

- **Ammonia Manufacturing Litigation**
  Assisted an equipment manufacturer in defending allegations that its equipment was the cause of a multi-million dollar business interruption claim. Assisted in discovery, evaluated operating records, estimated business interruption losses due to a power outage, and provided expert testimony.

- **Ammonia Plant Insurance Dispute**
  Assisted in evaluating insurance claims asserted by a major ammonia manufacturer. Work included evaluation of the technical basis for claims involving construction defects and warranty work amounting to $3 million. Assisted in documenting claims, inspected the plant, evaluated project records, and reviewed maintenance records.

- **Ammonia Plant Project Finance**
  Served as independent engineer on behalf of a major European bank for the relocation of a 750 TPD ammonia plant. Work included an assessment of existing and new technology that was to be incorporated in the project. The due diligence investigation analyzed feedstock supply, reviewed contracts, and inspected progress prior to close of financing. Monitored construction progress, certified mechanical completion, and witnessed the plant performance test.

- **Ammonia Plant Project Finance**
  Served as independent engineer on behalf of a major European bank for the construction of a new world-scale ammonia plant. Prepared a technology assessment, analyzed feedstock supply, reviewed contracts, and advised with negotiation of contracts. Monitored construction progress and mechanical completion, and witnessed the plant performance test.

- **Ammonia/Urea Plant Failure Analysis**
  Worked in support of client and its attorneys to investigate the cause of a reactor failure and defend against claims by OSHA and third parties. Work involved extensive analysis of process equipment and operating practices used in ammonia and urea manufacture.

- **Asbestos Exposure Litigation**
  Assisted a manufacturer of industrial equipment in defending personal injury claims related to asbestos exposure. Assisted in discovery, assessed the likelihood and degree of employee exposure to asbestos during maintenance activities, and reviewed equipment specifications, project histories, and maintenance records for various power generation units. Provided opinions regarding the potential for personal injury due to asbestos exposure in the course of normal work activities.

- **Benzene Exposure**
  Assessed possibility of employee exposures to benzene during prior refinery operations. Reviewed plant operating history and emissions records and provided preliminary opinions regarding potential benzene exposure to plaintiffs.

- **Business Interruption Damages Claim by Concrete Supplier**
  Assisted in a dispute between a concrete products producer and marketer against an oil refiner for damages allegedly incurred as a result of an incident at the oil refinery. Examined the timeline of the incident and provided an independent damage estimate.

- **Business Interruption**
  Performed an analysis of the schedule delay and financial impact from chemical plant downtime due to a major equipment fabrication error.

- **Business Interruption and Construction - Refining**
Monitored engineering and construction efforts undertaken to rebuild production facilities damaged by fire. The engagement was to ascertain the appropriate construction period for business interruption claim purposes and to facilitate the incident root cause analysis. Activities included daily site inspections, regular consultations with plant engineering and construction personnel, progress assessments, and development of independent project schedules.

- **Caustic Soda Contract Dispute**
  Reviewed caustic soda plant expansion and the ability of supplier to deliver the required volume of caustic soda under contract. Advised on the reasonableness of the expansion construction schedule based on review of environmental permits, public data, and internal documents on construction activities.

- **Chemical Plant Accident Investigation**
  Investigated an accident at a polyethylene production and storage facility. Reviewed equipment design, inspection and repair history, training of personnel, industry practices, and standards of care.

- **Chemical Plant Evaluation**
  Provided an independent assessment at a chemical plant of recent maintenance and sustaining capital projects.

- **Class Action Environmental Litigation**
  Provided assistance in evaluating environmental issues which led to a neighborhood lawsuit. Reviewed plant operating and emissions history and provided preliminary opinions regarding the potential for future impact on local community.

- **Commercial Contract Litigation**
  Assisted in a claim related to a force majeure incident related to the recommissioning of a facility after a hurricane. Examined conformance with standard industry protocols and applicable laws, standards, and regulations. Assessed whether the facility operator acted in a reasonably prudent manner with respect to the commercial and technical issues necessary to safely restart the facility as soon as possible.

- **Condensate Feedstock Contract Dispute**
  Assisted in a claim between: (1) a European refiner and ultimate condensate supplier, and (2) an intermediary company, concerning allegations that the intermediary company was prevented from obtaining condensate supplies for sale to the refiner. Studied the potential availability and quality of condensates in the producing region and elsewhere. Identified potentially suitable condensates for the refinery. Based on forecasts of oil and petroleum product prices, prepared an estimate of potential economic damages. Described how term feedstock contracts for condensate are typically concluded. Testified at an arbitration in London.

- **Construction Dispute - Gas Plant**
  Provided expert reports and testimony regarding project management issues, alleged defects, and liquidated damages for international arbitration between owner and contractor. The project involved an offshore platform, an undersea pipeline, an onshore cryogenic gas processing plant, and a sales gas pipeline.

- **Construction Dispute - Petrochemicals Plant**
  Prepared a confidential "Cold Eyes Review" assessment concerning a contemplated claim between an owner and a contractor of a grassroots petrochemical facility. Reviewed draft claims, researched evidence, and interviewed key personnel in order to produce an independent view of the claim.

- **Construction Dispute Litigation - Gas Plant**
  Assisted in a litigated dispute between Owner-Operator and Engineering & Construction Contractor over whether a cryogenic gas plant, as engineered, procured, and constructed, met the stipulated contractual performance guarantees; prepared expert witness rebuttal report with respect to relevant issues.

- **Contractual Dispute**
Performed a due diligence of owner allegations and contractor claims pertaining to a Lump Sum-Turn Key contract termination. Reviewed documents, schedules, witness statements, and expert reports to advise counsel on implications of contracting strategy and contract management following award.

- **Cost Allocation Report**
  Following a refinery fire incident and rebuild, performed an analysis of all elements of the repair costs, and produced a report that assessed and allocated repairs into three categories: identical replacement, functional replacement, and upgrade.

- **Crude Oil Metering Dispute**
  Investigated alleged tampering with crude oil Automatic Custody Transfer volume and quality measuring devices. Reviewed common carrier pipeline tariffs, inspected site, and analyzed measurement data.

- **Crude Oil Sludge Accumulation**
  Following a claim concerning sludge accumulation in crude oil storage tanks over a twenty-year period, advised as to the creation of sludge in crude oil tanks, its accumulation, the ways to prevent or control it, and the conventional ways of dealing with it.

- **Damages from Steam Turbine Failure**
  Assisted in determining economic damages resulting from failures associated with a new steam turbine that was provided and installed by a turbine manufacturer at a power generation facility. Conducted independent assessment of economic losses suffered by electric cooperative as a result of both short-term and long-term performance shortfalls and outages.

- **Defective Product Lawsuit**
  Provided an expert report concerning a dispute between a pressure safety relief device manufacturer and an operator of a claim that a device did not operate as designed in a reactor overpressure incident.

- **Defend Wastewater Treater Air Emissions**
  Requested to provide expert witness opinion of industrial standard of care for wastewater treater operations. Issue concerned volatile organic compound (VOC) emissions from a wastewater treater feed tank.

- **Delayed Coker Fire Investigation**
  Assisted client in investigating the cause of a coker hydrocarbon release and fire, which resulted in multiple fatalities. Visited refinery and reviewed procedures and events preceding the incident to identify potential areas of causation and liability. Operating experience and knowledge of technical and safety issues and of industry and management practices helped the client in addressing specific claims issues.

- **Due Diligence of Gas Gathering and Processing Assets**
  Conducted due diligence on gas gathering and processing assets within the Permian Basin in Southeast New Mexico and West Texas on behalf of lending group and prospective purchaser. Conducted physical inspection of the facilities, reviewed operation and maintenance records, assessed gas supply and competitive position, and reviewed financial assumptions and projections to ensure consistency with current gas supply contracts and asset performance.

- **Dust Collection System Risk Assessment**
  Performed a quantitative risk assessment on a dust collection system associated with the multifolder process at a large paper products manufacturing facility. Purpose was to determine if OSHA stipulations were appropriate.

- **Economic Damages Litigation - Plant Explosion**
  Retained concerning claims of design errors and failures in project management, following explosions and fires at a petrochemical plant. Conducted in-depth reviews of engineering, procurement, and construction agreements; process technology and design basis; construction records; owner's operating procedures; and actual operating history since start-up of the plant. Evaluated operating system provided against prevailing industry standards and examined potential for equipment failure.
Economic Damages Litigation - Plant Fire
Following furnace damage and rebuild, provided expert regarding property damage costs and normal maintenance/scheduled turnaround/betterment costs. Similarly, business interruption costs were compiled with reference to market situation and product volumes that were available from inventory.

Electric Incident Investigation
Conducted a Root Cause Failure Analysis on a power generation facility following the failures of a surge arrester and a backup battery system. Identified required inspection assistance, evaluated failed component inspection results and examined practices and procedures in place at the facility.

Estimate for Fire Rebuild
Developed a cost estimate for replacing and/or purchasing new equipment and materials after damage from plant fire.

Ethylene Plant Construction Litigation
Assisted in a dispute concerning allegations that poor engineering work product contributed to a >$100 million cost overrun. Assisted with discovery, inspected plant, evaluated construction documents, analyzed the project critical path, and analyzed lost income due to delays in the project schedule.

Evaluate Biodiesel Production Facility
Provided due diligence review of a biodiesel facility in support of project financing. Reviewed capital costs, operating costs, process technology, and maintenance requirements.

Evaluation of Refinery Operating Procedures
Acted as independent advisor in a dispute between a refinery and the Environmental Protection Agency following a period of excess emissions.

Expert Consulting Services
Provided expert consulting services concerning a personal injury incident that involved a weld failure and a release of hydrocarbons.

FCC NOx Allocation
Prepared a report of FCC regenerator nitrogen oxides (NOx) production that allowed allocation of FCC NOx from a combined refinery stack. The report was used to negotiate the allowable corporate average NOx limits with the EPA.

FCCU Construction Litigation
Assisted a major engineering and construction firm in defending allegations that construction errors in the installation of an FCCU catalyst cooler resulted in a significant business interruption claim. Assisted in discovery, analyzed FCCU operating data, reviewed refinery operating records, evaluated design issues, calculated property damages and business interruption losses, and provided expert testimony.

Force Majeure Dispute
Provided expert report relating to a claimed force majeure event, due to defects in critical equipment that was required to be installed during a turnaround. The correction to the defects then resulted in the late delivery of the equipment that extended a petrochemical plant turnaround.

Formaldehyde Plant Construction Litigation
Assisted in a dispute concerning allegations that completion delays and poor plant performance at a European formaldehyde plant resulted in a multi-million dollar damage claim. Assisted with discovery, inspected plant, evaluated plant operating records, reviewed construction contracts, valued the plant, and calculated damages. Presented and defended conclusions at hearing.

Litigation - Fuels Terminal Operations Assessment
Performed expert advice on fuels terminal operations that focused on the practices and procedures with an emphasis on the filling of product tanks.

- **Gas Pipeline Rupture Dispute**
  Performed an independent assessment of the costs incurred, including the lost natural gas inventory, on a ruptured interstate gas transmission line for which the owner requested a multi-million dollar damage reimbursement. A report was prepared for mediation which resulted in a negotiated settlement.

- **Gas Turbine Damage**
  Assisted in a root-cause analysis and damages dispute concerning a major turbine failure in the start-up of a power plant.

- **Gas Well Incident**
  Prepared expert report on behalf of client versus OSHA. Matter involved failure of a pipe carrying natural gas that injured one contractor. OSHA cited client for failure to provide a safe means of pressure relief for vessel (in-line heater) and piping.

- **Gas Wellhead Equipment Failure**
  Performed root cause analysis of a gas well casing hanger which led to a well blow out.

- **Gasoline Blending Compliance**
  Provided analysis for a refiner that does not produce finished gasoline on the prospects for producing gasoline that meets all API and ASTM requirements. Analyzed the options available to the refinery for blending reformate fractions and whether aromatics or benzene would likely be the constraining specification as it relates to the "anti-dumping" rule. Evaluated potential early compliance with the EPA's mobile source air toxics (MSAT2) program.

- **Gasoline Contamination Dispute**
  Provided expert report on refinery practices concerning caustic carryover in FCC gasoline mercaptan treaters. Class action plaintiffs, consisting of retail station owners, alleged underground storage tank damage due to gasoline contamination.

- **Gasoline Spill Litigation**
  Assisted in a dispute between a retail marketer and contractor concerning allegations that contractor's work contributed to a gasoline spill from a retail gas station that contaminated the well water of 130 homes. Assisted in discovery, evaluated the mechanical integrity of equipment, examined unique theories of causation, inspected site, and attended destructive testing procedures.

- **Heliport Pipeline Leak**
  Prepared expert rejoinder report on leakage from fuel storage, pipeline, and loading system located at a heliport and marine dock.

- **HF Alkylation Incident**
  Investigated facts related to pump casing rupture where hydrofluoric acid was released. Reviewed refinery operations, training, and safety practices. Advised attorneys on generally accepted industry engineering practices and standards regarding design, operation, and maintenance of hydrofluoric acid alkylation unit.

- **Historical Refinery Waste Generation**
  Provided expert report on the probable types and amounts of wastes produced by a refinery during its 50-plus year operating life. Study was part of litigation involving assignment of responsibility for an EPA superfund site.

- **Hurricane Rita Claim**
  A petrochemicals facility experienced a loss of steam supply from an outside steam supplier and a subsequent unscheduled shutdown which, in turn, resulted in production losses and major damage to the facility. The steam supplier attributed the steam outage to boiler damage caused by a hurricane, which had made landfall several months earlier. Assisted by investigating the link between the hurricane and the steam supplier boiler outages.
Incident Analysis - Petrochemicals
Performed an investigation analysis following fire and explosion incidents at a major Gulf Coast manufacturing facility. The engagement entailed development of the sequence of events, root cause analysis, assessment of the decision to rebuild, and reconstruction monitoring. An independent project schedule and cost estimate for the plant reconstruction was developed.

Independent Engineer
Retained as the Independent Engineer for the "grassroots" Tangguh LNG Liquefaction Project in Indonesia. Prepared the technical due diligence for the US$3 billion facility on behalf of a financial consortium.

Industrial Incident
Investigated cause of dust cloud deflagration at a Vitamin E production facility. Assessed that bulk solids handling procedures were modified without considering the original safety design basis for the equipment. Developed expert opinions on causation.

Insurance Arbitration
Investigated the circumstances surrounding an oil spill at a Gulf Coast refinery following a hurricane. Work focused on whether the refiner acted as a "prudent operator" before and after the hurricane and whether the owner was entitled to a claim for damages based on an insurance policy's pollution exclusion clause. Prepared a written report for submission into evidence in an international arbitration.

Interstate Pipeline Inspection Practices
Provided expert testimony on inspection and maintenance practices for interstate petroleum products pipelines. Issues included reasonable depth of additional overfill and width of maintenance right-of-way.

Investigate Refinery Heater Explosion
Performed root cause analysis of an explosion at a refinery heater and identified contributing factors. Performed a review of safe operating procedures, including shutdown and start-up of heaters. Provided expert testimony.

Jet Fuel Contamination Dispute
Following product quality issues in major interstate product pipeline movements, reviewed product injection practices and analyses at pipeline injection point. Evaluated analyses at various points along the pipeline to assess possibility of quality degradation.

Lender's Independent Engineer
Served as independent engineer for a "grassroots" olefins project. Prepared the technical due diligence for a US$4 billion facility on behalf of international export credit agencies and onshore and offshore lenders.

Litigation - Wastewater Treating
Provided expert consulting support for a refinery wastewater treating environmental criminal matter. The work required previous experience with and a solid understanding of the plant processes and equipment which are used in treating industrial wastewater.

LPG Pipeline Contamination
Evaluated pipeline contamination and potential sources of contaminants from various sources.

M&A Dispute
Evaluated the foreseeability of project cost overruns that negatively impacted the economics of the acquisition of an EPC Firm.

Manufactured Gas Plant
Provided technical assistance and review of historical documents in support of litigation regarding the environmental cleanup of a manufactured gas plant site. The site, which had various gasification units in operation between approximately 1870 to 1950, had been used for a number of other purposes. Analysis investigated the contamination present at the site to all previous and current gas plant operations.

Marine Terminal Development
Reviewed design requirements and monitored construction, start-up, and operation of a project to develop a bulk liquids terminal. Work included review of dredging requirement, schedule, and interfaces between this project and a project to export ammonia from the terminal.

- **Midstream Acquisition Due Diligence**
  Assisted energy distribution company with due diligence for potential transaction involving gas gathering and processing assets located in the Permian Basin. Assets evaluated included over 4,000 miles of gas and liquid pipelines, four gas processing plants, and multiple gas treating plants. Participated in data room reviews and management presentations with a focus on commercial, operational, and technical evaluations of midstream systems. Developed comprehensive economic model of the integrated gathering and processing assets that was used to determine valuations and evaluate key sensitivities.

- **Natural Gas Production Facilities**
  Served as one of two project managers responsible for the engineering, procurement, and construction of a 200 million cubic feet per day natural gas recovery facility in central Algeria to provide the feedstock for a new liquefied natural gas (LNG) plant on the Algerian coast. At the time of installation, the $250-million project was the largest of its kind in the world. Conducted negotiations with local labor, equipment, and utility suppliers. Arranged meetings with local environmental agencies to ensure compliance with all national environmental rules and regulations.

- **Natural Gas Royalty Litigation**
  Evaluated the design and historical capital costs of a natural gas pipeline system in western Oklahoma. Reviewed system material balances and operator's natural gas measurement practices.

- **New Petroleum Products Terminal**
  On behalf of a major international construction company, prepared a preliminary feasibility study on a new petroleum products import terminal to serve the local market. Study included facility layout and size estimates for docks and storage tanks.

- **Nitroaraffins Litigation**
  Assisted in a dispute between an operator and an EPC firm concerning allegations that the process design contributed to an explosion at a nitroaraffins manufacturing plant. Assisted in discovery, evaluated design issues, and provided expert testimony.

- **Offshore Pipeline Failure**
  Following a business interruption claim concerning number of failures on a large subsea crude oil pipeline, examined original construction specifications, maintenance, inspection, and operation records of the pipeline. Also reviewed the repair plans and repair execution of the failed components and made recommendations to include: a) comprehensive metallurgical analyses; b) preparation of an efficient repair and execution schedule; and c) complete subsea modeling of the pipeline for the purpose of failure mode and time to failure predictions.

- **Offshore Pipeline Project**
  Served as Independent Engineer on behalf of a major financial institution for a $200 million project to build a deepwater gas and oil-gathering system. Prepared a valuation of offshore pipelines and an onshore gas processing plant for gathering and processing of deepwater Gulf of Mexico oil and gas production in support of structured finance. Certified completion of the project for financial purposes.

- **Offshore Platform Design**
  Assessed design of elevated platform and ladders on a jack-up oil derrick which was under construction. Compared design to industry standards.

- **Paraxylene (PX) Contract Dispute**
  On behalf of a major international buyer of paraxylene, prepared an expert analysis concerning damages claimed by a large US
based supplier. Analysis included a detailed evaluation of supplier’s paraxylene manufacturing economics.

**PVC Plant Litigation**
Assisted in a dispute concerning allegations that an explosion at a major manufacturer of PVC resins was due to a poor process design that failed to meet government regulations and engineering standards. Assisted in discovery, inspected the plant, evaluated procedures and work methods, reviewed applicable standards, and reviewed operating records.

**Propane Product Quality Dispute**
Investigated the design and operation of a natural gas liquid fractionation, storage, and loading facility located on the Red Sea to determine potential causes of alleged hydrogen sulfide contamination of propane cargoes.

**Polyurethane Foam Litigation**
Assisted in claims concerning polyurethane foam system products that were alleged to be defective or unfit for their intended use. Assisted in discovery, observed and reviewed work environment and work methods, evaluated manufacturing records, reviewed warranty claims, and prepared trial exhibits.

**Pulp and Paper Mill Incident**
Analyzed processing operations and engineering design in a pulp and paper mill to determine sequence of events and possible causes of incident.

**Sulfuric Acid Storage Incident**
Retained to assist in the investigation of a fatality incident at a sulfuric acid processing and storage facility. Reviewed equipment design, inspection and repair history, operating procedures, training of personnel, and industry practices. Assisted legal team with on-site investigation and interaction with local, state, and federal agencies. Reviewed conclusions by root cause analysis for consistency and factual support.

**Thermal Radiation Exposure**
Investigated an incident involving a claim of thermal radiation exposure during a refining unit fire. Engineering reports, videos, weather conditions, unit design drawings, and published literature on levels of heat exposure from large hydrocarbon fires were evaluated.

**Salt Water Disposal Tank Explosion**
Investigated the cause and origin of a storage tank explosion at an oil and gas salt water disposal facility in Colorado. Conducted site investigation and facility/equipment inspections, evaluated system design and operation, and conducted witness interviews. Determined cause of explosion and worked with company management to evaluate existing policies and procedures for potential areas of improvement.

**Underground Storage Tanks Claim**
Assisted in a dispute concerning an allegation that Underground Storage Tanks (USTs) at a retail outlet had released gasoline vapors, resulting in contamination of groundwater with MTBE. Assignment included review of procedures for delivery of gasoline from tankers to UST, review of equipment and fittings used in UST, review of hydrogeological data regarding groundwater and contamination plumes, review of the design of vapor recovery systems, and calculations of vapor composition and amounts released. Prepared report to document findings and testified in deposition.

**Review of Facilities Safety Issues**
Assisted in technical review of safety related issues at crude oil production and gathering facilities.

**Root Cause Analysis**
Conducted a Root Cause Failure Analysis on a high pressure steam turbine that failed following a planned outage at a cogeneration power plant. Evaluated outage work procedures, actual outage work undertaken, start-up monitoring results, and
post-failure turbine inspection results on turbine disassembly.

- **Refinery Restart Due Diligence**
  Performed a site inspection and advised potential investor regarding the technical and commercial viability of restarting a refinery that had been shut down for several years.

- **Reciprocating Compressor Accident**
  Reviewed details of non-fatal accident involving a restart of skid-mounted gas compression machinery at a producing well. Upon investigation of the facts, prepared report detailing the proximate cause of the incident.

- **Pipeline Contamination Dispute**
  Assisted in a claim involving an alleged y-grade/NGL pipeline contamination from a gas processing facility. Examined the following key areas to evaluate the claim: pipeline hydraulics, laboratory records, chronology of pipeline sample data, reasonableness of claimed expenses, gas processing facility operation, and records.

- **Tank Truck Explosion Investigation**
  Investigated the potential causes and sources of ignition for an explosion that destroyed a road tanker, used to haul raw natural gas liquids from a gas treating plant, that was in a repair shop for the replacement of a pressure relief valve.

- **Petroleum Refinery Dispute**
  Provided overview of turnaround practices and industry standards utilized in the United States and Europe. Evaluated decisions and practices utilized at the subject refinery to determine if those decisions were in compliance with standard practices and whether a decision to optimize the turnaround execution date was a factor in a plant incident.

- **Pressure Vessel Failure**
  Investigated the cause of a hydrocarbon release resulting from the brittle fracture of a pressure vessel during start-up at a petrochemical plant. Incident involved multiple injuries and deaths and extensive property damage. Issues studied include ethylene plant design, operating practices and procedures, start-up operations, instrumentation, and safety training.

- **Polyolefins Plant Explosion**
  Assisted attorneys and company in preparation for litigation and negotiation with government agencies while investigating the cause of an explosion which caused the death of over 20 people. Assisted risk management in preparing and negotiating property damage and business interruption claims in excess of $1.3 billion.

- **Polybutylene Pipe Litigation**
  Assisted municipal water districts in asserting claims for tens of millions of dollars in damages resulting from defective polybutylene pipe. Assisted in discovery, evaluated research and development records, reviewed state-of-the-art issues, and provided expert testimony.

- **Polypropylene Manufacturing**
  Assisted in a dispute concerning insurance claims for property damage and business interruption in connection with a reactor incident during construction of a production facility.

- **MTBE Litigation**
  Prepared declaration of gasoline distribution issues in northern California, including rebuttal of other experts' analyses of gasoline distribution.

- **Coal Gasification Plant Accident**
  Provided assistance to a mechanical contractor for a root-cause investigation of a fatal accident at a coal gasification plant.

- **Refinery Force Majeure Claims**
  Prepared expert reports and testified in an international arbitration involving multiple product supply disputes between a refinery...
and an adjacent chemical plant. Reviewed force majeure claims related to catalytic cracking technology, product supply contracts, and utility supply interruptions.

- **Petrochemical Terminal Fire**
  Reviewed testimony, expert reports, and forensic evidence and attended depositions to determine cause and origin of terminal fire. Prepared report addressing electrostatic discharge theory, petrochemical handling procedures, employee training, and management issues.

- **Gas Processing Metallurgy Replacement**
  Evaluated the reasonableness of a large project’s cost to replace the piping with a different metallurgy for a high-pressure, high-temperature sour gas reinjection facility in Central Asia. Also opined on the industry knowledge of the proper metallurgy at the time of construction of the original facility.

- **Fall Protection Evaluation**
  Investigated circumstances concerning the injury to a person who fell from a loading dock. Provided opinions regarding general safety requirements, industry practices, and fall protection requirements for this type of activity.

- **MTBE Litigation**
  Supported joint defendants in litigation involving alleged MTBE contamination in groundwater. Analyzed gasoline supply issues to central Illinois over the period 1980 to 2006.

- **Natural Gas Gathering Disputes**
  Provided expert report regarding claims involving natural gas measurement, prudent operations, natural gas pricing, surface estate issues, reasonable accommodations, and environmental considerations.

- **Oil Field Pipe Dispute-Insurance Claim**
  Reviewed a claim involving an insurance dispute relating to proper preservation of drilling pipe in a storage yard following a hurricane.

- **Pipeline Pigging Accident**
  Reviewed injury accident that occurred while pigging a gathering pipeline to remove formation water produced with natural gas. Provided an expert report regarding applicable industry standards regarding operation of vacuum truck for disposal of formation, as well as observations regarding the contractual responsibilities of the tank truck operator and the production operator.

- **Refinery Contractor Indemnification Dispute**
  Provided expert opinion concerning an indemnification dispute between a refiner and contractor, as well as the standard of care and practice in the industry concerning the design and construction of a piping relief system. Also opined on the refinery owner’s responsibilities concerning the acceptance and maintenance of completed piping systems.

- **Gas Producer Contractual Dispute**
  Provided expert report and testified in federal bankruptcy court concerning disposal costs of produced salt water, reasonableness of a farm-out joint venture agreement, costs of capital, and salvage value of production equipment.

- **MTBE Litigation**
  Provided expert report that evaluated and discussed the issues concerning why MTBE was chosen over ethanol to the federal oxygenate requirements in the early 1990s. Also included was a discussion of how gasoline was supplied to the local region in California over the 1990s and early 2000s.

- **Wellhead Value - Natural Gas**
  Provided opinion with respect to effect of capital recovery of production facility costs on wellhead value of natural gas.

- **Project Development Dispute**
Prepared an expert report and delivered a deposition and testimony at jury trial in a dispute involving a project development claim. The dispute focused on the value and likelihood of successful completion for two projects in the early stages of development: a natural gas salt dome storage facility and a petroleum products terminal.

- **Dispute Support - Groundwater Contamination**
  Provided expert witness support regarding a groundwater contamination claim at a closed refinery. Provided opinions regarding the standards of care and operation of the former refinery. Prepared a written expert report.

- **Tube Sheet, Flare Tip Matter**
  Investigated the cause of tubesheet and flare tip damage related to an unplanned sudden shutdown of the facility. Evaluated whether damage was caused by the shutdown, long-term wear, or contractor error during installation. Provided expert support through mediation and settlement efforts.

- **Biodiesel Plant Construction Dispute**
  Evaluated engineering and construction practices in a dispute between an owner and EPC contractor due to cost overruns. Issues included engineering and project management practices which required rework, and construction practices which created safety and operability issues. Cost estimates were prepared for correcting the deficiencies.

- **Gas Compressor Incident Dispute**
  Provided expert opinions concerning a gas compressor failure insurance claim related to: (1) evaluating the gas processing facilities' maintenance and standard of care practices compared to industry standards; and (2) reviewing the operating practices and programs utilized at the facility to determine if these practices caused or contributed to the incident and subsequent damage.

- **Review Infrastructure Assets**
  Assisted client in evaluating infrastructure spending to support ongoing operations and maintenance activities. Our review evaluated whether the infrastructure assets were integral to the overall technological complex.

- **Condensate Gathering System Due Diligence**
  Assisted client with engineering due diligence on a Texas condensate gathering system focusing on pipeline mechanical integrity issues.

- **Supply Contract Dispute**
  Assisted in breach of contract claims regarding a helium supply agreement from a large natural gas processing/treating complex. Analyzed historical operation and performance of processing and extraction facilities, including sources and composition of gas supplies, plant shutdowns, and plant turndown capabilities. Reviewed plant performance, including operating costs, efficiencies, and operating modes to support defendant's plant operations.

- **Terminal Operations**
  Provided litigation support assistance and expert opinion for case involving historic Standard of Care issues with petroleum product terminals.

- **Performance Improvement Initiatives in Worldwide Refineries**
  Helped design and direct a consulting project to identify the most successful profit improvement initiatives at top performing worldwide refineries. Audited and examined company culture, energy usage, refinery losses, personnel training, safety practices, environmental controls, process operations, technical services, administration, planning and economics, capital investments, maintenance, and reliability factors. Identified and documented those initiatives, which proved most successful, including their duration, need, and value added. Assignments were in the U.S., U.K., Romania, Korea, and West Africa.

- **Maintenance and Reliability Improvement Program**
  Managed the development of a client's routine maintenance and reliability improvement program that identified areas of concern.
and implemented new work practices aimed at improving competitiveness. Efforts reduced maintenance costs and improved operating performance.

- **Turnaround Optimization Studies**
  Performed numerous turnaround optimization studies and execution reviews for refineries and petrochemical companies worldwide. Areas of focus included analyzing the work selection process, reviewing work execution schedules, evaluating the facilities preparedness to perform the turnaround, and optimizing turnaround cycles or start dates.

- **Maintenance Contracting Strategies**
  Worked with international clients to analyze existing maintenance and turnaround contracting strategies, contractor availability, and local cultures to identify areas of concern and develop strategies for improvement.

- **Reliability and Maintenance Continuous Improvement Initiatives**
  Improved efforts to eliminate equipment defects and unscheduled outages by developing and incorporating the use of reliability indices to identify problem equipment. Reliability teams were then able to prioritize concerns to focus reliability improvement initiatives in areas of highest risk to safety, operational performance, and profits. This defect elimination program was utilized as the cornerstone for the plant’s continuous improvement initiatives.

- **Pipeline Operating Dispute**
  Assisted in a dispute between an owner and an operator of a recently-constructed crude oil pipeline. Prepared an expert report concerning: (1) the facilities that should have been provided as part of the capital project to construct the pipeline; (2) the equipment necessary to operate and maintain the pipeline; and (3) whether defects found during the early operating period were the result of improper equipment design specifications and construction, or improper operation and maintenance. Testified at arbitration in London.

- **Marine Accident Investigation**
  Investigated causes for contamination of a cargo of residual fuel aboard a barge that exploded and sank.

- **Performance Improvement - Petrochemicals**
  Assisted in a global study focused on analyzing the operating performance of steam crackers. Participated as a member of a multi-disciplined team responsible for: reliability and operations data gathering, analysis, plant personnel interviews, and industry benchmarking of performance. The study concluded with numerous recommendations to company senior management aimed at improving worldwide plant operational availability.

- **Gas Plant Acquisition Dispute**
  After concluding a transaction, the acquiring party claimed that the facilities were not sufficient to conduct business due to deficiencies related to design, construction, safety, and failure to meet environmental regulations. Visited the plant to interview key personnel, viewed the physical facilities, and reviewed relevant operational, safety, and engineering design information. Our findings and opinions were presented in an expert report which was submitted into evidence.

- **Post-incident Equipment Preservation Review**
  Assisted client by assessing preservation techniques and "mothballing" efforts following the catastrophic failure of a vessel at a specialty products company. Incident resulted in an insurance claim for damaged equipment and idled equipment in the vicinity of the vessel failure. Efforts included assessing preservation techniques utilized at the plant compared to industry practices, developing an expert report, and providing expert testimony.

- **Paper Mill Safety Incident**
  Assisted attorneys by investigating the circumstances concerning an incident that occurred at a paper plant during a scheduled turnaround that resulted in a fatality. Issues studied included assessing work practices and safety procedures utilized to prepare
equipment for turnaround activities, including vessel entry and paper mill plant design.

- **Flash Fire Investigation**
  Investigated circumstances concerning a flash fire that occurred during vessel entry and cleaning operations. The investigation included the: (1) assessment of refinery safe work practices compared to industry standards and government regulations; (2) utilization of vessel entry and confined space safety practices to mitigate ignition hazards; and (3) responsibilities of both the operating company and contractor organization to recognize, develop, and follow safe work plans to prevent potential flash fires from occurring during vessel entry. Developed and submitted expert report.

- **Refinery Due Diligence**
  In support of

- **Litigation Support for Asbestos Claim**
  Asbestos Litigation—provided expert input and litigation support for trial preparation on refinery/chemical personnel’s exposure to asbestos gaskets and equipment insulation materials.

- **Refractory Failure Investigation**
  Provided expertise and technical assistance related to the evaluation of a failed refractory in a methanol reformer.

- **Gas Plant Mediation Support**
  Provided mediation support in relation to a helium supply agreement dispute.

- **Production Facility EPC Dispute**
  Reviewed and opined on different aspects of a dispute between the developer of an oil production facilities project and the EPC contractor. Assessed variation/change orders for entitlement and reviewed claims of preferential engineering (versus functional design).

- **Power Outage Cause and Origin**
  A refinery suffered an unplanned shutdown due to a power outage. At the time of the incident, the power source was from the grid via a third-party cogeneration station. Analyzed facilities and procedures to determine which parties: the grid, the cogeneration station, and/or the refinery, contributed to the outage.

- **Feedstock Supply Dispute**
  Reviewed the incidents of feedstock disruption and its effects on production of a basic chemical by a chemical producer in its dispute concerning a long-term feedstock supply contract. Dispute was settled at an early stage, prior to the preparation of an expert report.

- **Gas Plant Construction Dispute**
  Prepared expert report and testified regarding alleged performance deficiencies of a general mechanical contractor performing a reimbursable construction project. The project allegedly experienced poor productivity, resulting in cost overruns and schedule delays. Assessed the different potential causes of alleged poor productivity, including project management, scope changes and weather impacts.

- **EPC Construction Dispute**
  Provided expert support in a construction dispute relating to a natural gas processing plant in North America. The dispute primarily concerned engineering design issues and whether the installed facilities met contract, specification, and industrial standard requirements.

- **Insulation Works Dispute**
  Provided expert witness assistance with technical issues regarding the installation of insulation on an LNG facility. Baker & O’Brien reviewed the technical issues, prepared an expert report, and testified regarding our opinions in an ICC Arbitration hearing.
Floating Production Platform Dispute
Reviewed, opined, and prepared expert report regarding the project cost differences experienced during construction of the hull and integration of topsides for a semi-submersible platform, which was placed into service offshore of Brazil. Our review included a change in the construction site, changes in construction strategy, and changes in the sequence of construction.

Industrial Accident Investigation
Investigated

Refinery Environmental Consent Decree
Investigated

Refrigerants Manufacturing Arbitration
Assisted in

Refinery Incident Claim
Assisted in

Tank Incident Report
Assisted during

Ethylene Plant Construction Dispute
Opined on the

Assessment of Naturally Occurring Radioactive Material
Followed claims

Nitrogen Related Incident
Investigated

Pipeline Operation Dispute
Following an

Chemical Plant Construction Dispute
Provided expertise

Natural Gas Distribution System Construction Dispute
Supported a claim

Condensate Splitter Operating Budget
Provided budget

Natural Gas Measurement Dispute
Assisted with

Splitter Performance Review
Provided guidance

Dispute Support - Groundwater Contamination
Provided expertise

Crude Oil Pipeline Dispute
Provided expertise

Accident Liability
Assisted in a personal injury claim following an incident in a petroleum refinery process unit. Examined refinery conformity with the latest available industry technology, regulations, standards, and practices.