LONG INTERNATIONAL

RICHARD J. LONG, P.E.

Richard J. Long, P.E. is Founder and Chief Executive Officer of Long International, a Colorado-based construction claims and project management consulting firm that focuses its practice on owners, engineering and construction firms, and contractors performing petroleum refining, petrochemical, oil and gas, power/cogeneration, mineral processing, industrial, building, and infrastructure projects worldwide. Mr. Long has over 40 years of U.S. and international consulting experience involving construction contract disputes analysis and resolution, arbitration/litigation support and expert testimony, project management, engineering/construction management, cost and schedule control, and process engineering. As an internationally recognized expert in the analysis and resolution of complex construction disputes for nearly 30 years, Mr. Long has served as the lead expert on over 300 projects having claims ranging in size from US $100,000 to over US $2 billion. He has presented and published numerous articles on the subjects of claims analysis, entitlement issues, CPM schedule and damages analyses, cumulative impact claims, and claims prevention.

Before forming Long International, Mr. Long was Senior Vice President, Contract Administration for a major electrical and mechanical contractor. In this role, he had corporate-wide responsibility for technical management and oversight of the preparation and resolution of construction claims. In addition, he was responsible for the development, training, and implementation of project management policies and procedures to ensure that profit, cost, schedule, scope, quality, and safety objectives were achieved. Mr. Long managed for thirteen years the construction claims practices of two large consulting firms. Prior to his consulting career, Mr. Long gained 13 years of project management and process engineering experience on petroleum refining, oil shale, synfuels, mining and power generation projects with Tosco, Fluor, and Conoco.

EDUCATION

M.S., Chemical and Petroleum Refining Engineering, Colorado School of Mines, 1974
B.S., Chemical Engineering, University of Pittsburgh, 1970

PROFESSIONAL REGISTRATIONS

Registered Professional Engineer, Colorado (No. 25050)

PROFESSIONAL AFFILIATIONS

American Institute of Chemical Engineers
Project Management Institute
Association for the Advancement of Cost Engineering International
Society of Construction Law

TEACHING AND SEMINARS

Honorarium Instructor, University of Colorado at Denver, Masters of Engineering and Engineering Management, “Project Controls and Scheduling,” 2001.

Instructor, University of Houston, Master of Engineering, “Claims Management,” 2003.

TECHNICAL EXPERIENCE

Representative U.S. and international technical experience includes:

- Construction claims preparation, analysis, defense, and negotiation of settlements.
- Development of project management plans and procedures.
- Management of petroleum refining, oil shale, synfuels, mining, and power generation projects, including program and project management and the management of major engineering and construction contractors as the owner's representative.
- Identification and systematic evaluation of major engineering and construction problems and their cause/effect relationship on cost and schedule overruns.
- Management performance assessments.
- Deposition and expert witness testimony.
- Speaker and author of numerous articles and training manuals on the subject of construction claims, project cost and schedule control, change order management, and project management.
- Development of numerous computerized database management systems.
- CPM schedule analyses of the impacts of delays, disruption, acceleration and loss of labor productivity.
- Contract/entitlement analysis.
- Direct and indirect damages assessments.
- Process engineering, process flow diagram and piping & instrumentation diagram development, and preparation of equipment specifications.

PROJECT EXPERIENCE

As an internationally recognized expert in the analysis and resolution of complex construction disputes, Mr. Long has evaluated claims and assessed the performance of owners, engineers, and contractors on numerous types of projects, both in the U.S. and internationally. Representative projects include the following:

Oil Refinery, Petrochemical and Chemical Plants, and Offshore Oil & Gas Production Facilities

- Analysis of an engineering & construction contractor's $154 million change order, delay, and disruption claim against the owner of PET chemical plants in Spain, Argentina, and The Netherlands. The scope of work also included deposition support, assessment of the contractor's allegations regarding the cumulative impact of changes, assessment of process flow diagrams, P&IDs, and isometric drawings for changes, the tracking of the genesis of change orders, field change requests, and lessons learned items from prior projects, a detailed CPM schedule analysis to determine delay and acceleration responsibility, and the quantification of damages.
- Preparation of a mechanical contractor's $20 million claim for delay, additional work, labor disputes, and loss of productivity regarding a delayed coker project at the Cerro Negro oil upgrading project in Venezuela. Assisted counsel in the preparation of its briefs, document discovery requests, and support in preparation for expert witness testimony at the ICC arbitration hearings in Geneva, Switzerland.
- Analysis of change order and delay claims totalling $85 million submitted by a South Korean EPC contractor on the construction of an offshore production facility that was fabricated in Texas and South Korea.

- On behalf of the owner, performed an analysis and expert report regarding schedule delays and increased costs associated with an EPC contractor's $138 million claim on a gas plant project in Saudi Arabia. The work involved correction of the contractor's baseline and schedule updates, assessment of impacts allegedly due to change orders, welding defects, late drawing deliveries by the owner, and contractor performance problems. Prepared a time impact and an as-built but-for schedule analysis to address time extension entitlement, compensable delay, and loss of productivity. Developed a chronological database and assisted the law firm with witness statements and document disclosure requests. Completed a comparative assessment between the project's radiography records for the rejected pipe joint welds, and the results that were developed from the owner's radiography expert's interpretation of the films. Evaluated the opposing experts' schedule delay and damages analyses and assessment of responsibilities for project management performance problems. The dispute was resolved prior to arbitration.
- On behalf of the owner, performed an analysis of a Canadian contractor's $25 million delay and disruption claim against the owner of a refinery in Trinidad. The venue was international arbitration under Uncitral arbitration rules. The contractor's scope of work involved the construction of a new visbreaker unit, modernization of instrumentation facilities, and a revamp of a fluid catalytic cracker oil upgrading process unit. This project involved the organization of thousands of documents and assessments of alleged delays and disruption impacts identified in change orders, correspondence, meeting minutes, disruption notices, monthly progress reports, and CPM updates. The scope of work also included a detailed CPM schedule analysis and the quantification of damages. Prepared an Expert Report in international arbitration prior to settlement of the dispute.
- On behalf of the owner, performed an analysis of the quantum aspects of a contractor's $130 million delay and changed conditions claim involving the relocation of a $700 million natural gas processing plant project site in Algeria after construction had commenced because of the discovery of unfavorable soil conditions. The owner counterclaimed delay damages because the plant was completed late. Issues involved alleged increased quantities for earthworks and pipelines in the new site location, subcontract labor man-hours and costs, engineering and construction management man-hours and costs, and associated delay, productivity loss, and other costs, and whether the contractor has sufficient documentation to support its claims. The owner alleged bid error by the contractor and inadequate and incorrect quantum calculations to support its claimed costs. Supported the preparation of an expert report and rebuttal expert report, which were submitted in ICC arbitration in Paris, France. The owner received a favorable award.
- Performed an analysis of the technical entitlement of over 400 change orders associated with an engineering and construction contractor's $60 million claim on a magnesium oxide production plant. Determined the cause-effect relationship between the changed work and the resulting schedule impact and additional costs. Provided expert testimony at an ICC arbitration hearing in London. Contractor alleged that the FIDIC-based contract provided relief under the Variations clause; the owner argued that it was a fixed price contract and no relief was available. Also analyzed cause-effect relationship of improper operation by the owner and resulting poor magnesium oxide production from the facility.
- Analysis of a contractor's claim for delay and disruption allegedly resulting from work associated with removal of lead-containing paint from the process plant modules and platforms of an offshore oil production facility installed in the Gulf of Mexico. Testified in mediation leading to a successful settlement of the dispute. This project also involves the defense against the owner's delay claim for recovery of lost profits due to the delay to the achievement of First Oil allegedly caused by the lead abatement program. Performed a detailed schedule delay analysis of the contractor's performance on all aspects of the project to demonstrate that concurrent delays by the contractor would have caused delay to the mechanical completion of the Spar and the achievement of First Oil to be late regardless of the lead abatement program. Presented an Expert Report and testified in deposition, resulting in a successful settlement of the dispute.

- On behalf of the owner, performed an analysis of a $100 million cost overrun claim resulting from mismanagement, delays, and rework by an EPC contractor for an offshore oil and gas production SPAR installed in the Gulf of Mexico. The fabrication of the soft tank/truss was performed in Texas and the fabrication of the hard tank was performed in Finland.
- Analysis of an owner's $19 million claim against a major engineering and construction firm relative to home office and field cost overruns on a $200 million refinery project in Illinois.
- Performed an analysis of a major international contractor's $22 million delay and disruption claim on a $100 million refinery upgrade project involving new hydrotreater and sulfur recovery units in Trinidad. Prepared a detailed schedule delay analysis, damage analysis, and provided mediation testimony which resulted in a successful settlement of the dispute.
- Assessment of a Korean contractor's $75 million delay and acceleration claim on an oil terminal project in Russia. Assessed the contractor's CPM schedules, change orders, increased staffing claims, and the owner's counterclaims.
- On behalf of the owner, analysis of schedule delay claims by the prime contractor on an LNG facility being constructed in Angola.
- Claims preparation, database development and negotiation support related to the design and construction of a $450 million fertilizer plant in Iraq. During this project, successfully negotiated claims between the Japanese prime contractor and one Turkish and two Korean subcontractors.
- Analysis of delays, productivity loss, and project management performance deficiencies of an LNG terminal project being constructed in Spain for installation off the coast of Italy.
- Analysis of delays to the start-up and commissioning of an Upgrader Refinery that was built to process synthetic crude oil from a tar sands production facility in Canada. The delays were allegedly caused by a fire at the tar sands production mine site, which delayed the transport of bitumen to the refinery.
- Analysis of change order, delay, and disruption claims involving a ultra low-sulfur diesel Unicracker project at a refinery in Texas.
- Claims analysis, entitlement analysis, schedule analysis, and damages assessment of $20 million in cost overruns on a lump sum, fast-track gas processing plant project in California.
- On behalf of the insurer representing the contractor, prepared an expert report and provided testimony regarding the analysis of an owner's property damage claim following a fire at a condensate storage facility in Louisiana, which damaged the tank areas, including associated equipment, piping, electrical and instrumentation. Also evaluated the validity of the owner's warranty claims that existed prior to the fire and included in the owner's alleged damages. Prepared an expert report and testified in deposition, which led to a settlement of the dispute.
- On behalf of the owner, performed an analysis of a contractor's delay and loss of productivity claim on the design and construction of a polypropylene project in Argentina.
- Performed an analysis of alleged deficiencies in the design of a petroleum coke gasification and syngas plant, resulting in change orders, delay, and loss of productivity claims totaling $25 million against the owner of a refinery in Kansas. The project involved the relocation of a coal gasification facility from California and redesign of the plant based on petroleum coke feed.
- Analysis of a Japanese contractor's $35 million change order, delay, and loss of productivity claims on a LPG FPSO project being constructed in Japan for installation in West Africa.

- Performed an analysis of various contractor's delay and change order claims on behalf of the owner on a major Gasoline Optimisation Project in Trinidad, including modifications to an existing FCCU unit, a new alky-acid unit, an isomerization unit, a new heavy naphtha hydrotreater and continuous catalytic regeneration Platformer unit, and offsites facilities modifications. Claim evaluations included an assessment of the integrity of the contractor's baseline and schedule updates, preparing alternative impact analysis of delays allegedly caused by scope changes as well as concurrent delays caused by the contractor, reviewing cost support for the requested change order amounts, recalculation of time-related costs based on delay analyses, determination of damages based on assessment of contractual entitlements under the terms of the contract, and participation during negotiations to achieve settlement of the change order claims.
- Claims analysis in support of the owner's defense against a contractor's $5 million delay and disruption claim on a fast-track CO_2 recovery process plant facility in Texas.
- Preparation of an owner's claim against an engineering and construction management firm who was defaulted for defective design, delays, and cost overruns on a guaranteed maximum price contract to build a commercial-scale chemical plant in Colorado that was scaled-up from a pilot plant facility. Mr. Long's process engineering experience was vital in preparation of his analysis and opinion as to the cause-effect relationships of design and procurement problems, delays, and cost overruns on the project.
- Development of cash flow economic evaluation computer models and preparation of capital and operating cost estimates and economic analyses used in the negotiation of the $1.1 billion project loan guarantee for the Colony Shale Oil Project in Colorado.
- Claims analysis and delay evaluations on a major refinery expansion project in California involving $20 million of direct and indirect damages.
- On behalf of the owner, performed an analysis of an EPC contractor's $43 million claim on behalf of the owner involving hundreds of alleged P&ID changes to the FEED design of a compressor station and pipeline project in Nigeria, and resulting delay to the completion of the project. Analyzed the technical entitlement to the P&ID changes based on standard industry practice for design development, the owner's specifications, and the timing of the changes.
- Analysis of a $500 million claim for property damage and business interruption costs resulting from fire damage to a petrochemical plant in Texas.
- On behalf of the contractor, evaluated defective design and project management performance problems associated with an offshore underwater gas extraction facility and offshore pipelines, and an onshore gas processing plant in Australia. The contractor was a joint venture of the design firm and the underwater pipeline installation company. Under an LSTK Contract, the contractor was responsible for carrying out the design, engineering, procurement, construction and commissioning of the project. The owner terminated the contractor and sought recovery of damages.
- On behalf of the owner, performed an analysis of a $85 million change order and delay claim regarding an offshore Compliant Piled Tower constructed in Texas and topsides facilities fabricated in South Korea for installation offshore Angola.
- On behalf of the owner, evaluated a contractor's $87 million delay and disruption/loss of productivity claim resulting from alleged design changes to a semi-submersible hull and mooring system project which was fabricated in Norway and installed in the Gulf of Mexico. Evaluated contractor's entitlement to unresolved change orders and contractor's alleged delays associated with owner interference, late owner approvals, ABS approval delays, and out of sequence work.
- Analysis of an EPC contractor's change order, delay, and loss of productivity claims on a Linear Alpha Olefin Project in Alberta, Canada.
- Analysis and mediation testimony in support of an owner's defense of a $10.5 million claim on upgrades to piping and flare facilities in a major international oil refinery.

- Reviewed owner's ITB packages, contracts, project controls procedures, and contract administration procedures for natural gas pipelines and compressor station projects in Trinidad, and presented a Claims Prevention Seminar.
- Reviewed owner's contracting strategy and risks associated with the engineering, procurement, and construction of several major chemical plant projects in Texas.
- On behalf of the owner, analysis of delay and disruption claims by a US/Argentinean Joint Venture firm against a major US chemical company on the engineering, procurement, and construction of an ethylene cracker project in Argentina.
- Evaluated a claim by the Operator of a chemical storage facility associated with delays and cost overruns caused by scope changes and Hurricane impacts. Operator alleged that the cost of the facility significantly increased as a result of owner-caused changes and impacts from Hurricanes Katrina and Rita, and that the owner agreed to compensate the Operator for the Hurricane impacts. The owner alleged that the Operator mismanaged the project, and that the delays and cost increases were primarily caused by other problems not related to the Hurricanes.
- Analyzed a major international chemical company's contract documents and specification for engineering, procurement, and construction of chemical plants worldwide. Recommended clauses to resolve potential inconsistencies, ambiguities, and conflicts. Prepared clauses for cost and schedule control procedures. Provided a Claims Prevention Seminar.
- Analysis of a $100 million claim for property damage and $1 billion in business interruption losses resulting from fire damage to a tar sands oil upgrader project in Canada. Prepared assessment of fire-related damages as well as a detailed CPM schedule analysis to determine responsibility for the extended period of time required to reconstruct the facility.
- On behalf of the owner, evaluated outstanding contractual payments, unresolved change orders, and alleged delay costs alleged by a contractor for the fabrication, transportation, and installation of Pipeline End Terminations and Jumpers for an offshore oil production facility in the Gulf of Mexico.
- On behalf of the owner, performed an analysis of the EPC contractor's schedules for a multi-billion dollar Gas to Liquids facility in Nigeria. Verified the schedule work scope against contract requirements. Evaluated schedule metrics, reviewed schedule logic, assessed the reasonableness of the critical path and provided recommendations for optimizing the schedule. Also evaluated a cumulative impact claim.
- Analysis of a $7 million marine lien claim filed by a mechanical subcontractor against a major oil company on an offshore oil production project in Nigeria. The claim involved the value of equipment, piping, and structural installations on two refurbished drilling rigs that were delayed and impacted by changes and management problems.
- Analysis of delay and acceleration impacts incurred by a U.S. engineering and construction company on an offshore oil production facility in West Africa involving liquidated damages totaling $40 million.
- Assessed a contractor's claim on behalf of the owner for change orders, delays, and acceleration regarding the design and refurbishment of a tanker for a deep-sea crude oil FPSO project to be installed in Brazil. Assessed the reasonableness of the contractor's baseline and updated schedules, and determined potential delays caused by delivery of design information from other components of the project. Evaluated the contractor's claims regarding loss of productivity for the refurbishment work in Dubai.
- Analysis of a $12 million delay and disruption claim on the construction of a chemical plant in Louisiana.
- Analysis of an owner's claim for delays and cost overruns against the engineering, procurement, and construction contractor of a polyol chemical plant project in Tennessee.

- Analysis of delay and acceleration claims on the engineering, procurement, and construction of an ethylene project in Trinidad.
- On behalf of the EPC contractor, performed an analysis of delays and time extension entitlement on a $75 million claim by the mechanical subcontractor involving the procurement materials and installation of process plant equipment and piping on a major petrochemical plant in Texas.
- Performed an analysis of delay and acceleration claims on the engineering, procurement, and construction of an ammonia plant project in Trinidad.
- Analysis of the expediting costs incurred by the owner to expedite the completion of the reconstruction of part of an oil refinery in Canada following a fire. This work was performed in support of the insurance company's interest on a property damage claim filed by the owner of the refinery. The analysis included an assessment of expediting costs associated with procurement of equipment and materials, overtime costs for working multiple shifts and longer hours, and loss of productivity as a result of a compressed schedule, trade stacking, and overtime. Analyzed the trade offs of increased time-related costs that would have been incurred had the work not been expedited compared to the increased costs as a result of a fast track schedule. The results of the various scenarios were evaluated using Monte-Carlo calculations to derive a probabilistic determination of the range of costs as a function of the variables involved in the analyses.
- On behalf of the owner, performed an analysis of a contractor's $11 million claim involving disputed change order work, loss of productivity, late materials deliveries, and other delay events on a new petrochemical plant project in Angola. Issues involved customs clearance delays and inadequate project management by the contractor.
- Analysis of delay and disruption claims on the engineering, procurement, and construction of an ethylene cracker project in The Netherlands.
- Review of a Swedish subcontractor's claim for delay and loss of productivity associated with the fabrication and assembly of living quarters for an offshore oil production facility in the Gulf of Mexico.
- Analysis of delay and performance problems on a gas compressor/pipeline project in India resulting in liquidated damages in excess of $50 million.
- Analysis of the owner's damages resulting from the delayed installation of an oil production facility in the Gulf of Mexico due to defects in the fabrication of shackles. Identified the owner's direct costs and time-related costs from its job cost project files. Analyzed the owner's Project CPM schedules to identify critical path delays associated with the work to replace the defective shackles.
- Performed an analysis of a $45 million delay and disruption claim by a South African contractor involving the engineering, fabrication, and erection of two oil production facilities for a major U.S. oil company. Work included an independent assessment of estimated and incurred costs, a schedule analysis of alleged construction and transportation delays, entitlement analysis, and the preparation of affirmative claims against the contractor. Advised the client on the merits of the contractor's claim to facilitate settlement.
- Analysis of a European/Japanese EPC firm's $75 million claims on a refinery upgrade project in Belgium. Assessed the technical entitlement of over 100 change orders forming the basis of the claims as well as the schedule analysis to demonstrate entitlement to an extension of time and delay damages. Evaluated the contractor's methodology for performing its schedule delay analysis and quantum calculations, and its loss of productivity analysis for proof of damages for labor cost overruns.
- Analysis of issues regarding knowledge of delays and cost overruns associated with the issuance of an insurance policy on a refinery project in Canada.
- Reviewed contracting strategy and risks associated with the engineering, procurement, and construction of several major chemical plant projects in Texas for a major international chemical company.

- Retained by a major US oil company to evaluate the status, record keeping, schedules, and costs relative to the design and construction of hulls and topsides for two oil and gas processing offshore platforms being constructed in Korea. The evaluation followed a visit to the contractor's fabrication yard and focused on the analysis of cost overruns, schedule delays, and entitlement, and an assessment of the potential for claims from the prime contractor.
- Evaluation of a $15 million claim for impact and delay costs on an ethylene plant in Venezuela.
- Prepared an expert report regarding the potential impact on the surrounding area caused by the construction and operation of a compressor station project in Colorado.
- Reviewed the owner's contract for the engineering, procurement, and construction of a chemical plant in South Carolina. Recommended changes to project management, scheduling, and project controls provisions to improve the owner's visibility into the progress reporting on the project. Provided a Claims Prevention Seminar.
- Analysis of a $1.7 million claim for schedule delays and disruptions during the construction of two wastewater treatment plants and barometric condenser conversions at an oil-processing unit in Trinidad. Prepared detailed CPM schedule analyses and expert reports. The dispute was successfully resolved prior to the arbitration.
- Analysis of a contractor's change order claims on a tar sands oil-upgrading project in Canada.
- Reviewed the owner's ITB package for preparation of the FEED for the design of the Topsides facilities for an offshore oil & gas production facility in the Gulf of Mexico.
- Analysis and testimony regarding a major oil company's claim against a contractor for $29 million in improper charges on a reimbursable contract for the fabrication in Louisiana and Venezuela of one offshore gas compression platform and two wellhead platforms.
- Analysis of a French contractor's $14 million delay and increased quantities claim on a 36-inch gas pipeline and valve station project in Trinidad.
- Analysis of contractual responsibilities for cost overruns and delays on the fabrication of components of a semi-submersible offshore drilling rig in Texas.

Nuclear, Coal, Geothermal, Biomass and Gas-Fueled Power Plants

- Analysis of a contractor's $24 million delay and loss of productivity claim involving the relocation of a gas turbine generator and the construction of a new heat recovery steam generator as components of a cogeneration power and steam generation facility in an existing fertilizer plant in Alaska. This project involved litigation support, discovery, deposition support, and the preparation of an internet-based document database for the retrieval of documentation to support the analysis of the contractor's allegations regarding the delay and impact analysis components of its claim. Mr. Long successfully critiqued the contractor's claim, resulting in a settlement during mediation.
- Preparation of a contractor's $45 million delay, change order, and loss of productivity claim involving the construction of three gas turbine power generators and related-utilities comprising a new power plant project in Texas. This project involved the preparation of an internet-based database for the retrieval of documentation to support the delay and impact analysis components of the claim.
- Analysis of EPC contractor's $40 million claim regarding a lump-sum contract to design and build a gas-fired power plant in Illinois. Assessed the EPC contractor's allegations regarding the constructability of the heat recovery steam generators and the delay and disruption impact of those problems on its work.
- Analysis of an EPC contractor's $30 million delay and disruption claim involving a geothermal power plant project in Indonesia.

- Reviewed the owner's contract for the engineering, procurement, and construction of a polyethylene plant in The Netherlands. Recommended changes to project management, scheduling, and project controls provisions to improve the owner's visibility into the progress reporting on the project.
- Analysis of schedule delay, productivity loss, and direct damages totaling over $1 billion allegedly resulting from problems related to hydrodynamic loads on a nuclear power plant reactor building in Ohio. This project involved the discovery of over one million documents that were subsequently scanned, imaged, and converted into a database utilizing state-of-the-art optical character recognition software.
- Analysis of operating performance problems on a cattle manure-fueled power plant and several agricultural waste-fueled power plants in California.
- Analysis of a $11 million claim involving the installation of new mechanical equipment on a power plant project in Tennessee.
- Preparation of a $1.0 million claim involving the construction of new Low NOx and boiler reheater facilities on a power plant project in Indianapolis.
- Analysis of delay and disruption claims on the installation of three heat recovery steam generators as part of a retrofit repowering project in Louisiana.
- Analysis of delays and loss of productivity impacts caused by late delivery of equipment by the turbine/generator manufacturer on a new power plant project in Colorado. The schedule analysis also supported the contractor's defense of liquidated damages assessed by the owner because of delays caused by the turbine/generator manufacturer.
- Damage and schedule analysis and claims assistance on a geothermal power plant in California.
- Preparation of a claim on the assembly of turbine generators on a hydroelectric power plant project in Colorado.
- Litigation support of a nuclear power plant project in Louisiana involving the assessment of cost overruns, delays, inadequate QA/QC documentation, and defective electrical and instrumentation installations.
- Analysis of delays and backcharges on the construction of three gas-fired turbine generators and heat recovery steam generators on a power plant project in California.

Steel Mills and Coke Oven Batteries, Pulp and Paper Mills, Food Processing Plants, Synfuels Process Plants, and other Industrial Facilities

- Litigation support of a $400 million blast furnace and coke oven battery project in Indiana involving analysis of construction cost and schedule overruns and the adequacy of the engineering design. The owner claimed damages against the EPC contractor for cost overruns on the project. The EPC contractor had a reimbursable contract, but the owner alleged that the contractor mismanaged the project. This project resulted in a jury verdict award of $74 million in favor of the owner.
- Preparation of a contractor's delay and loss of productivity claim against an owner cooperative on the construction of a $32 million soybean processing plant in South Dakota.
- Analysis of a Swedish contractor's delay and disruption claim involving the design and construction of a pulp and paper mill in Washington.
- Litigation support, database management system development, and assessment of the technical design, cost and schedule overruns, and start-up problems of a coal gasification project in Alabama.

- Performed an analysis of a contractor's delay and loss of productivity claim against a Finnish equipment supplier providing a design build materials handling facility for a glass bottle manufacturing plant in Colorado. Analyzed the contractor's schedules, alleged changes to its scope of work, and cost records supporting its labor cost overruns. The case was resolved in arbitration in favor of the client equipment supplier.

Commercial, Educational, Medical and Industrial Buildings, Airports, Correctional Facilities, and Stadiums and Convention Centers

- On behalf of the owner, analyzed a Russian and Turkish contractor's claim for change orders, delay, and loss of productivity, and the owner's counterclaims for default due to inadequate project management performance and substandard installations of a residential community project in eastern Russia. Developed a document database, inspected the site, reviewed contractual entitlements, and provided the owner with a basis for negotiating a settlement with the contractor.
- Preparation of a $1.2 million claim involving the electrical subcontract work on the new Chemistry Building at the University of Washington in Seattle.
- On behalf of the insurer, evaluated property damage claims associated with flood-damaged industrial buildings and manufacturing facilities following a flood in Indiana. Prepared comparative cost estimates for the damaged equipment and facilities to test the reasonableness of the damage claims alleged by the owner.
- Preparation of a $6 million claim involving electrical subcontract work on the new St. Louis Stadium and Convention Center Project.
- Preparation of a $4 million claim involving the electrical subcontract work on the Alaska Native Medical Center project in Anchorage.
- Analysis of a $1.5 million claim involving the mechanical subcontract work on a new classroom building at the Air Force Academy.
- Reviewed a schedule delay consultant's expert report regarding a claim on a hotel construction project in Colorado and testified in arbitration regarding the thoroughness of the consultant's work and the costs it billed.
- Reviewed a schedule delay consultant's expert report regarding a claim on a hotel construction project in Colorado and testified in arbitration regarding the thoroughness of the consultant's work and the costs it billed.
- Prepared an electrical subcontractor's claim for delays, extra work, and loss of productivity on the installation of fire alarm, security, and communications systems for the Federal Bureau of Prisons Project in Beaumont, Texas. The contractor's increased costs resulted from delays, changes, field work orders, rework, loss of productivity, and acceleration to the Division 17 installation work. Prepared an expert report and assisted counsel in the defense of the opposing expert's deposition, which resulted in a successful settlement of the dispute.
- Claim preparation, schedule and damage analyses for an airport expansion project in California.
- Claims analysis, construction oversight, contract administration and expert testimony for a surety involved in the mechanical installations on a prison project in Montana.
- Analysis of delay claims on the renovation of a hospital project in Oakland, California.
- On behalf of the subcontractor, prepared a schedule delay and damages claim for the fabrication and installation of glass and metal curtainwalls for the Memphis/Shelby County Library Project in Tennessee.
- Performed an analysis of a mechanical contractor's contract and quantum meruit claim for disputed changes in scope, delays, and loss of productivity on the installation of piping systems on a computer microchip manufacturing facility in Virginia. Presented testimony in arbitration.

- Litigation support for the construction cost overruns and delays for several commercial building projects in Texas including a luxury hotel and a major office building.

Wastewater Treatment Plants, Earth-Filled Dams, Lock and Dam Projects, Fiber Optic Communications Projects, and Concrete Wharf Projects

- Analysis of contractors' delay and loss of productivity claims against the owners of wastewater treatment plant projects in Ohio, Alaska, and New Mexico.
- Analysis of delay and disruption claims on the engineering, procurement, and construction of an industrial wastewater treatment plant in Trinidad.
- Delay/impact analysis and claims preparation involving an earth-filled dam project in New Mexico. This project resulted in a $55 million settlement from the U.S. Bureau of Reclamation.
- Analysis of $800,000 and $600,000 claims involving electrical subcontract work on two lock and dam projects in Louisiana.
- Prepared an owner/operator's claim against a major railroad for causing delays and cost overruns during the construction of fiber optic communications systems along the railroad's right-of-ways throughout the United States. Developed Schedule delay analysis of each of the right-of-ways along which the fiber optic cable was installed in trenches. Identified detailed daily documentation that identified railroad interference or lack of support for the installation of the work.
- Schedule and damages analysis and claims preparation on a concrete wharf expansion project in California.

PROFESSIONAL EXPERIENCE

Long International, Inc.
Littleton, Colorado (September 1996 to Present)

Founder and Chief Executive Officer of an engineering and construction consulting practice specializing in engineering and construction contract dispute analysis and resolution, litigation/arbitration/mediation support, and expert testimony. In addition, Long International provides project management consulting, and claims prevention services through the development, application, and training in the use of integrated estimating, cost and schedule control systems, and preparation of thorough project documentation. Long International also performs fire/explosion insurance services, where we provide analyses of Property damage and business interruption claims, as well as analysis of insurance coverage for delays and cost overruns, and reconstruction cost and schedule performance monitoring. Long International focuses its practice on owners, engineering and construction firms, and contractors in the petroleum refining, petrochemical, power/cogeneration, industrial, food processing, and other process industries worldwide.

Fischbach Corporation and Fischbach and Moore, Inc.
Englewood, Colorado (August 1995 to September 1996)

Senior Vice President, Contract Administration responsible for the technical management, resolution, and prevention of construction claims corporate wide. Fischbach Corporation owned Fischbach and Moore, Inc., and Natkin & Company, who were among the largest electrical and mechanical contractors in the United States, respectively. In addition, Mr. Long was responsible for developing and implementing project management policies and procedures for project selection, bidding, and project controls. Inherent in these new policies and procedures was better control of the profit, cost, schedule, scope, quality, and safety objectives of projects through the use of standardized bidding practices, control budgets, as-planned schedule development, integrated cost and schedule controls, quantity tracking and labor productivity analysis, change order management, preparation of monthly reporting including correction plans for cost and schedule variances,

delay and impact analysis, thorough documentation, and claims identification and mitigation. He was also a member of executive-level project teams responsible for reviewing major, high-risk projects to identify potential problems and recommend corrective actions for cost and schedule recovery.

Hill International, Inc.
Englewood, Colorado (June 1993 to August 1995)

Senior Vice President responsible for managing all technical and business operations in Hill's Denver office. Mr. Long grew the practice to five full-time consulting experts focusing on the preparation and analysis of claims involving projects in the petroleum refining, petrochemical, and oil & gas production industry.

Kellogg Corporation
Littleton, Colorado (August 1983 to June 1993)

Vice President, Director of Operations and Principal in Charge of Dispute Services responsible for managing the dispute resolution practice, as well as the project and environmental business units. Mr. Long was the lead expert in the analysis and resolution of over 200 claims projects, and frequently represented his clients along with counsel in settlement negotiations. He also had direct responsibility for marketing and sales, project and personnel management, cost control, and organizational efficiency.

Tosco Corporation
Aurora, Colorado and Los Angeles, California (May 1974 to August 1983)

As Project Manager, Mr. Long had overall responsibility for management, project execution planning, engineering contractor supervision, permitting, cost estimating, economic analyses, cost and schedule control, risk analysis, and management reporting for the Sand Wash Shale Oil Project in Utah. Specific accomplishments include preparation and implementation of a comprehensive project management plan and development of a cost/schedule control and performance measurement system for the engineering and construction phase of the project. He directed several major engineering contractors who were performing mining, materials handling, hydrocarbon recovery, and oil upgrading designs and cost estimates. Mr. Long managed the production of technical data to obtain a Final Environmental Impact Statement, PSD air quality permit, and numerous other federal, state and local permits. He evaluated the solid wastes generated by the mine, retort facility, and the oil upgrading facility, and managed the design of the solid waste disposal facility for containment of the hazardous and nonhazardous wastes. Mr. Long also performed a process evaluation for the wastewater treatment facilities. He was responsible for the preparation of capital and operating cost estimates and economic evaluation of a $1 billion plus single-train shale oil facility and a $4 billion six-train shale oil facility.

Mr. Long participated in the engineering development of the Colony Shale Oil Project including responsibility for the development of several cash flow economic evaluation computer models and preparation of capital and operating cost estimates and economic analyses used in the negotiation of the $1.1 billion project loan guarantee. He was assigned as Technical Manager to develop with Exxon the TOSCO II pyrolysis unit process design basis and equipment specifications, and developed a heat and material balance process simulation computer model of the pyrolysis unit design and a solids flow computer model which was used to size and specify the rotating retort vessel. Mr. Long was also responsible for technical evaluation of improvements to the TOSCO II retorting facility and evaluation of various shale oil upgrading technologies including delayed coking, Fluid Coking, Flexicoking and partial oxidation of the heavy oil fraction, as well as evaluation of alternatives of whole oil and separate naphtha and gas oil hydrotreating.

As Principal Project Engineer, Mr. Long was responsible for the process design, environmental and waste management systems evaluation, cost estimating and economic evaluation of numerous oil shale and coal pyrolysis, combustion and gasification processes; hydrocarbon recovery and upgrading technologies for oil shale, coal, conventional petroleum and tar sands-derived liquids and gases; a petroleum coke gasification-combined cycle cogeneration process; and flue gas desulfurization processing options for a coke-fired refinery boiler. He evaluated the yields, cost estimates, and economics resulting from the pyrolysis of numerous coals and lignites, and developed the commercial process design basis, cost estimate and economics for several commercial coal pyrolysis and coal gasification/combined cycle cogeneration processes.

As Senior Process Engineer, Mr. Long was responsible for planning, organizing, and managing research and development, cost estimating and economic evaluation efforts for pyrolysis and gasification technology development utilizing oil shale, coal, scrap tire and tar sands feedstocks. He operated and optimized several pilot and bench-scale units involving fluidization, combustion, chemical reaction, and solids transport, and developed the design basis for oil shale and spent shale gasification and combustion processes. He also developed and evaluated improvements to the heat utilization efficiency and hydrocarbon emission control for the TOSCO II process.

Fluor Engineers and Constructors
Houston, Texas (July 1972 to July 1973)

Mr. Long was a Senior Process Engineer responsible for the process design, flow sheet preparation, equipment specification, and bid evaluation of a 30,000 BPD crude oil vacuum unit. He performed technology and cost analyses of heavy crude oil hydrodesulfurization processes, as well as evaluation of upgrading processing alternatives and synthetic natural gas processes.

Continental Oil Company
Ponca City, Oklahoma (May 1970 to July 1972)

As a Process Engineer, Mr. Long was responsible for producing final process designs for new and revamped refinery unit operations including several crude oil and vacuum distillation units, several hydro-desulfurization units, a catalytic cracking unit, a naphtha reforming unit, a butane isomerization unit, several gas treating units, and various refinery utilities facilities.

PUBLICATIONS AND SPEAKING ENGAGEMENTS

"Schedule and Delay Analysis Methodologies," with Andrew Avalon, P.E., P.S.P. and Ronald J. Rider, Long International, AACE International's Professional Practice Guide to Forensic Schedule Analysis, Chapter 11: Method Implementation Protocol – Modeled/Subtractive/Single Simulation, 2008.

"Evaluating Effects of Changes in Process Plant Design," *Hydrocarbon Processing*, December 2004.

"High-Tech Head Starts on Big Cases: Using Advanced Database Tools," *LEGAL TECH Newsletter*, March 2004.

"Cardinal Changes," with Andrew Avalon, *ABC Today*, May 2001.

"Constructive Changes," with Andrew Avalon, *ABC Today*, April 2001.

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"Quantum Meruit," with Andrew Avalon, *Central Florida AGC News*, November 2000.

"The Jury Verdict Method of Calculating Damages," with Andrew Avalon, *Central Florida AGC News*, October 2000.

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"Acts of God / Weather," with Andrew Avalon, *Building Central Florida*, August 2000.

"Quantification of Damages," with Andrew Avalon, *Central Florida AGC News*, August 2000.

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"Claims Mitigation During Construction," with Andrew Avalon, *Central Florida AGC News*, June 2000.

"Scheduling and Delay Analysis" and "Claims Prevention", Managing the Contractual Arrangements under a Typical EPC Contract, Trinidad, West Indies, October 1999.

"When a Traditional Construction Project Turns into an Environmental Project—What Do You Need to Know When Your Client Calls, Hypothetical Scenario and Video Animation," *American Bar Association Forum on the Construction Industry*, New York City, January 27, 1994.

"Delay and Disruption Damages," *Eleventh Annual Construction Superconference*, November 1991.

"Contract Schedule Preparation and Updating Provisions," *KC-News*, June 1991.

"How the Construction Attorney and Consultant Can and Should Work Together—Selection and Use of a Claims Consultant in Preparing or Defending a Construction Claim," *Fifth Annual Construction Litigation Superconference*, December 1990.

"Liquidated Damages," *KC-News*, December 1990.

"Calculation of Damages in Complex Construction Claims," *11th Annual Cost Engineering Congress*, Paris, France, April 1990.

"Damage Recovery Using the Modified Total Cost Method," *KC-News*, March 1990.

"Claims and Asbestos Abatement," *ECON: Environmental Contractor*, September 1989.

"Introduction to the Claims Process for Asbestos Abatement Projects," *National Asbestos Council Conference*, Anaheim, California, March 1989.

"Claims Investigation and Analysis," *Minnesota Institute of Legal Education*, January 1989.

"Preparation and Use of a Claim Document," *American Bar Association Forum on the Construction Industry*, Minneapolis, October 1988.

"Proof of Damages in Construction Claims," *AACE 32nd Annual Meeting*, New York, July 1988.

"Contract Documents: Lessons From Litigation," *Civil Engineering*, May 1988.

"Maintaining Control of Your Technical Documentation," *The Construction Specifier*, April 1988.

"Management Considerations for Resolving Construction Disputes," *Project Management Institute 1987 Seminar/Symposium*, October 7, 1987.

"Defective and Deficient Contract Document: Options for Mitigation," *KC-News*, October 1987.

"The Owner's Defenses Against Spearin," *KC-News*, October 1987.

"The Contractor and Defective Drawings and Specifications," *KC-News*, October 1987.

"Proof of Damages Supported by Integrated Cost and Schedule Control," *KC-News*, July 1987.

"Arming the Attorney With a Computer in Complex Litigation Cases," *The Colorado Lawyer*, October 1986.

"The Proposal as a Contract," *The Construction Specifier*, September 1986.

"Guidelines for Resolving Construction Contract Disputes," *Chemical Engineering*, August 18, 1986.

"Software Facilities Information Access," *The National Law Journal*, August 4, 1986.

"Computerized Litigation Support," *KC-News*, April 1986.

"The Importance of Project Documentation in Recovering Your Costs," *American Subcontractors Association*, Las Vegas, March 1986.

"Comprehensive Preparation of Documentation for Construction Contract Disputes," *The Colorado Lawyer*, January 1986.

"Construction Claims Require Thorough Analysis," *Legal Times*, March 4, 1985.

"Proving Construction Damages—Which Method To Use," *Colorado Engineer*, March 1985.

"Applicability of the UCC to Construction Contracts," *Construction Claims Monthly*, August 1984.