



## **ANDREW AVALON, P.E., P.S.P.**



Mr. Avalon is President of Long International and has nearly 30 years of engineering, construction management, and claims consulting experience. He is an expert in the preparation and evaluation of construction claims, insurance claims, schedule delay analysis, arbitration/ litigation support, and dispute resolution. He has prepared more than thirty CPM schedule analyses, written expert witness reports, and supported attorneys in depositions, cross-examinations, mediations and settlement negotiations. He has analyzed construction schedules for owners and contractors to determine the causes of construction delays and to equitably allocate responsibility for delay-related costs. He has developed "cause and effect" analyses and presentations for time extensions and delay damages. In addition, Mr. Avalon has published numerous articles on the subjects of CPM schedule delay analysis and entitlement issues affecting construction claims. Mr. Avalon is a registered

Professional Engineer with U.S. and international experience in petrochemical, oil refining, tar sands, gas-to-liquids, LNG, commercial, educational, medical, correctional facility, transportation, dam, wharf, wastewater treatment, coal, and nuclear power projects.

Mr. Avalon specializes in preparing detailed schedule analyses and apportioning responsibility for delays, disruption, and acceleration impacts. He is skilled at contract analysis, claims preparation, claims defense, and the negotiation of settlements. Mr. Avalon has served as a Project Manager on numerous claims ranging in size from US\$100,000 to over US\$1 billion. Before joining Long International, Mr. Avalon held construction management positions including Senior Scheduler, Contract Administrator, Project Manager, and Senior Consultant. In these roles, he had responsibility for preparation of project schedules, analysis of change orders, and resolution of construction claims.

### **EDUCATION**

B.S., Mechanical Engineering, Stanford University, 1984  
B.A., English, Stanford University, 1984

### **PROFESSIONAL REGISTRATIONS**

Registered Professional Engineer, Florida (No. 55137)  
Registered Professional Engineer, Colorado (No. 25802)  
Planning & Scheduling Professional (PSP-00193)

### **PROFESSIONAL AFFILIATIONS**

Florida Engineering Society  
National Society of Professional Engineers  
Project Management Institute, College of Scheduling  
Association for the Advancement of Cost Engineering International



## TECHNICAL EXPERIENCE

Representative U.S. and international technical experience includes:

- Construction claims preparation, analysis, defense, and negotiation of settlements on industrial, commercial, institutional, civil, and public works projects.
- Identification and systematic evaluation of major engineering and construction problems and their cause/effect relationship on cost and schedule overruns.
- Management performance assessments.
- Speaker and author of articles and training manuals on the subject of construction claims, CPM schedule analysis, and project management.
- CPM schedule analyses of the impacts of delays, disruption, acceleration and loss of labor productivity.
- CPM schedule development and monthly progress reporting.
- Contract/entitlement analysis.
- Direct and indirect damages assessments.
- Contract administration and change order preparation and management.
- Development of computerized database management systems.

## PROJECT EXPERIENCE

Mr. Avalon has served as a Project Manager on more than thirty claims ranging in size from \$100,000 to over \$1 billion. He 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:

### Petrochemical, Oil Refining and Power Plant Facilities

- Analysis of a \$200 million insurance claim for non-traditional coverages resulting from delays to the construction of a tar sands mine facility and upgrader unit in Alberta, Canada. Testified in deposition as a CPM scheduling expert witness in support of the ICC Arbitration in Canada.
- Analysis of various contractors' 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 assessing the integrity of the contractor's baseline and schedule updates, preparing alternative impact analysis of delays allegedly caused by scope changes, reviewing cost support for the change order amounts, and participating in negotiations to achieve settlement of the change order claims.
- Analysis of a \$150 million claim for schedule delays and disruptions during the construction of two Polyethylene Terephthalate (PET) plants in Argentina and The Netherlands. Prepared and answered interrogatory questions, prepared and answered document production requests, developed an Internet-based document repository database containing over 500,000 pages of project documentation. Attended fact witness depositions to support counsel. Prepared detailed expert reports in support of the ICC arbitration in New York City.



- 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 upgrading facility in Alberta, Canada. Prepared detailed CPM schedule analyses, wrote expert witness reports, assisted attorneys in cross-examination, and assisted expert witnesses prepare for testimony in support of the trial in Canada.
- Analysis of a \$500 million claim for business interruption losses resulting from fire damage to a tar sands mine facility in Alberta, Canada. Prepared detailed CPM schedule analyses and an expert witness report. Designated as a CPM expert witness in support of the ICC Arbitration in Canada.
- Analysis of a \$250 million claim for property damages resulting from fire damage to a fractionator tower at an upgrading facility in Alberta, Canada. Evaluated expediting costs in support of the insurance adjustment process.
- Analysis of delays to the construction of an LNG terminal in New Brunswick, Canada, on behalf of an insurance company. The marine cargo insurance claim was filed as a result of materials being lost overboard at sea in severe weather while being shipped to the site.
- Analysis of delays to the reconstruction of a natural gas plant in British Columbia, Canada, on behalf of insurance companies. The \$21 million business interruption claim was successfully settled after preparation of an expert report regarding schedule delays due to plant betterments.
- Analysis of shutdowns of an MTBE plant in Alberta, Canada and related loss of production claims. Prepared analyses regarding the causes of the shutdowns and an expert witness report.
- Analysis of EPC schedules for a \$1.7 billion 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.
- Evaluation of a piping module subcontractor's delay claim associated with a Gas to Liquids facility in Nigeria. Evaluated the integrity of the subcontractor's schedules and verified the impact of changes to the subcontractor's schedule. Participated with the EPC contractor and owner to achieve a settlement of the time extension and cost components of the subcontractor's claim.
- Evaluation of a civil subcontractor's delay claim regarding foundation and civil works associated with a Gas to Liquids facility in Nigeria. Evaluated the integrity of the subcontractor's schedules and verified the impact of changes to the subcontractor's schedule. Participated with the EPC contractor and owner to achieve a settlement of the time extension and cost components of the subcontractor's claim.
- Analysis of a \$50 million claim for schedule delays and disruptions during the construction of a new oil processing unit in Trinidad. Prepared detailed CPM schedule analyses and expert reports in preparation for Uncitral arbitration in London.
- Claims preparation, database development and negotiation support related to the design and construction of a \$450 million fertilizer plant in Iraq. Prepared detailed as-planned and as-built schedule comparisons that were used to successfully negotiate claims between the Japanese prime contractor, one Turkish and two Korean subcontractors.
- Preparation of a detailed CPM schedule analysis for a mechanical subcontractor's \$20 million claim on a \$790 million Delayed Coker Unit in Puerto La Cruz, Venezuela. Prepared document production requests, developed an Internet-based document repository database containing over 100,000 pages of project documentation. Prepared detailed briefs and was designated as a CPM scheduling expert witness in support of the ICC arbitration in Switzerland; however, the case settled before the hearing was conducted.
- Management audit of a contractor's \$75 million claim on an NC2 Ethylene Cracking Unit in Belgium. Performed a "cold eyes review" of the contractor's schedule delay analysis.
- Claims analysis in support of the owner's defense against a contractor's delay and acceleration claim on a \$160 million chemical plant facility in Terneuzen, The Netherlands.



- Data base development including coding over 100,000 documents to facilitate research and analysis for a prudency audit to evaluate the reasonableness of \$1.3 billion of start-up and commissioning cost overruns on a large nuclear power plant.
- Analysis of a \$200 million loss for property damage resulting from fire damage to electrostatic precipitators at a tar sands oil upgrading facility in Alberta, Canada. Prepared schedule analyses, wrote expert reports, and assisted loss adjusters and Underwriters with damages calculations.
- Analysis of EPC schedules for a \$2.7 billion LNG facility in Angola. Verified the schedule work scope against contract requirements. Evaluated schedule metrics, reviewed schedule logic, and assessed the reasonableness of the critical path.
- Analysis of a \$50 million loss for property damage and business interruption resulting from cracking to a reactor vessel at glycol facility in Alberta, Canada. Prepared deposition questions and assisted loss adjusters and counsel for Underwriters with cost and schedule analyses.
- Analysis of EPC schedules for an \$880 million coal-fired power plant in Arkansas. Evaluated schedule metrics, reviewed schedule logic, and assessed the reasonableness of the critical path.
- Assisted with the development of a Project Management Controls Unit for a natural gas company in Trinidad. Prepared written findings and recommendations for establishing a Project Management Controls Unit and developing a Project Management Methodology.
- On behalf of the Receiver in a bankruptcy proceeding, performed project management audits of a Gas-to-Liquids facility in Trinidad to assist with evaluating the outstanding engineering and construction scope, assess restructuring of the Project Management Team, and assist with the development of a Request for Proposal for the selection of a Project Management Contractor.
- Prepared CPM fragnets depicting schedule delays and analysis of productivity losses on a natural gas liquefaction project in Venezuela.
- On behalf of the owner, analyzed schedule delay claims by the prime contractor on an LNG facility being constructed in Angola.
- As a result of a potentially insured event, evaluated whether other causes of schedule delay to the construction of a nuclear power plant in Canada would have caused delay to the project.
- Reviewed CPM schedules submitted for arbitration to verify their authenticity for use in a delay analysis by opposing expert. Prepared examination questions for counsel to cross examine the opposing expert at arbitration regarding causes of delay to the reconstruction of a refinery in India that was damaged by a cyclone.
- Provided schedule quality assurance services regarding a Gas Supply Expansion Project in Nigeria. Evaluated schedule metrics and appropriateness of the critical path of the baseline schedule.

## **Industrial, Commercial, Educational, Medical and Correctional Facilities**

- Evaluation of delays and cost overruns on an insulation manufacturing facility in Alberta, Canada. Analysis of schedule and cost data in support of the owner's \$28 million counterclaim against the EPC contractor's \$20 million claim. Testified in deposition and arbitration hearings as a CPM scheduling expert witness.
- Peer-review of an audit of the EPCM and general contractor's cost records to identify potential billing discrepancies and problems on cost reimbursable contracts for a Calciner expansion project in Alberta, Canada.



- Preparation of a damage and schedule analysis on behalf of a general contractor for a \$560,000 claim on a new cafeteria building and dormitory renovation project at a youth detention facility in Okeechobee, Florida. Designated as a CPM scheduling expert witness for the jury trial and presented preliminary findings at the court ordered mediation which resulted in a successful settlement.
- Preparation of a baseline schedule for a classroom addition to an elementary school in Groveland, Florida.
- Analysis and review of delay claims submitted by the contractor due to soil contamination caused by underground gasoline tanks on a federal courthouse project in Minnesota.
- Preparation and analysis of detailed as-planned and as-built schedules to assist the owner defend against contractor claims on a university dormitory project in Riverside, California.
- Preparation of detailed as-planned and as-built schedule analyses on a \$45 million dispute involving two hospitals in Kuwait built by an Italian contractor.
- Analysis of detailed as-planned and as-built schedules for two state prison projects and on a city prison project in California.
- Preparation and analysis of detailed as-planned and as-built schedules for the mechanical contractor on a state prison project in Montana. Prepared schedule delay claims and participated in expert witness depositions.
- Evaluation of entitlement and preparation of damage analyses for the contractor for a main post office in Wyoming. Prepared financial analyses and wrote expert reports.
- Management advisory services for a concrete drilling and sawing contractor in Minnesota. Assisted contractor in transitioning to new cost accounting software.

### **Transportation Projects**

- Preparation of monthly progress reports and schedule updates for the preliminary engineering and final civil design of the \$600 million Central Florida Light Rail Transit System in Orlando, Florida. Developed detailed civil design, construction and systemwide interface schedules.
- Quality control and reasonableness review of a schedule delay analysis for a tunnel-boring contract on the Los Angeles metro subway project.
- Pricing and negotiation of change orders for the Bay Area Rapid Transit District on a \$65 million train control contract. Evaluated entitlement, prepared schedule analyses, wrote findings of fact, and negotiated change orders.
- Preparation of detailed as-planned and as-built schedule analyses for the contractor on a \$100 million airport expansion project in California.
- Financial and schedule audits for the Los Angeles County Transportation Commission on light rail and metro subway projects. Reviewed project budgets, contractor schedules, construction manager monthly progress reports, and advised the County of potential cost overruns, schedule delays and reporting deficiencies.
- Preparation of detailed as-planned and as-built schedule analyses for the contractor on a highway construction project in Pennsylvania. Assisted the contractor to prepare a recovery schedule to mitigate construction delays caused by differing site conditions.
- Analysis of cost overruns associated with the construction of a heavy haul road in Alberta, Canada.



## Dams, Wharfs and Wastewater Treatment Projects

- Preparation of a schedule delay analysis for an underground piping subcontractor in Florida. Designated as a CPM scheduling expert. Claim settled in negotiations after preparation of an expert report.
- Preparation of a preliminary damage analysis for an electrical subcontractor on the South Cross Bayou Water Reclamation Project in Pinellas County, Florida. Designated as an expert witness on the electrical subcontractor's loss of productivity and extended overhead damages. Claim settled in negotiations after preparation of an expert report.
- 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. Prepared detailed CPM schedule analyses and expert reports. The dispute was successfully resolved prior to the arbitration.
- Preparation of detailed as-planned and as-built schedule analyses for the contractor on an earth-filled dam project in New Mexico. Participated in negotiations between the contractor and the U.S. Bureau of Reclamation that resulted in a \$55 million settlement for the contractor.
- Preparation of detailed as-planned and as-built schedule analyses for the contractor on a dam in Alberta, Canada. Participated in negotiations between the contractor and the Province of Alberta.
- Preparation of entitlement and damage analyses for a hydroelectric pumped storage facility in South Carolina. Performed financial analyses and wrote expert reports.
- Evaluation of entitlements and preparation of claim analyses for the contractor for a U.S. Coast Guard wharf at the Port of Los Angeles. Analyzed entitlement issues and wrote expert reports.
- Peer review of an analysis of a contractor's right to recover damages for delay to early completion on an Activated Sludge Facility sanitation project in California.

## PROFESSIONAL EXPERIENCE

### **Long International, Inc.**

*Orlando, Florida (July 1999 to Present)*

As President of Long International, Mr. Avalon provides CPM scheduling, claims management, and dispute resolution services to the construction industry. He specializes in preparing detailed schedule analyses and apportioning responsibility for delays, disruption, and acceleration impacts. He is skilled at contract analysis, claims preparation, claims defense, and the negotiation of settlements. He has analyzed construction schedules for owners and contractors to determine the causes of construction delays and to equitably allocate responsibility for delay-related costs. He has developed "cause and effect" analyses and presentations for time extensions and delay damages.

### **Pacific Project Management, Inc.**

*Orlando, Florida (April 1998 to July 1999)*

As a Project Manager, Mr. Avalon served as the Senior Scheduler for the preliminary engineering and final civil design of the Central Florida Light Rail Transit System. He developed detailed civil design schedules, construction schedules and systemwide interface schedules, supervised cost engineering functions, participated in weekly project management meetings and schedule interface meetings, and prepared monthly cost and schedule progress reports.

**West Engineers and Associates, Inc.***San Francisco, California (May 1996 to April 1998)*

As a Project Manager, Mr. Avalon served as a Contract Administrator for the Bay Area Rapid Transit District on a \$65 million Train Control contract for three BART extensions. He evaluated entitlement of contractor claims, prepared schedule analyses, wrote findings of fact and negotiated change orders. Mr. Avalon received a Letter of Commendation from BART's Transit System Development Executive Manager for his significant contribution to bringing to fruition five new Stations and 26 miles of track.

**International Leadership Associates***San Rafael, California (September 1991 to May 1996)*

As President, Mr. Avalon prepared detailed CPM schedule analyses, wrote expert witness reports, supported attorneys in cross-examination, and participated in settlement negotiations on large construction disputes. The largest of these projects involved the analysis of a \$100 million claim for property damage and \$1 billion in business interruption losses resulting from fire damage to a synthetic crude oil refinery in Alberta, Canada.

**Kellogg Corporation***Littleton, Colorado (November 1986 to September 1991)*

As a Senior Consultant, Mr. Avalon prepared and evaluated claims for contractors and owners on major construction projects. He analyzed construction schedules for owners and contractors to determine the causes of construction delays and to equitably allocate responsibility for delay-related costs. He developed "cause and effect" analyses and presentations for time extensions and delay damages. He evaluated the adequacy of construction budgets on major public works projects to allow sufficient contingency for changed conditions, delays and other unforeseen events and reviewed public works expenditures for compliance with federal financing requirements. He also developed document databases, some including over 100,000 documents, to facilitate the research and analysis of construction claims and to prepare for litigation, arbitration or mediation.

**General Electric Company***Denver, Colorado (May 1984 to April 1986)*

As a Sales Engineer, Mr. Avalon sold electrical distribution equipment including switchgear, transformers and motor control centers for residential and commercial construction projects. He graduated from GE's Technical Marketing Program in 1985 and achieved 149% of a \$1.8 million annual budget in the first quarter of 1986.

**PUBLICATIONS AND SPEAKING ENGAGEMENTS**

"The New Modeled, Subtractive, Multiple Base MIP 3.9 Forensic Schedule Analysis Protocol," AACE International Annual Meeting, Seattle, June 2009.

"Forensic Schedule Analysis, Recommended Practice No. 29R-03, Method Implementation Protocol 3.9: Modeled, Subtractive, Multiple-Base Schedule Analysis," AACE International Annual Meeting, Claims and Dispute Resolution Committee, Toronto, June 2008.

"Schedule and Delay Analysis Methodologies," with Richard J. Long, P.E. 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.

"Schedule Delay Analysis Methodologies," Construction SuperConference, with Richard Long, P.E. and Ron Rider, San Francisco, December 2007.



“Retrospective As-Built Schedule Development,” with Dr. Anamaria Popescu, AACE International, June 2005.

“Schedule and Delay Analysis Methodologies,” with Dr. Anamaria Popescu, Lorman Education Services Seminar on “Construction Claims Detection, Prevention and Schedule Analysis in Texas,” Houston, TX, February 2005.

“Cardinal Changes,” with Richard J. Long, *ABC Today*, May 2001.

“Constructive Changes,” with Richard J. Long, *ABC Today*, April 2001.

“Ownership of Float,” with Richard J. Long, *Central Florida AGC News*, April 2001.

“Differing Site Conditions,” with Richard J. Long, *Building Central Florida*, March 2001.

“The ‘No Damage for Delay’ Clause,” with Richard J. Long, *Central Florida AGC News*, March 2001.

“Specific Damages Analysis Method,” with Richard J. Long, *Central Florida AGC News*, February 2001.

“Delay Claims,” with Richard J. Long, *Building Central Florida*, January 2001.

“Modified Total Cost Claims,” with Richard J. Long, *Central Florida AGC News*, January 2001.

“Defective and Deficient Contract Documents,” with Richard J. Long, *Building Central Florida*, December 2000.

“Estimating Construction Claim Damages Using A/B Estimate and Delta Estimate Methods,” with Richard J. Long, *Central Florida AGC News*, December 2000.

“Quantum Meruit,” with Richard J. Long, *Central Florida AGC News*, November 2000.

“The Jury Verdict Method of Calculating Damages,” with Richard J. Long, *Central Florida AGC News*, October 2000.

“Total Cost Claims,” with Richard J. Long, *Central Florida AGC News*, September 2000.

“Acts of God / Weather,” with Richard J. Long, *Building Central Florida*, August 2000.

“Quantification of Damages,” with Richard J. Long, *Central Florida AGC News*, August 2000.

“Directed and Constructive Acceleration,” with Richard J. Long, *Building Central Florida*, July 2000.

“Apportioning Concurrent Delays,” with Richard J. Long, *Central Florida AGC News*, July 2000.

“Construction Claim Types,” with Richard J. Long, *Building Central Florida*, June 2000.

“Claims Mitigation During Construction,” with Richard J. Long, *Central Florida AGC News*, June 2000.

“Review and Approval of Detailed As-Planned Schedules,” with Richard J. Long, *Central Florida AGC News*, May 2000.

“Schedule Analysis: A Dispute Resolution Tool,” Bay Area Primavera User Group, San Francisco, CA, August 1997.

“Claims Analysis Using P3 and Expedition,” with John Stack of Primavera Systems, Inc., Project Management Institute, Reno, NV, February 1995.

“Evaluating Claims Using P3 and Expedition,” with Ted Stolarczyk and Jim Coyle of Primavera Systems, Inc., Primavera Systems User Conference, Philadelphia, PA, September 1994.

“What Works in American Industry and What Doesn’t,” Facilitator for satellite broadcast by Peter Drucker, San Francisco, CA, November 1992.



- “Claims Forum, Mock Arbitration,” Primavera Systems User Conference, Philadelphia, PA, August 1991.
- “Evaluating Responsibility for Schedule Delays,” Nordnet International Project Management Conference, Trondheim, Norway, June 1991.
- “Profitable Claims Management,” California CPA Society, Construction Industry Conference, Anaheim and San Francisco, CA, May 1991.
- “Resolving and Preventing Construction Claims,” A one-day seminar sponsored by Kellogg Corporation, Dallas, TX, March 1991.
- “Schedule Analysis: A Dispute Resolution Tool,” *KC-News*, December 1990.
- “Quantifying and Evaluating Schedule Delays,” Primavera Systems User Conference, Philadelphia, PA, September 1990.
- “When is the Total Cost Approach Valid for Damages?” *CFMA Building Profits*, March/April 1990.
- “Constructive Change - An Unwritten Bill of Rights for Contractors,” *Construction Digest*, March 1990.
- “When Fairness is not Enough,” Editorial, *KC-News*, September 1989.
- “Maladministration, As It Affects the Professional Roof Consultant,” Roof Consultants Institute National Convention, Washington, D.C., March 1989.
- “Maladministration - When the Owner’s Actions or Inactions Interfere,” *Walker’s Estimating and Construction Journal*, Spring 1989.
- “Contract Clauses and the Project Schedule,” with Herbert D. Casner, *KC-News*, October 1988.
- “Document Discovery in Construction Litigation,” *KC-News*, December 1987.
- “Perspectives on Construction-Related Cases,” *KC-News*, October 1987.