Construction Claims Analysis Checklist

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1. INTRODUCTION

The preparation and analysis of claims on engineering, procurement, and construction (EPC) projects can be a complex undertaking. Multiple engineering, construction, project management, and construction management experts and legal professionals may be required to either prepare or defend against claims, depending on the nature of the issues that comprise the claim. The types of claims and counterclaims that may arise during EPC projects are also diverse, and can include, but are not limited to, one or more of the following:

- Delay claims, both by the contractor for extended overhead costs and by the owner for liquidated or actual damages
- Disruption/Loss of Productivity claims
- Acceleration claims
- Differing Site Conditions claims
- Changes in Scope claims, including Cardinal Change claims
- Constructive Changes claims
- Defective and Deficient Contract Documents claims
- Termination/Suspension claims
- Variation in Quantities claims
- Gross Negligence/Willful Misconduct claims
- Lost Profits claims
- Misrepresentation claims
- Defective Work claims
- Failure to Perform to a Standard of Care claims
- Bad Weather claims
- Impossibility of Performance claims
- Unjust Enrichment claims
- Superior Knowledge claims
- Breaches of Implied Warranties claims

This article sets forth the basic information and tasks in performing a claims analysis, whether one is preparing a claim or defending against one. The scope, tasks, and level of detail of the analysis, however, is dependent on the settlement objectives (change order negotiation, negotiated settlement of a formal claim, mediation, or expert report for arbitration or litigation), as well as the monetary risk involved, *i.e.*, the cost of the claims analysis and preparation/defense must be cost effective compared to the value of the claim. Therefore, not all of the following tasks may be appropriate, justified, or necessary. Although this list is extensive, it is not meant to be all-inclusive, and depending on the specific claim issues and the schedule and quantum analyses utilized, other tasks may be appropriate.

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2. IDENTIFY AND ANALYZE DOCUMENTATION FOR CLAIM ISSUES

1. Determine if the project documentation is reasonably organized and if a document database will be required. If the documentation is not well organized or too voluminous to review efficiently, a document database with OCR text recognition, keyword, issue, author, recipient, date, and other search fields may be necessary.

2. Obtain and review the contract terms and conditions, change management procedure, cost and schedule control procedures, and other contract documents that may affect the analysis of the claims.

3. Identify the law which governs the contract. Seek legal guidance for any contractual issues that will govern the analysis and dispute resolution based on the governing law.

4. Obtain and review the owner's Request for Proposal, the contractor's Proposal, and any documentation related to the development and understanding of the contract terms and the contractual scope of work.

5. Identify daily reports, diaries, correspondence, emails and other contemporaneous communications that may contain information regarding the claim issues.

6. Review any documents setting forth the contractor's claim(s) and the owner's counterclaims. Identify and describe the nature of the claims and problems incurred or alleged.

7. Interview project personnel to understand major problems encountered and the relevant documentation related to those problems.

8. Prepare issue files that contain information related to each problem and claim issue.

9. Prepare a chronological history of events related to each claim and problem.

10. Identify work areas of the project or parts of the facility affected by the claims and problems.

11. Identify change orders (approved, disputed, or pending) that have been submitted by the contractor. Identify notice letters related to change orders or other alleged impacting events.

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12. Obtain and review the RFI log and RFI files if prepared during the project, or logs and documents related to other project mechanisms used to contemporaneously record potential impacts, such as Design Change Notices (DCNs).

13. Identify any actions or problems caused by the contractor or its subcontractors, vendors, and suppliers which may have contributed to the delays, man-hour overruns, and cost overruns incurred by the contractor.

14. Identify if construction means and methods changed because of the claims and problems.

15. Identify any hindrances or interferences to the contractor's work that were caused by actions/inactions of the owner or his agent(s).

16. Identify any owner-furnished information, equipment, materials, or other items that were delivered late or were defective which may have caused delays.

17. Identify any design or specification problems (errors, ambiguities, etc.) that may have caused or contributed to the claims and problems.

18. Perform a technical assessment of any engineering, specification, construction means and methods, or other technical issues to determine the contractor's entitlement to delay and additional costs.

19. Perform an assessment of the project and construction management performance of the owner and contractor. Use a standard of care, such as that identified in the contract, or industry standards such as the Project Management Institute (PMI), Construction Industry Institute (CII), AACE International, American Petroleum Institute (API), Associated General Contractors (AGC), Construction Management Association of America (CMAA), or others to determine responsibility for any mismanagement issues.

20. Evaluate any problems that may be associated with gross negligence or willful misconduct. Obtain guidance from legal counsel on these issues.

21. Identify any "specific information on matters of substance" that may have been withheld by the owner that, if provided, would have affected contractor's bid price.

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22. If differing site conditions are being alleged, obtain all available soils reports and descriptions of site surface and underground conditions that were provided by the owner in the bid package and contract documents. Also, obtain all reports of the actual site surface and underground conditions.

23. If weather-related delay claims are being alleged, obtain all reports relating to weather conditions from the project record and from the closest weather station to the project site.

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3. CLAIMS ANALYSIS RELATED TO SCHEDULE DELAY

1. Obtain all native electronic files for the baseline schedule, any rebaseline schedules, and periodic schedule updates.

2. Determine if the schedules contain logic errors or missing logic, or are governed by an unusually high number of constraints.

3. Determine if the contractor's as-planned schedule (sequences, durations, scope) was reasonable. Confirm that the as-planned schedule included the entirety of the originally contracted scope of work.

4. Identify specific requests for time extension sent to the owner and actual time extensions granted by the owner due to delays caused by approved change orders, and time extensions that are associated with pending change orders or other problems, such as *force majeure* events, suspensions, etc.

5. Identify any attempts to accelerate the work as a result of the problems encountered. Determine if the contractor was directed to accelerate or if constructive acceleration has occurred.

6. Determine if the contractor planned to complete the project work early. Determine how this early completion date was determined and how it was communicated to the owner.

7. Determine if the as-built start and finish dates for the schedule activities are accurate.

8. Identify the relevant milestones and/or time periods that must be analyzed. In some projects, for example, liquidated damages are assessed based on the delays to interim project milestones and not just project completion. Additionally, a contractor's time-related costs may be highly variable during the lifespan of a project, *e.g.*, high during the construction phase but much lower during the engineering phase.

9. Determine the appropriate retrospective schedule delay analysis method(s) that need to be performed based on the delay-related issues being alleged. Refer to AACE International's Recommended Practice 29R-03, Forensic Schedule Analysis, for selection of the most appropriate method(s).

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10. Determine if the schedule analysis should employ an assessment of delays during specific time periods (*i.e.*, windows), such as between monthly schedule updates.

11. If appropriate and necessary, correct the schedules (logic, dates, durations, etc.) before performing a retrospective delay analysis, depending on the schedule delay analysis method(s) being performed.

12. For certain schedule analysis methodologies, prepare activity duration and relationship variance tables to quantify start and duration delays to schedule activities. These variance tables may need to be calculated for each of the various time periods being analyzed.

13. Apportion delays to the activities identified in the duration and relationship variance tables. Determine responsibility for delays using the Claim Issue analyses (Section 2 above) already performed, and seeking guidance from legal counsel and/or technical experts if appropriate.

14. Further analyze any large delays identified in the variance tables that are not explained by the Claim Issue analyses.

15. Identify the planned and actual start dates, milestone and final completion dates, and activity durations for activities associated with the problems, as well as activities on the critical and near-critical paths.

16. Determine if the as-planned and as-built critical paths are different for each period of the analysis.

17. Identify specific critical and near-critical activities that were delayed and/or impacted by the problems encountered.

18. Determine if the work affected by the problems was (i) on the as-planned critical path, or (ii) on the statused critical path at the time the problem occurred.

19. Determine if there were other delays that occurred before or after the problems that may be related to or were caused by the problems, *i.e.*, dependent concurrent delays.

20. Identify any independent concurrent delays specific to the time frame of each problem.

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21. Determine if the work was performed out of sequence as compared to the as-planned schedule.

22. Determine if there are any compensable delays associated with differing site conditions, suspensions, work being delayed into bad weather periods, or other claim issues for which time extensions have not been requested and granted.

23. For certain schedule analysis methodologies, prepare schedule delay fragnets based on the identification of the various delays (from Claim Issues analysis described in Section 2 above), and identify the existing schedule activities that were impacted. A fragnet is a group of schedule activities inserted into a schedule that model delaying events.

24. Use an appropriate retrospective schedule analysis, such as a Time Impact or Update Impact Analysis, to determine if the contractor is entitled to a time extension.

25. Use an appropriate retrospective schedule analysis that considers concurrent delays, such as an As-Built But-For Analysis, to determine if the contractor is entitled to compensable delay time and costs.

26. Use an appropriate retrospective schedule analysis to determine if the contractor accelerated the work, and use the results of this analysis to allocate acceleration costs that have not already been paid through change orders.

27. Use an appropriate retrospective schedule analysis to determine if the owner is entitled to liquidated or actual delay damages.

28. Prepare narratives with supporting documentation that describe the information utilized, the problems encountered, the analyses performed, and the results of the schedule calculations and results.

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4. CLAIMS ANALYSIS RELATED TO QUANTITIES, MAN-HOURS, AND COSTS

1. Obtain and review the contractor's bid and bid estimate calculations and assumptions, including productivity, material quantities, labor rates, contingency, field and home office overhead amounts, and profit.

2. Determine if the bid was reasonable, or if there could have been an underbid or bid error.

3. Obtain and review the contractor's budget and revised budget information, including quantity, man-hour, and cost data and underlying assumptions, noting any differences from the bid estimate.

4. Obtain and review the contractor's actual quantity, man-hour and costs data.

5. Determine the extent to which the contractor coded its additional man-hours and costs to discrete change-related cost codes, *i.e.*, did the contractor segregate its additional work and its base scope work?

6. Obtain and evaluate the contractor's Work Breakdown Structure (WBS) coding and/or cost account structure. Evaluate the level of detail to determine if (disruption) claims can be assessed by discipline, work area, timeframe, etc. Confirm that the same coding structure was used for budgeted and actual man-hours and costs.

7. Obtain and evaluate the approved, pending, and disputed change orders on the project. To the extent possible, determine the material quantities, man-hours, and costs included in the changes (which may be difficult in respect to negotiated, lump sum change orders). Determine if the approved change orders included field and home office overhead costs.

8. Determine if accord and satisfaction was reached in the approved change orders. Are claims being sought for problems that have already been resolved? Did the contractor reserve its rights to assert additional claims?

9. Prepare a quantity variance analysis by material type or detailed WBS/cost account to determine which types of materials had significant variances when planned and actual quantities are compared, including consideration for any approved or pending change orders. Determine the extent to which quantity overruns affected labor man-hours and costs.

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10. Prepare a man-hour variance analysis, comparing budgeted and actual man-hours at the most detailed level of the information available, including consideration for any approved or pending change orders.

11. Prepare a cost variance analysis, comparing budgeted and actual costs at the most detailed level of the information available, including consideration for any approved or pending change orders.

12. In preparing a claim, utilize the variance analyses to: (i) identify and claim discretely coded additional work; (ii) identify accounts with overruns that are claimable; (iii) identify accounts with overruns that are not claimable; (iv) identify escalation costs to labor, materials, or equipment, based upon comparisons between budgeted and actual rates; (v) quantify the claimed amounts for certain cost accounts when a Total Cost or Modified Total Cost Approach is used; and (vi) demonstrate that the claimed costs are reasonable, by showing the claimed amounts as compared to the variances or losses.

13. In defending against a claim, utilize variance analyses to: (i) identify potential underbid or bid error; (ii) demonstrate that claims are being improperly asserted for accounts in which no man-hour or cost overrun was experienced; (iii) demonstrate that the entirety of the man-hour or cost overrun for a given account is being claimed improperly because of demonstrable contractor-responsible problems; and (iv) identify contractor-responsible issues (*e.g.*, material quantity growth from its budget) that may be used to demonstrate incorrect claim amounts.

14. Related to claims for additional work: (i) confirm contemporaneous estimates included in the change order documentation; (ii) evaluate and confirm additional costs using invoices and/or labor man-hours and costs from discrete change-related accounts; or (iii) alternatively, when better data is not available, estimate the extent of the additional work.

15. Prepare disruption or loss of productivity claim, which is often the largest component of a contractor's claim. To the extent possible, compare the planned working conditions with the less-productive actual working conditions for discrete and measurable scopes of work, provide the causes of the changed conditions, and quantify the resulting loss of productivity.

16. Obtain if available contemporaneous data with respect to labor man-hours incurred and quantities installed by time (week or month). In preparing a disruption claim, utilize such time-series data to demonstrate productivity losses in discrete periods or show work stoppages or out-of-sequence work.

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Alternatively, in defending against a claim, determine if the timing and the magnitude of the claimed man-hours aligns with the alleged impacting events.

17. If appropriate man-hour and installed quantity data is available over the duration of the project, and if there are relatively un-impacted periods of work, perform a measured mile analysis to determine the loss of productivity man-hours that may be associated with the alleged impacts.

18. Alternatively, utilize various industry studies to estimate the loss of productivity man-hours associated with impacting events, such as:

    - Overtime
    - Stacked trades/congestion
    - Weather impacts
    - Out-of-sequence work
    - Cumulative impact due to multiple change orders
    - Other productivity impacts

19. Determine if management staff or overhead costs increased as a result of disruption, so that such discrete costs could be claimed as part of a disruption claims (rather than as part of a delay claim).

20. Determine if the contractor expended additional costs for acceleration and if the owner has paid for any acceleration costs.

21. Determine if the change orders resulting from the alleged problems included impact or loss of productivity costs.

22. Related to prolongation or delay claims, quantify the contractor's average time-related field overhead costs by day, week, or month. Use the results of the schedule analysis for compensable delay to quantify the contractor's delay damages. As noted above, the contractor's overhead costs may change substantially over the course of the project, and more than one period may have to be considered.

23. Determine if there any specific home office overhead man-hour and costs that can be tied directly to the delays. Consider the use of the Eichleay or other overhead cost allocation formulae to calculate the compensable home office overhead delay costs.

24. Determine what construction equipment was used for work relating to the problems. Obtain and analyze the type, duration, and costs associated with

construction equipment ownership/rental costs during the period of delay. Using the delay analysis results, apportion construction equipment delay costs that were caused by the owner and caused by the contractor.

25. Using the man-hour and cost variance analysis, identify any labor, materials, or installed equipment escalation costs compared to the bid estimate for labor, materials, or installed equipment due to delays caused by problems.

26. Update the man-hour and cost variance analyses to include approved and pending change orders, contractor-caused problems, delays, and other claim issues to determine if the amount being claimed at the cost account level is reasonable. Ensure that the man-hours and costs associated with any claims for which the contractor may be entitled fit into the man-hour and cost variance matrices such that the claimed man-hours and costs do not exceed the difference between the current contract value and the actual man-hours and costs when contractor-caused problems are accounted for in the variances.

27. Calculate the reasonable claim value associated with unresolved suspension or termination claims.

28. Calculate the reasonable value of any lost profits claims.

29. Calculate the reasonable value of any misrepresentation claims.

30. Calculate the reasonable value of any claims associated with a failure to perform to a standard of care claim.

31. Calculate the reasonable value of any Impossibility of Performance claims.

32. Calculate the reasonable value of any Unjust Enrichment claims.

33. Calculate the reasonable value of any superior knowledge claims.

34. Calculate the reasonable value of any breaches of Implied Warranties claims.

35. Calculate the reasonable value of the contractor's claim and the owner's counter claim against the contractor.

36. Prepare cause-effect matrices that connect the root causes of the problems to intermediate causes and then to the ultimate effects and costs.

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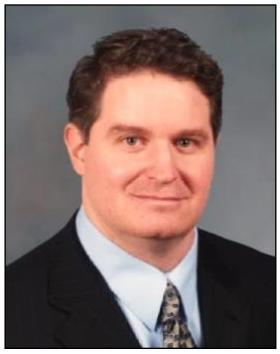
37. Prepare narratives with supporting documentation that describe the information utilized, the problems encountered, the analyses performed, and the results of the damages calculations.

About the Authors

Richard J. Long, P.E., P.Eng., *is Founder of Long International, Inc. Mr. Long has over 50 years of U.S. and international engineering, construction, and management consulting experience involving construction contract disputes analysis and resolution, arbitration and litigation support and expert testimony, project management, engineering and construction management, cost and schedule control, and process engineering. As an internationally recognized expert in the analysis and resolution of complex construction disputes for over 35 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, and claims prevention. Mr. Long earned a B.S. in Chemical Engineering from the University of Pittsburgh in 1970 and an M.S. in Chemical and Petroleum Refining Engineering from the Colorado School of Mines in 1974. Mr. Long is based in Littleton, Colorado and can be contacted at rlong@long-intl.com and (303) 972-2443.*



Rod C. Carter, CCP, PSP, *is President of Long International, Inc. He has over 20 years of experience in construction project controls, contract disputes and resolution, mediation/arbitration support, and litigation support for expert testimony. He has experience in entitlement, schedule, and damages analyses on over 30 construction disputes ranging in value from US$100,000 to US$7 billion, related to oil and gas, heavy civil, nuclear, environmental, chemical, power, industrial, commercial, and residential construction projects. He is proficient in the use of Primavera Project Planner software and has extensive experience in assessing the schedule impact of RFIs, change orders, and other events to engineering and construction works. Mr. Carter specializes in loss of productivity, cumulative impact, and quantum calculations, and has held a lead role in assessing damages on more than a dozen major disputes. In addition, Mr. Carter has developed cost and schedule risk analysis models using Monte Carlo simulations to address the uncertainty of estimates and claims. He has testified as an expert in construction scheduling and damages and has presented expert findings to an international arbitral tribunal. Mr. Carter earned a B.S. in Civil Engineering from the University of Colorado at Boulder in 1996, with an emphasis in Structural Engineering and Construction Management. Mr. Carter is based in Littleton, Colorado, and can be contacted at rcarter@long-intl.com and (303) 463-5587.*