

Dredging in 3D — Delays, Damages and Disputes
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Abstract

Time is money — especially when applied to dredging operations, because so many elements of cost are time-dependent including management, engineering, supervision, labor, and equipment.

Dredging projects also carry the risk of potential problems due to unforeseen subaqueous conditions and unusually severe weather, both of which may seriously impact the time — and therefore the costs — of performance.

When dredging is delayed, disputes often arise between the contract parties as to their responsibilities for the delay and its impact on the completion date and cost of the project.

Presented herein are the viewpoints of an engineer, an accountant and an attorney — all of whom specialize in the analysis and resolution of contract disputes — on some of the key factors involved in solving the problems of delays, damages, and disputes on international dredging projects.

Delays

Introduction: Dredging delays can be extremely costly, yet the causes of delay and the responsibilities of the parties are often difficult to determine. As a result,

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contractual disputes over delay are common.

To resolve disputes over delay, it is often necessary to analyze the specific events which caused delay; the impacts on operations; the contractual duties of the parties; the magnitude of delay to activities and the overall project; and any concurrency of delay. A comprehensive analysis including these elements is required to provide the necessary foundation for determining legal and financial responsibilities.

In dredging and other forms of construction, uncertainty is everpresent. It is impossible to forecast with precision all of the circumstances or events which can affect project cost and duration. The uncertainty associated with dredging stems from two basic facts — each job is unique, and the actual conditions of performance are not known until implementation. Each job is unique because it can differ from other projects in many of the following aspects of performance:

- Contract terms,
- Location and physical character,
- Weather conditions,
- Subsurface soil, rock and water conditions,
- Time of performance,
- Phasing of design, construction and use,
- Costs and availability of material, labor and equipment,
- Construction methods,
- Availability of resources—labor, equipment and materials,
- Organizations and personnel—owners, designers, contractors and users,
- Economic conditions and degree of competition,
- Equipment systems.

Of course, many of these features will affect the cost and time of construction and each job must therefore be designed, planned, estimated and managed with special care and attention. Even when the initial design, planning, estimating and management are excellent, a project can still run into trouble because of the unforeseen — for example, unanticipated difficulties due to access, soil conditions, weather, changes in design, and labor or equipment availability, all of which must be solved during performance. And often, the process of resolving these and other problems leaves the parties in contention over answers to the questions — who's responsible for delay? Who pays? How much?

Let's look at some important aspects of delay analysis and evaluation.

Delay Analysis: Delay is essentially a measure of the timing of an operation, compared with its timing on the planned schedule. The initial focus in a delay

analysis must therefore be given to the schedule itself. Obviously an analysis of delays will be more probative if the original "baseline" schedule were logical, well-thought-out, complete, and sufficiently detailed to accurately reflect the nature of the planned project.

It is generally accepted that the optimum form of scheduling for construction is the Critical Path Method (CPM) — largely because it can be used to clearly show the interdependence between the various activities and project completion. As a result, the CPM schedule will indicate the effect of an activity delay on the completion of the overall project, with one important proviso — if the projected future activities actually occur as scheduled. In other words, if the actual sequence and durations of future activities are in accordance with schedule assumptions, then the CPM will accurately predict the delayed completion date. Of course, if the operations, their sequence and durations are different in reality from those scheduled, then simply impacting the schedule with a delay will not accurately predict the eventual completion date. This is a major point to be considered in delay analysis — the schedule, and the analysis, are only as good as the assumptions made regarding operations, durations and logic.

Analyses which use theoretical schedules to demonstrate project delays are often challenged for proof that their "would-have" assumptions are valid, in light of facts and circumstances of actual project performance. Many courts and boards adjudicating disputes over delay have rejected theoretical-type delay analyses because they have failed to meet that challenge.

The following recommended five-step approach to delay analysis relies heavily on the actual facts of project performance for the identification and apportionment of responsibility for delays. Its basis is the documented project record including the checklist of items listed below:

Project Records Checklist

- Bidding Information
- Contract Documents
- Production Records
- Cost Reports
- RFI's
- Change Orders
- Correspondence
- Schedules
- Job Meeting Minutes
- Revised Drawings & Specifications
- Submittals/Approvals
- Field Orders
- Force Account Records
- Payment Requests & Certificates
- Photographs & Video Recordings
- Claims and Claim Notices
- Daily Reports & Diaries
- Contracting Officers' Decisions
- Project Organizations
- Test and Inspection Reports
- Punch Lists
- As-built Drawings

Step 1: Detailed research into the project records to create a schedule of actual "as-built" performance comprising the original contract work; change orders; extra work; submittal and review of shop drawings; offsite fabrication of key equipment and materials; performance problems; claimed issues; and requests for and issuance of design information.

Step 2: Identification of the critical path or paths through the as-built construction performance schedule which reflects the actual sequence and durations of activities, periods of no work, and design and construction restraints imposed by the owner, contractor, and other parties.

Step 3: Preparation of the "as-planned" schedule displayed, for ease of comparison, in the same time-scale and format as the as-built schedule. The original project schedule may require adjustment to correct absolute errors — in logic or computer programming — and to include contractually required work, if omitted from the schedule.

Step 4: A comparative study of the as-planned and the as-built schedules is then performed to identify and quantify delays and determine whether they were critical to project completion, and to identify concurrency.

Step 5: To develop an opinion on disputes over time extensions and the responsibility for and compensability of delays and, particularly, over acceleration, it is often helpful to analyze the status and schedule of construction at major chronological milestones. This includes comparison of actual versus scheduled performance; investigation into and evaluation of delays incurred prior to that date; and a determination of the effect of those delays on the scheduled completion date.

The results of the delay analysis are often best presented by graphical means in addition to a written report. The McDonough Bolyard Peck Schedulegraph® is a graphic summary of the delay analysis which displays the as-planned critical path; the as-built critical path; critical delays and their dates of occurrence; responsibility and magnitude; acceleration (where applicable); and a summary breakdown of total delay apportioned to the contract parties, to unusually severe weather and to non-contract parties.

The following comments are made with specific reference to delay analysis on dredging contracts:

- Since accurate documentation is the key to analysis, care should be taken to memorialize all of the major assumptions made in the original schedule, e.g., the mobilization effort; number and types of equipment planned and why; production

analysis rates and planned downtime and their bases in past projects; access; delivery of owner information or materials; soil boring information used (contract and supplemental); anticipated weather effect on operations and the source of data used to establish severity and frequency; and the planning of on-shore construction and operations.

- Reflect sufficient detail to fully describe all the key contract work — yet provide a time-scale graphic network plot which can be readily followed, on its own, without the use of a magnifying glass or reference to the computer reports.
- Partner the scheduling effort — get a consensus between the parties on the dredging and other operations early in the contract, so it is a true baseline plan.
- Monitor, update and revise the schedule when it becomes non-representative of the actual work operations and/or sequence.
- Maintain an as-built schedule, perform delay analyses contemporaneously, and work hard to negotiate delay time and money in change orders to the contract. If unable to agree, document the positions and move-on.

Damages for Delay

For any construction contractor, the calculation and presentation of damages relating to delays or other events occurring on a project are heavily dependent upon the contractor's accounting system. For a dredging contractor, given the risks associated with the size of projects entered into, as well as the investment that is typical for large dredging projects, the job cost accounting system becomes even more critical. Dredging contractors are normally fairly sophisticated in terms of the number of cost codes which are established on a project, and the different types of information which are tracked. It is very common on a dredging project for cost codes to be established which indicate not only the type of activity being performed, but also the location of the work and the production rates being realized with the dredges and pipe being employed in that area.

Given the fact that dredging companies are normally accustomed to establishing very discrete cost accounts, it is advisable, when in a delay or claim situation, to set up and track costs with as great a degree of detail as possible relating to the events or location of the project which may be subject at a later date to a differing site conditions claim or some other type of damages request for contract adjustment. Obviously, any additional contemporaneous documentation which is maintained (e.g., daily reports, diaries, pictures, etc.) and which is more expansive in terms of description and extent of impact, should also

be as detailed as possible. It is much easier to document and describe conditions when they are happening than it is to go back at a later date and attempt to recreate the situation.

In terms of generally proving damages, most dredging contracts include fairly detailed unit prices which are used for billing purposes and, in many circumstances, for changed conditions. The contract, as always, is the starting point for the determination of how additional monies will be paid to a dredging contractor for extra materials removed or delays encountered. In situations where the contract does not have unit prices relating to an alleged scope of work which is beyond the contract, or specific contract payment terms for time under a rental contract approach, the costing information introduced above becomes critical.

In dredging contract disputes, as with many other construction disputes, one of the areas that is particularly troublesome is in the calculation of actual equipment costs relating to a project. For a dredging contractor, this is often more troublesome than it is for other construction contractors, because the equipment being employed on the project is often specially built, and comparable hourly, daily, or monthly rate information is not normally available through published sources. For this reason, it is advisable, if possible, to negotiate actual hourly or daily rates for major pieces of equipment and plant at the time of contract signing, and include them in the contract. From an owner's perspective, this exercise must be viewed very critically, as a possible inflated rate in the contract, when it is later applied to significant delays or extra work, can often yield very large sums, and possibly result in a windfall to the dredging contractor if not properly handled in the contract. As an example, very often rates will be established in a contract for extra work, but the issue of delay damages if equipment is sitting idle are still left to later negotiation between the parties.

From an internal costing standpoint, it is advisable to establish some type of standard cost or usage rates to be applied for various pieces of equipment and pipe being used on a project. For a dredging contractor, this issue becomes a little more complicated, because hourly or daily rates for equipment and pipe are influenced greatly by the type of material being removed. For this reason, it is not unusual to see standard costs established which are, as an example, higher for pipe wear. The typical range of costs can be developed from past project activities, and, as with any unit cost, must be adjusted periodically to reflect actual experience so that the integrity of the rates is maintained and their usage and applicability in a claim or litigation situation can be supported.

Special problems also come up in the equipment area for dredging contractors if rates are not established in the contract because the piece of equipment may have been specially built for the project. In these situations,

detailed study of the special dredging plant employed on the contract is often necessary to determine a reasonable costing approach in a delay or extra work situation. Issues such as cost of money (i.e., interest), replacement cost, major overhaul treatment, and the impact on residual value of the equipment due to the passage of time, often create areas of dispute which are not very easily resolved because of the diversity of opinion on these costing matters.

Other areas of damages which are often troublesome are home office overhead, field general conditions (i.e., general expenses or field overhead), and productivity losses. Each of these issues is sometimes difficult to prove and, depending upon the circumstances of the particular project, requires various types of support and analysis in order to defend the position. Care must be taken, for instance, in the area of home office overhead which is unabsorbed as a result of a delay to a project, to make sure that documentation can be provided as to the dedication of the home office and the company to this project; not merely because billings are being made on a monthly basis, but also that the project level supervisory and project management teams are still significantly involved in monitoring and supervising events on the job, and that major equipment is still located at the site and ready for usage when the delay or impact event is over.

For field office overhead and general expenses, it is, of course, appropriate to remove any expenses which are not being extended as a result of the delay (i.e., one-time expenses) from daily rates being claimed for delays. In addition, a long enough period of time should be selected for calculation of the daily rate so as to not distort the daily rate with any costs that are being incurred in a specific period, but which benefit the entire project or a longer period of time.

Finally, in the area of lost productivity, care should be taken to try to analyze projects or periods of time where productivity was normal and not impacted by the events in the project. The application of labor inefficiency percentages from publications or studies, although helpful, is often found wanting by triers of fact if information was, in fact, available from other periods of time on the project or other projects which would have better supported the contention and calculation of labor or other cost inefficiencies on the project in question.

Disputes Resolution through Litigation or ADR

Disputes have always been a part of construction projects. The increasing cost of dispute resolution, the time needed to resolve disputes through traditional methods such as litigation and arbitration, and the negative impact of the process on the relationships among the parties have increased the scrutiny devoted to this aspect of construction. As a result of the increased attention, the construction

industry is attempting to identify alternatives to the traditional methods of resolving disputes in an effort to refocus the attention of the parties on completing the project and preserving good business relationships. This section of the paper addresses the topics of disputes, and dispute avoidance and resolution.

The primary topics to be discussed are partnering, dispute review boards, mediation, arbitration, mini-trials, and litigation. Some of these alternative dispute resolution methods are exclusive of one another, while others may be used in combination. All of them tend to be driven by the owner/prime contractor relationship. Since dredging contractors may find themselves as specialty subcontractors on a major project, dredgers are not always able to influence the method of dispute resolution that is selected. In such a situation, the dredger should determine whether to make dispute resolution an important negotiation issue.

The concept of partnering is the most recent arrival on the ADR stage. Although being touted as a new concept, in fact, partnering is really a desire by parties to return to the old-fashioned business relationship where the parties trusted each other to behave fairly rather than seeking every advantage over the other. One of the most prominent construction industry organizations advocating the use of partnering is the Associated General Contractors of America ("AGC"), which has fostered the development of partnering throughout the United States. The Corps of Engineers is one major customer of dredging services which has endorsed partnering.

The partnering concept typically employs a separate partnering agreement. It can be used on a project by project basis, or on a long term basis covering a series of projects. In either situation, a partnering agreement identifies party representatives responsible for tackling issues as soon as they arise in an attempt to negotiate them before they become disputes.

Even if the parties elect to enter into a partnering agreement, they should consider including the forms of dispute resolution to be used in the event that issues arise which cannot be negotiated. Unless other means of dispute resolution are provided for in the contract for construction, the only form of dispute resolution available will be litigation.

Another new concept for resolving disputes is the Disputes Review Board. It has been used successfully on a number of major projects, particularly in the western states of the United States. A Disputes Review Board is set up by the parties after the execution of the construction contract. The board usually consists of three members selected and approved by both of the parties, owner and contractor. The members of the board should be experts familiar with the

type of construction provided for in the contract. When an issue arises during the course of construction, the members of the board are summoned to the site, and review the problem in the field. Then each party presents its side to the board. The board then promptly renders its decision on liability and, if requested to do so, on damages (additional costs). The parties are not necessarily bound to follow the decision of the board, but an incentive to follow that decision is usually provided for in the contract — that the decision of the board will be admissible in evidence in any subsequent arbitration or litigation related to the issue. Since the use of a Disputes Review Board requires three experts paid by the parties, boards are usually limited to large projects.

Mediation is a process of formal negotiation involving a neutral third party. To be successful the parties must be genuinely willing to negotiate the dispute in good faith. A neutral third party, the mediator, facilitates the negotiation by removing some of the parties' emotional involvement in the case. A mediator is expected to look at both sides of each issue dispassionately.

Mediation has the advantage of being completed quickly with relatively low cost. The proceeding is conducted privately. The American Arbitration Association, among other organizations, sanctions mediation and provides mediation rules and a place for mediation, all for a relatively small fee.

Mediation has some disadvantages, the greatest of which is that it frequently is not binding. If one party is dissatisfied with the result, he can ignore it, demand arbitration or file suit.

The most well established method of ADR in the construction industry is arbitration. Like mediation, arbitration provides a method for both sides of the dispute to present their evidence and arguments to neutral third parties. Unlike mediation, the award is usually binding upon the parties. Also, that award can be converted quickly to an enforceable judgment by the courts, giving the successful party a means to enforce the award.

Arbitration can usually be conducted on a much faster schedule than litigation, and for that reason alone it is usually less expensive than litigation. Also, discovery in arbitration is limited, and that also reduces legal costs. An important point to remember, however, is that the parties must provide in writing for arbitration. Without an agreement to arbitrate, most arbitral bodies will not consider a request to arbitrate. Also, without an agreement to arbitrate, one party can file suit which will foreclose any opportunity to arbitrate.

Arbitration is still the most frequently used method of dispute resolution on international construction contracts. In an international setting, arbitration

avoids the potential that the local courts in the country in which the project is located will favor its own national to the prejudice of the other parties to the contract. Many countries have their own arbitration bodies to sanction arbitrations in those countries. However, there are several truly international bodies which can provide more reliable freedom from prejudice. The best known of these international bodies are the United Nations Commission On International Trade Law located at The Hague, and the International Chamber of Commerce's World Court of Arbitration located in Paris. Both of these bodies are well respected around the world, and have well established procedures for monitoring the performance of arbitrators.

Finally, litigation remains the ultimate and most well known method of resolving disputes. Litigation has lost its appeal because of its high cost, and the long waits caused by clogged dockets. Litigation offers the advantage of full and complete discovery of the other side's case, which may be an advantage in establishing your own position. Also, it is the method of dispute resolution most likely to be based on an interpretation of the laws governing construction contracts. Litigation provides for winner takes all. Sometimes parties find an all or nothing solution more satisfactory than the compromise solutions frequently rendered in mediation and arbitration. In addition to the high cost, litigation has the disadvantage that the judges or juries hearing cases are not always familiar with the issues and technical information involved in the case. One step short of full litigation, especially in state and federal boards of contract appeals, is the mini-trial. A mini-trial allows the parties to present the essence of their cases to knowledgeable people, typically a senior representative from each side and a neutral third party. Each side then makes a presentation to this three-member panel and then, with the help of the neutral, the two principals attempt to negotiate a solution. This method has proven to be very successful in many cases.

Regardless of the method chosen, the resolution of disputes can be enhanced by keeping accurate records and presenting the information as fully and completely as possible. Dredging contractors have a peculiar advantage in this respect, because the nature of the dredging business requires maintaining large volumes of historical records which also are absolutely essential in proving the merits of delay, differing site conditions, and changed conditions claims. The more evidence that you can present in favor of your position, the more likely your position will be understood and favorably received. A credible presentation will go a long way to enhancing your likelihood of success.