



COST OVERRUN ACCOUNTS

THE INDEPENDENT ENGINEERING RECOMMENDATION

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Background

In its role as an independent engineer (IE) on behalf of various lenders, RPMGlobal is asked to perform pre-loan approval due diligence on mining projects in order to identify risks that might affect a borrower's/sponsor's ability to repay debt. Additionally, an IE is often asked to recommend the size of a cost overrun account. These accounts are typical requirements for companies without the corporate financial means to fully fund the completion of a project should it overrun its approved construction budget. Overrun accounts are not typically part of the core project financing package but are typically a requirement to obtain core project financing.

For a simple example of the need of an overrun account, take the case of a one-mine company budgeted to spend \$100 million on a project that has raised \$50 million in equity and \$50 million in debt financing. If the project overruns the \$100 million budget, the project needs to have a source of funding to reach completion. The recommended amount of additional funding lenders should require the sponsor to set aside in a cost overrun account is the topic of this paper. The overrun account is drawn upon if spending requirements so necessitate—it is the "last

CONTENTS

Background
Page 01

Markets
Page 02

Processing
Page 03

**Mineral Resource
Reporting**
Page 03

money in". It is not to be confused with project contingency as it is above and beyond that estimated amount.

Without an adequately sized overrun account, should project costs exceed the approved amount, technical default on the debt financing is likely triggered. Equity sources may be required to provide more funding, other unfavorable debt arrangements may have to be made, vendors payments may be missed, etc. Certain one-project companies have lost their majority ownership in a property as a result of cost overruns exceeding the overrun account size! jeopardizing the borrower's ability to ever pay back debt.

Overruns for mining projects have often averaged between 20% and 60% in the past 50 years. There have also been some famous cases of overrun's far exceeding this average. To address this problem, RPMGlobal has developed a process to help guide it in making the recommendation for a cost overrun facility size; it is a process that tries to clearly identify which aspects are vulnerable to overrun and why.

Some Definitions

- Contingency--an amount estimated in a project budget to cover known unknowns. It includes items whose quantities are not estimated since they are not significant, not possible, or not suitable for the intended accuracy of the estimate.
- Accuracy--the expected precision of the estimate or of a feature of it.
- Feasibility Study Level Accuracy = +/-15% (typical)²
- Expense--operating costs, assigned to the period in which they are incurred
- Capital Cost--a cost classification that is depreciated over time. Certain jurisdictions have rules for what costs can or must be capitalized. Capital Costs generally include costs to attain certain level of production (i.e. at certain phases of ramp-up).
- Capitalized Revenue--revenue generated, typically during ramp-up or capitalization period, that offsets capital cost. Capitalized Revenue is very price and production sensitive.
- Cost Overrun—can be from known project aspects or from unforeseen project aspects (unknown unknowns).
- Direct Construction costs—costs including the following:
 - Equipment
 - Construction material
 - Construction labor
 - Freight on equipment
- Indirect Construction costs—costs including the following:
 - Engineering
 - Procurement
 - Customs fees
 - Security during construction
 - Construction management
 - Project control
 - Construction equipment (e.g. crane rental) and vehicles
 - Construction camp services
 - Construction management temporary office facilities
 - Temporary utilities (power, water, trash removal)
 - Mobilization and demobilization
 - Project accounting
 - Pre-commissioning labor and materials (for items not included in Owner's cost)
 - Vendor assistance and commissioning
 - Commissioning spares
 - First fills
 - Capitalized spare parts
- Owner's cost—capital costs including the following up to the point at which these costs become operating expenses (for instance upon mechanical completion or upon 60% of nameplate capacity being achieved—timing is at the discretion of the owner):
 - Owners team to monitor a construction project
 - Administration costs not directly interfacing with project construction
 - Pre-production mining development costs, including the cost to develop the mine to a certain point and additional development if time allows
 - Health and safety costs
 - Mine equipment costs
 - Pre-commissioning labor and materials (for items not included in Indirect Construction costs)
 - Environmental evaluations
 - Legal costs
 - Travel costs
 - Permitting costs
 - Land acquisition costs
 - Operator training costs
 - Community and public relation costs
 - Power, water and fuel supply systems if not included in Direct and Indirect costs

- Other Costs:
 - Contingency
 - Escalation

Recent Publications on this Topic

This topic has received substantial recent attention. Most of this attention, however, has focused on the causes of overruns rather than estimating the size of an overrun account. At a CIM presentation in 2014, Christopher Haubrich found “Strong association between capital cost overruns and the following project characteristics”: hot commodity market, marginal economics and separate design and build teams. But he found “No association or weak association” with: project size, project location, primary commodity and project history (greenfield vs brownfield).³ In another CIM presentation by Chris Twigge-Molecey, some of the key problems identified were the result of: technical challenges, organizational challenges, environmental and social challenges and homework challenges. One of the key solutions identified was to have a strong project management by the owner and the EPCM contractor.⁴

Recently, E&MJ’s Simon Walker interviewed the heads of several large EPCM type engineering firms and found the key causes of overrun include: scarcity of resources, complexity, fast-track projects, scale of project, and poor owners’ teams. The key solutions identified for overrun include: clear scope, shared objectives, a sufficiently high budget, a longer schedule and realistic labor productivity estimates.⁵

RPMGlobal’s Dick Addison published a Pincock Perspectives article in September 2007 titled “See How They Run (Project Cost and Schedule Overruns)”. His key findings were that contributors to cost overruns include: pressure from owners, tight budgets and schedules that “pressurize” project management, lowballing the bid, and insufficient or lack of knowledge. The three key project risk factors he found to be (his “three blind mice”): remoteness, unconventionality, and earthwork. Dick summarized the cure as “make allowances”.

Terry P. McNulty has also published an excellent article about ramp-up successes and issues. McNulty broke startups into type curves designated as “Series 1 through Series 4” and noted many common themes in the delayed “Series 2, 3 and 4 startups” including aggressive attitudes, poor oversight, product price decreases, use of new technologies and engineering deficiencies. He cited many authors listing steps that should be taken for a project to be successful, to meet ramp up goals and avoid overruns.

Some Optional but not Fully Adequate Approaches

1. Just add 25%..

This one-size-fits-all approach approach has the advantage of avoiding discussions and of giving a recommendation in line with some recent historical average cost overruns. The

suggestion is likely to be rejected by the borrower/sponsor, out of hand, though.

2. Review of estimate procedures to assess if they are consistent with AACE (Association for the Advancement of Cost Engineering).

This review is typically performed by a 3rd party engineering group. It consists of reviewing the procedures followed by project estimators. It excludes a comparison of reviewer’s cost database, and it does not seek to quantify a potential recommended cost adjustment. For a small project (<\$200 million), this may take one person two to three weeks. The procedure is clearly a worthwhile exercise, although by design it does not encompass a review of certain items that have often led to significant cost overruns, such as the propensity for management to change scope, the probability of disruptive community protests, the impacts of a poor organization structure, the consequence of likely climate issues, etc.

3. Have 3rd party engineering company estimators perform a thorough review of the capital cost estimate.

This task is often performed for projects prior to seeking financing, particularly for mega-size projects. The 3rd party engineering reviews both the method of estimation and the cost database, comparing both to their knowledge-base. For a small project (<\$200 million), this exercise may take two people up to six weeks. It would take much longer for a mega-project. While clearly a worthwhile exercise, similar to the prior item, the review/conclusion does not consider some items that can lead to significant cost overruns.

Reported Cost Overruns —Beware of Headline Numbers

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