

**Accepted  
Standards and  
Emerging Trends  
in Over Target  
Baseline (OTB)  
Contracts**

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## **1 Abstract**

Over Target Baseline (OTB) projects or programs are those that have run significantly over cost and require formal reprogramming – essentially a complete replanning of the project – in order to help the contractor regain management control over the effort. The OTB process has been well documented and become an established part of Earned Value Management practice. Much of the literature-to-date has focused on OTBs from the contractor perspective, including the steps to take in order to propose and implement an OTB, and the proper channels and occasions for engaging the customer in the process. But effective OTB implementation is a two-way street. The customer also must take an active role in the OTB process, examining variables such as mission need, overall strategic objectives, and prevailing business conditions, when determining if a request for OTB reprogramming should be granted, or if there exist other potential alternatives to pursue. Recent research suggests that OTBs, as currently implemented, have little effect on subsequent project performance, so new questions and criteria for engaging OTBs are now beginning to emerge.

## 2 Introduction

There are many reasons why a project may run over budget, from unexpected increases in the cost of the resources that the project consumes to poor project performance by the contractor carrying out the work. Often, these cost or schedule overruns can either be made up elsewhere in the project or kept within reasonable and acceptable variances. Occasionally, however, the overruns can become so pervasive that the project has to be rebaselined to a cost exceeding that of the original contract price. This type of intervention is referred to as an Over Target Baseline (OTB), and represents a "fundamental reprogramming" of the contract. (Bemmers, et al., 2003) In such instances, the contractor submits a proposed OTB to the customer, and if accepted, the project receives an increase in funding sufficient to carry out the remaining work detailed in the original contract. According to the Department of Defense Earned Value Management Implementation Guide, an OTB "increases the performance budget without modifying the work scope or other constraints of the contract." (DCMA, 2006) Schedule overruns can be addressed through a process similar to OTB referred to as Over Target Schedule, or OTS. It is very common to have an OTS occur with an OTB.

The purpose of the OTB is to "improve managerial control over the execution of the remaining work in a project." (Bemmers, et al., 2003) An OTB represents a serious effort to get a program or project back under control when cost overruns have become so significant that there is no way in which the Contract Budget Base (CBB) can cover the remaining work to be done. This paper will cover a brief history of OTBs, review some of the salient terms used within the OTB process, summarize the OTB process, and contemplate project sponsor concerns when an OTB is sanctioned.

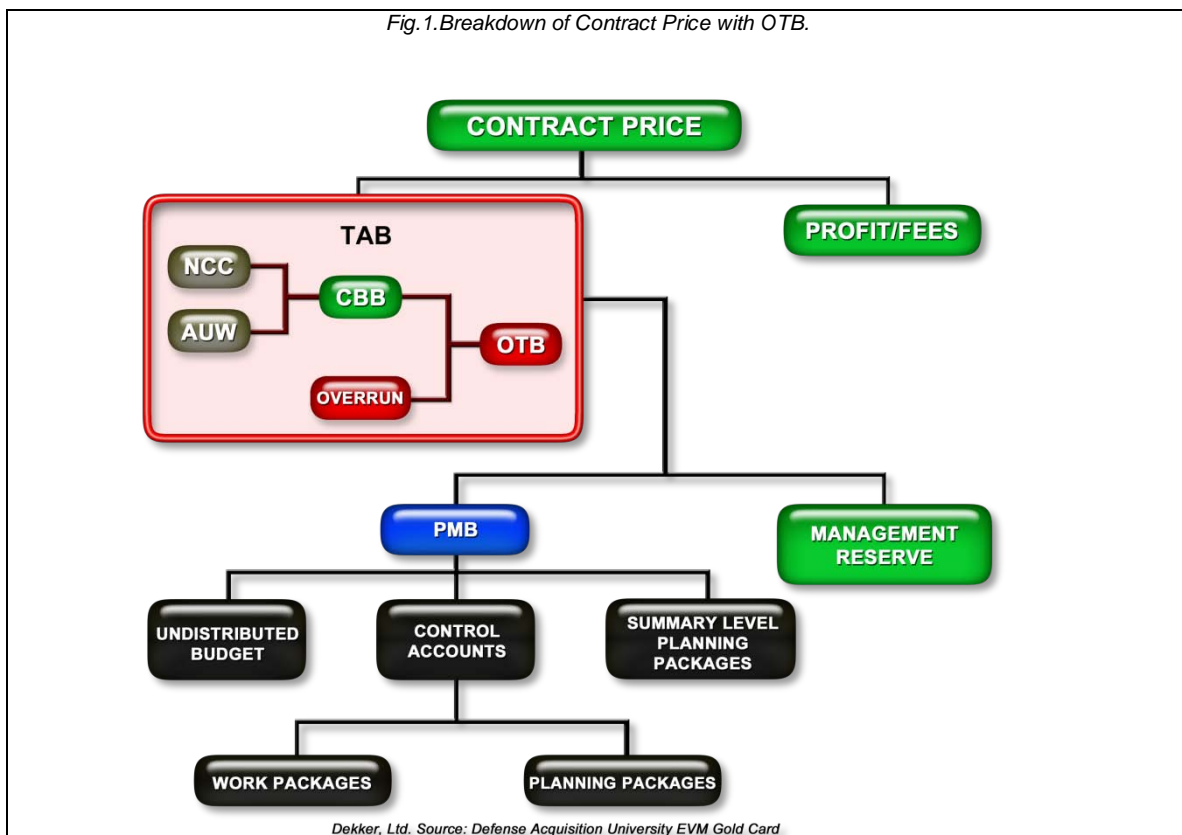
## 3 OTB History

The term OTB became integrated into the Earned Value Management discourse in the wake of highly publicized overruns on programs such as the Navy A-12 Avenger II stealth aircraft and the Air Force C-17 Globemaster III. In January 1991, then Secretary of Defense Dick Cheney terminated the A-12 program for significant cost and schedule overruns that, by one estimate, threatened to consume 70% of the Navy's total budget for aircraft (Mahnken, 2008). At about the same time, another McDonnell Douglas project, the Air Force C-17 military transport aircraft, incurred significant cost and schedule overruns. In that case, however, the DoD set standards the contractor had to meet to solve cost and schedule overruns, and the program was allowed to continue. (Evans, 1993) As in the case of the C-17, formally reprogramming a contract through an OTB

requires that the customer and contractor perform a rigorous cost/benefit analysis and thoroughly examine the remaining work to determine how to establish and move forward with a realistic baseline. The processes of OTB and OTS have evolved since the early 1990s when the customer and contractor mutually agreed to a condition in which the entire remaining work could no longer be accomplished under the current baseline.

## 4 Definitions

The Defense Acquisition University (DAU) includes OTB as part of its Earned Value Management Gold Card. (DAU, 2010)



Terminology and Acronyms		
Total Allocated Budget	TAB	Contract cost. At the beginning of a project, Total Allocated Budget is equal to the negotiated contract cost and contract budget baseline.
Negotiated Contract Costs	NCC	Contract price less profit/fees
Authorized Unpriced Work	AUW	Work contractually approved, but not yet negotiated/defined

Terminology and Acronyms		
Contract Budget Base	CBB	Sum of NCC and AUW
Over Target Baseline	OTB	Sum of CBB and recognized overrun
Profit/Fees		Fixed price contracts include a profit, whereas cost reimbursement contracts include a fee
Performance Measurement Baseline	PMB	Contract time-phased budget plan
Management Reserve	MR	Budget withheld by PM for unknowns/risk management
Undistributed Budget	UB	Broadly defined activities not yet distributed to CAs
Control Account	CA	Lowest WBS element assigned to a single focal point to plan and control scope / schedule / budget
Summary Level Planning Package	SLPP	Far-term activities not yet defined into CAs
Work Package	WP	Near-term, detail-planned activities within a CA
Planning Package	PP	Far-term CA activities not yet defined into WPs

Table 1. Source: Defense Acquisition University EVM Gold Card

Essential to the OTB process is the term *reprogramming*. Reprogramming represents more than simply increasing the budget for the project, but rather it is a fundamental re-assessment of the program or project. An OTB essentially reboots the project, and therefore merits the same careful consideration that launching the project in the first place required. As more research emerges concerning OTBs and their effectiveness, recommendations have been made that an OTB not be undertaken at all without a comprehensive cost/benefit analysis that examines the project risks afresh. (Jack, 2010) DAU makes a similar recommendation. (Bembers, et al., 2003)

What constitutes a project that has crossed the line beyond which its budget is "decidedly insufficient" (DCMA, 2006) to complete the contracted work? DAU suggests that an OTB may be warranted if the contract's Projected Growth exceeds 15%. (Bembers, et al., 2003) Projected Cost Growth represents the difference between estimated costs at completion vs. current actual costs and initial budget at completion vs. budgeted costs of work performed, then divided by the differences between budget at complete and current budgeted costs of work-to-date. This is expressed in the following equation:

$$\frac{(EAC - ACWP) - (BAC - BCWP)}{BAC - BCWP} = \% \text{ Projected Growth}$$

## 5 Process

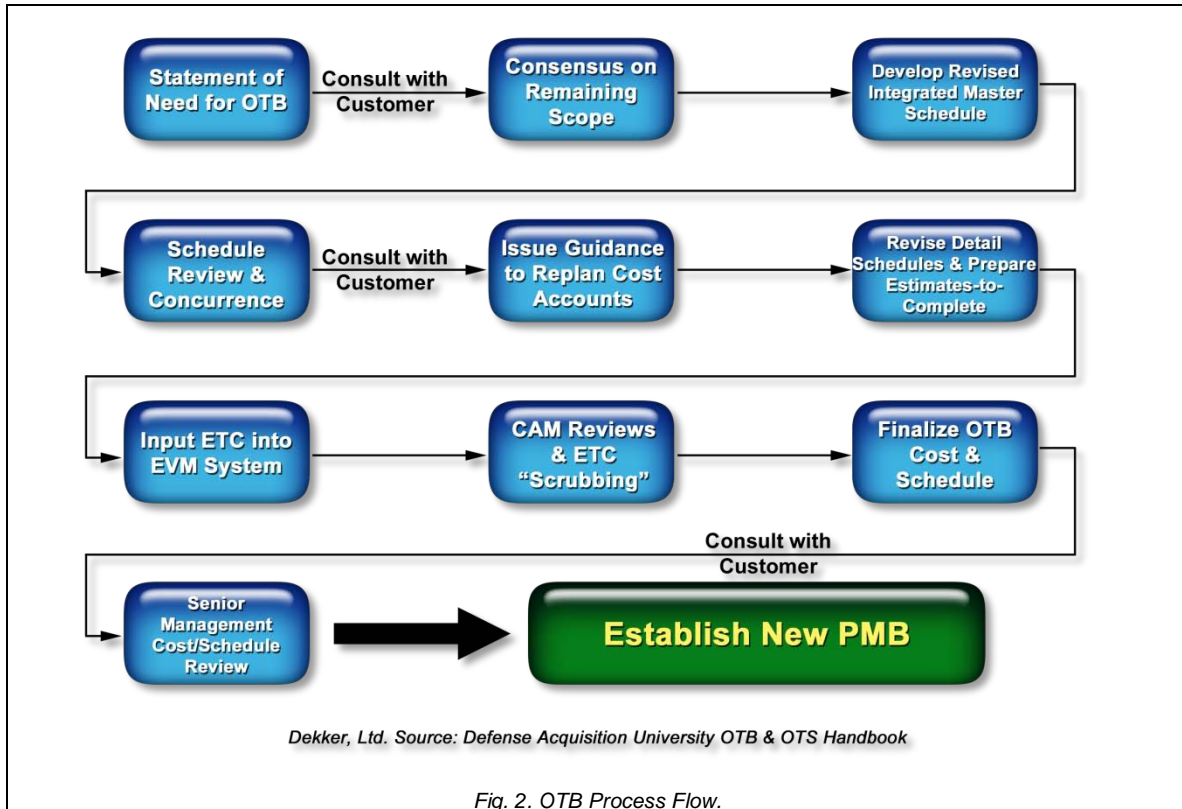
The OTB process has been well established in both the DAU *Over Target Baseline and Over Target Schedule Handbook* and the *DoD EVM Implementation Guide* published by DCMA. It has further been defined as "a bottoms-up, collaborative assessment of remaining work that is centered on risk analysis in which cost and schedule variances are typically removed and funding is added in excess of the original contract budget base." (Jack, 2010)

The OTB is initiated through bottoms-up communication from the contractor to the customer, initiated when the contractor "determines that the current baseline does not represent a realistic plan for accomplishing the remaining work and no longer serves as a basis for realistic measurement." (DCMA, 2006) This is not to say, however, that the decision to embark on an OTB is a decision that should be made unilaterally by the contractor or contractor PM. Open communication channels between the two entities are essential to long-term success of the project through the OTB process and once the new baseline has been implemented.

The DAU *Handbook* (2003) breaks the OTB process into 10 constituent steps (See Fig. 2) that begin with the contractor's decision to pursue formal reprogramming of the contract. This process begins with the contractor because the purpose of an OTB is to help the contractor regain control over and better manage ongoing work. The initial plan, including a statement of remaining scope and an analysis of the potential impact of the OTB on the contract should also be developed at this stage. Several regulations, including DoD 5000.2, ANSI/EIA 748-B, and the Defense Federal Acquisition Regulation Supplement (DFARS) stipulate that the customer must then be notified in writing of the plan to pursue an OTB. (Bembers, et al., 2003)

In establishing consensus on the remaining scope (See Fig. 2, below), OTBs most often seek to provide additional funding for the original, agreed-upon scope of the work to be done, and therefore the DAU observes that contract changes are not traditionally required. (Bembers, et al., 2003) Dekker recommends that a complete assessment of all aspects of the project be considered in an OTB process including contractual changes if necessary. In some cases, the review of the existing contract reveals a failure to clearly specify crucial areas of scope or performance, which has contributed to poor baseline adherence by the contractor. It is in these cases that customers often decide to edit or amend the contract to be more strict in the future, if an OTB is granted. These restrictions can be in the form of setting variance threshold limits, the breaches of which can be made to trigger subsequent evaluations of the contractor's performance.

It is important for a customer presented with a request for an OTB to recognize that the existing regulations and protocols on the OTB process are written largely from the contractor's perspective. The options and chief concerns of a customer facing the prospect of having to allocate millions or potentially billions of dollars to a project or program that has proposed reprogramming through an OTB are addressed only briefly throughout the literature. However, some of these concerns will be enumerated and discussed in the next section of this paper.



## 6 Business Conditions and the Customer Perspective

From a customer perspective, three questions loom large over the OTB process:

1. Once requested by the contractor, should an OTB be granted?
2. Should the customer consider other sources?
3. Should the program or project in fact be terminated?

General business conditions prevailing upon the customer come to bear in this decision-making process. There are numerous variables, and DAU (2003) provides a detailed list of questions that could be used as a check-off list of concerns (Bembers, et al., 2003, pp 8-10). The following concerns categorize the check-off list:

- Is the project outcome still aligned to the critical, strategic goals of the organization?
- Does the program still offer the competitive advantage it did when the contract was awarded?
- Has senior management's buy-in to the project or capability significantly eroded?
- Are there sufficient resources available to re-fund the revised Estimate-at-Complete?
- What internal and external risks are inherent to the OTB?

These questions can have just as significant an impact on the ultimate disposition of a contract as the contractor's performance. With the continued tightening of budgets and huge reductions in Federal spending, contracts that no longer serve a high-priority mission may present too high of an organizational cost to bear reprogramming.

Regardless of business conditions, however, customers cannot de-emphasize the role of contractor performance-to-date when assessing the relative merits of an OTB. An OTB must include an assessment of the contractor's performance-to-date, with a realistic evaluation of whether or not the project team in place can accomplish the necessary goals even after the OTB. Of the two defense programs cited above – the Navy A-12 and Air Force C-17 – one was ultimately canceled, and the other was threatened with cancelation unless the contractor took positive and concrete steps to reign in cost and schedule overruns. In both cases, these decisions had to be reached after billions of dollars had already been spent investing in these programs. These were painful, high-profile decisions that ultimately rested upon the customer's evaluation of how the contractor had performed on the contract, and reasonable expectations of how the contractor would manage the project in the future, if allowed to continue.

DAU recommends that customers assess not only the contractor's performance-to-date, which has resulted in the apparent need for an OTB, but also the contractor's "system discipline to maintain baseline integrity, as well as compliance with the intent of the industry guidelines and the contractor's EVM system." (Bemmers, et al., 2003) The contractor's system discipline is perhaps the most crucial evaluation the customer can make at this stage, as even the most carefully thought-out OTB will fail if its execution is poor. Put simply, if there is no reason to believe that the contractor will have any greater control over a new baseline than it has exerted over the existing one, the contractor's role in the continuation of the project must be addressed. If it no longer makes sense for the customer to move forward with the existing project team, the contract can be canceled, re-bid, or otherwise revisited.

If the customer makes the decision to proceed with an OTB, it must avoid the pitfall of looking only at the changes made by the OTB. Reprogramming a contract offers an opportunity to highlight new interpretations of established

procedures and move forward with a clean slate and the added benefit of the hindsight that comes from the past performance of the contract.

## 7 Recent OTB Findings

The practice of issuing OTBs has undergone close academic scrutiny recently, and new findings offer guidance to customers and contractors facing OTBs.

Regarding the formulation of a new Estimate-at-Complete (EAC) for contracts in need of reprogramming, Elizabeth Trahan (2009) explored the prospect of using nonlinear growth modeling versus traditional Earned Value Management indices to predict final contract costs. In her research, 63-79% of OTB projects examined were able to predict their final contract costs more accurately using these growth models than by using the traditional EVM Cost Performance Index (CPI) or Schedule Performance Index (SPI). Trahan cites numerous examples of traditional EVM metrics failing to accurately estimate project costs. These flawed estimates can lead to poor decision making that ultimately harms project performance. Trahan suggests that certain nonlinear regression models, provide "a more accurate EAC to that of the CPI and Composite Index methods on 71% of OTB contracts. This provides a much desired tool for these previously avoided and excluded specifically designated contracts." (Trahan, 2009) These models can both be used as predictors for EAC during the OTB process. Subsequent research seeking to apply these models to projects before an OTB is necessary; however, the models used by Trahan have not been successful in providing an early warning indicator to predict final costs before an OTB condition exists. (Thickstun, 2010)

While the DAU *Handbook* (2003) lists possible benefits of undertaking an OTB, the research of Jack and Thickstun independently suggest that whatever benefits may be possible from OTBs, they are only rarely realized in actual practice. Thickstun draws the conclusion that the implementation of OTBs in the Department of Defense appears to happen at random, meaning that only a portion of significantly over-budget projects submit to a formal OTBs. This results in significant difficulty in formally quantifying agency-wide cost overruns. She suggests, therefore, that there is no established and quantifiable benefit that can be drawn from the use of OTBs, since there are only limited grounds for any effective comparison. (Thickstun, 2010) In potentially the most damning assessment of OTB performance, Jack's research finds that OTBs produce no statistically significant effect on cumulative CPI slope. This means that even after the investment required to institute an OTB, the intervention "does not significantly improve management's ability to earn cost value." (Jack, 2010) While acknowledging the small data set available to his research inquiry, Jack writes that "OTB does not gain managerial cost control of remaining work with

respect to the cumulative CPI slope." (Jack, 2010) As this is the stated purpose of conducting an OTB in the first place, recent research seems to suggest an OTB may not be worth doing, barring extraordinary circumstances revealed by a new and thorough cost/benefit analysis. Jack goes so far as to suggest that the practice for formal OTBs be disallowed, barring significant cost/benefit evidence produced on an individual project basis.

## **8 Conclusion**

The OTB process has evolved over the past 20 years and is now acceptable under Earned Value Management doctrine. The process is centered around the contractor; however, the customer has the responsibility to review all business and strategic needs supporting a continuance of a major project. When an OTB becomes apparent, the customer should conduct a thorough project audit and review all attributes of a program; a complete cost benefit analysis is required. OTBs are expensive to conduct and must produce a greater sense of controlling scope, schedule and cost. The customer must have faith that the contractor can still perform the work, or that customer must consider alternative approaches if the program outcomes are still in line with corporate objectives. Both the contractor and customer must reevaluate the program and ensure that proper changes have been made in all aspects of the project to ensure expected performance. Recent studies suggest that failure to perform a complete audit increases the likelihood of not discovering opportunities that can mitigate a repeat of past performance. Both the customer and contractor must be prepared to review and change internal processes to prevent a return to the poor performance issues of the past that initially triggered the OTB intervention.

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