

# **EVMS Training Snippet Library: Management Reserve Versus Contingency and Budget Versus Funds**



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*Achieving Management and Operational Excellence*

This EVMS Training Snippet, sponsored by the Office of Acquisition and Project Management (OAPM) discusses the differences between Management Reserve and Contingency as well as the difference between Budget versus Funds as applied in DOE. The purpose is to provide a common understanding within DOE and among DOE contractors, and to provide consistency.

# PART 1



## Concept, Purpose, Uses

This Snippet is divided into two Parts. Part 1 is a discussion of Budget, Funds, Management Reserve, and Contingency concepts, purposes, and uses. Part 2 provides detailed scenarios of how normal project changes impact the performance measurement baseline, management reserve, projected variances at completion, and DOE contingency.

## Concept of Budget vs. Funds



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- **Budget cannot be spent.**
- **It is a metric used for measurement purposes.**



vs.



- **Funds are real dollars being spent and those real dollars forecasted to be spent.**

First we need to understand the concept of budget and funds. Budget cannot be spent. It is a metric that is used to formulate a baseline for measurement purposes. It is based on estimates. Think of it as a yard stick.

Funding consists of real dollars that are used to 'pay the bill' so to speak. Funds are obligated on a contract and spent to cover the actual costs incurred to complete a project.

## Relationship of MR and Contingency to Budget and Funds



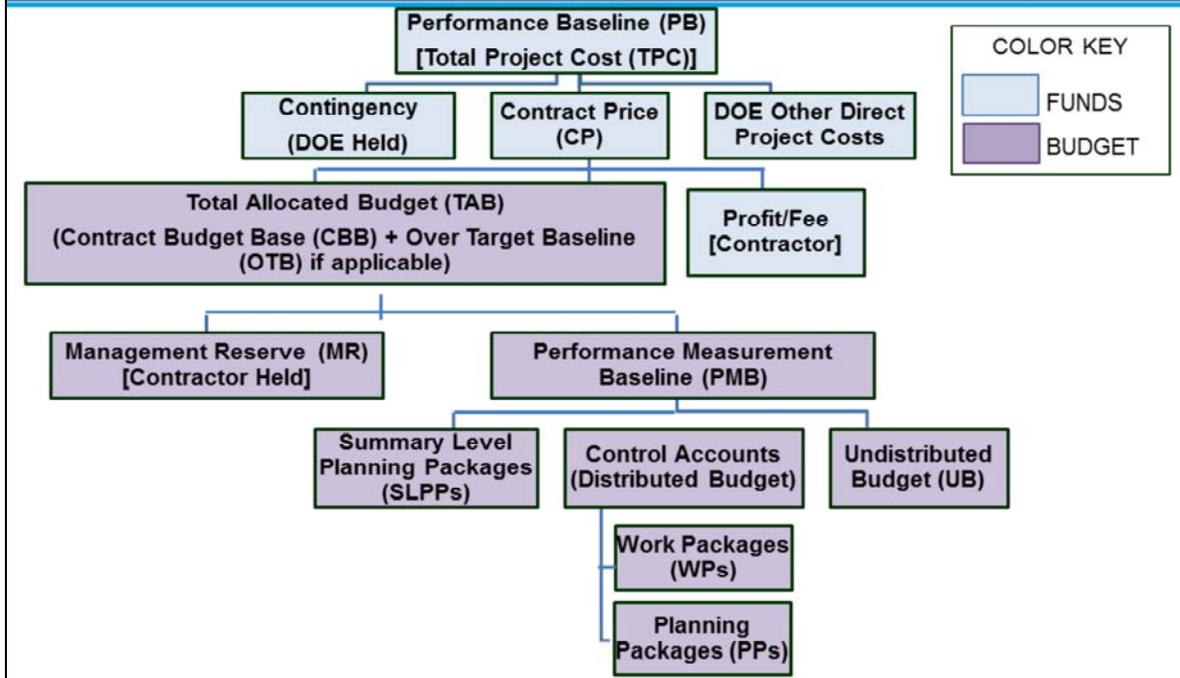
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- **Management Reserve is BUDGET**
  - Part of the Contract Budget Baseline and traces to the Performance Measurement Baseline when applied
- **Contingency is FUNDS**
  - Can be applied to FUND contractual changes, such as additional scope
  - Can be applied as FUNDS to pay the bill, i.e. cost reimbursement type overruns

Management Reserve relates directly to budget. The Management Reserve is within the Contract Budget Base and is applied to the Performance Measurement Baseline when authorized internal changes are made.

Contingency relates directly to funding. It may be applied to fund contractual changes within scope and it may be applied to pay the bill for overruns on Cost Reimbursement type contracts. DOE is responsible to reimburse the contractor for all allowable costs up to the cost and funding limits established in the contract in accordance with FAR Clause 52.232-18, Limitations of Cost, for any fully funded cost-reimbursement contracts and 52.232-22 Limitations of Funds clause, as applicable for incrementally funded cost reimbursement contract.

# Performance Baseline Components



The Performance Baseline Components chart is provided in the context of Budget versus Funds. Those elements in light blue represent funds and the elements in purple represent budget. Starting at the top, the Performance Baseline represents the Total Project Cost for DOE. This is broken down to three elements: DOE-held Contingency, the Contract Price issued to the contractor, and DOE-held reserves for Other Direct Project Costs. All of these elements, along with the Contractor's profit or fee are all associated with funds.

The budget related components begin with the Total Allocated Budget or TAB, which is based on the negotiated target cost for the effort under contract. The TAB equals the Contract Budget Base unless an Over Target Baseline has been approved.

The Contract Budget Base (CBB) is the level at which budget is managed by the contractor. The contractor first places the entire CBB in Undistributed Budget (UB), which is part of the performance measurement baseline (PMB). The UB budget is then allocated to the control accounts, based on the estimates to perform the scope, Summary Level Planning packages, and management reserve.

# Management Reserve (MR)



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- **Definition**

- An amount of the total contract or project budget set aside for management control purposes by the contractor

- **Purpose**

- For unexpected growth within the currently authorized work scope, rate changes, risk and opportunity handling, and other project unknowns
- Applied for future needs
- Cannot be used to offset accumulated overruns or under runs
- Cannot be eliminated from prices during subsequent negotiations or used to absorb the cost of project level scope changes, i.e. funding

Let's start with the definition of management reserve (MR). It is an amount of the total budget set aside by the contractor from the CBB for management control purposes. To estimate the amount to establish the MR, the PM may use a flat percentage across the board from all CAM estimates or base it on risks associated with each Control Account. The risk-based approach is most commonly used.

The purpose of management reserve is to have budget that can be applied due to unexpected growth within the currently authorized work scope, rate changes, risk handling, and other project unknowns. It is used to budget future internal needs but it may not be used to 'pad the future' to offset previously accumulated overruns or under runs. When the prime contractor is negotiating with the government customer, MR is typically not separately identified, and once it is identified, it cannot be eliminated from pricing during subsequent negotiations or used to absorb the cost of project level scope changes.

# Authorized Uses of MR



- **Examples include:**

- Previously unrecognized tasks or realized risks consistent with the general scope of work of the contract
- Change in execution strategy (e.g., make/buy decisions)
- Unexpected future internal scope growth within the currently authorized scope of the project
- Direct and indirect rate changes and currency fluctuations
- Risk and opportunity handling (not for cost or schedule variance based risks)
- Work that needs to be repeated (not the result of inaccurately reported progress)
- Changes to the future budget of work not yet started (e.g., subcontractor activities that are negotiated post project award)

Generally, MR can be used by the contractor's PM to plan or replan future effort not yet started for one or more of the following reasons:

It may be used for previously unrecognized tasks and identified risks that are consistent within the scope of work of the contract. All risks, unrealized and realized, are usually identified, quantified, and tracked through a risk register.

MR may be used for changes in execution strategy. An example would be a make or buy decision that is changed from the original baseline plan. This is an example of an assumption change that would be included in the approval documentation.

MR may be used for unexpected future internal scope growth within the currently authorized scope of the project,

MR may be used for changes in direct or indirect rates. Also included would be currency fluctuations.

MR may be used for risk and opportunity handling. However, allocating MR for Cost or Schedule Variance based risks is inappropriate.

MR may be used for work that needs to be repeated. It is not appropriate to be added as budget when the progress has been inaccurately reported.

MR may be used to change future budget for work not yet started. For example, the baseline may have been estimated prior to final negotiations of subcontractor work. MR

may be used to increase the budget associated with final negotiations; however, not if the effort has begun.

## MR Usage Criteria



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- **For new work not yet planned and future needs *not yet started*, meaning actuals have not been accrued**
- **No changes to open work packages without Government direction, i.e. directed change or an OTB**
- **Burden of proof is on the contractor to demonstrate it is an authorized use, and**
  - Applied beyond the freeze period, generally more than one month in the future; current period scope changes should be minimized and urgency of need must be documented
  - Not related to a current trend or cost variance

There are some criteria for applying MR budget. It should be for new work not yet planned and future needs not yet started, meaning actuals have not been accrued. Because replanning is limited to future (unopened) work packages, long work packages that stretch six months to a year into the future limit the contractor's flexibility to re-plan the effort. If that same long work package was identified into several shorter-span work packages, replanning would be allowable for those unopened ones existing in the future. So short-span work packages benefit the supplier by virtue of the additional flexibility they provide, and they benefit both the Government and the contractor by making performance measurement more easily calculable. If the Government approves re-planning of open work packages in the case of directed changes or an Over Target Baseline, the work package should be closed, setting BCWS equal to BCWP, preserving the ACWP. Then a new work package is opened to replan the remaining BCWS, and in the case of this discussion, incorporating a legitimate use of MR. The use of MR must be carefully identified to ensure it is being applied to future tasks and that the change in scope is documented.

The burden of proof is on the contractor to demonstrate that MR use is legitimate and meets the requirements of internal procedures.

MR should be applied beyond the planning freeze period identified in the contractor's system description; this is generally more than one month in the future. Current period scope changes should be minimized and any urgency of need must be documented. The use of MR should not be related to a current trend or a cost variance.

# MR Management and Control



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- **Management Reserve is the contractor's budget**
- **Contractor is responsible for management of MR throughout the life of the project**
- **Project Manager may or may not allocate MR based on the assessment of CAM impact and availability of MR remaining balance**
- **Applications must be documented and traceable**
- **Contingency cannot be used to replenish MR**
- **MR balance cannot be negative**

MR is the contractor's budget. It is the contractor's responsibility to manage MR wisely for the risks over the life of the project. Generally it is expected that MR will be used proportionally during the life of the project. Where the percentage of MR remaining varies significantly from the project percent complete, the project may be increasing the risk of overrun. An example is 20% of MR remaining and 50% completion of the project. This means that there is only 20% of the original MR budget to cover the risks in the last half of the project. Once MR is depleted, all new work within the project scope is captured as a variance and an increase to the EAC.

It is important to note that MR is never required to be allocated. MR allocation is subject to the PM's approval based on the CAM's definition of the requirement for new scope and any project impact, and whether any MR remains that is available for allocation.

It is important that MR be carefully controlled and monitored in formal records such as the MR and CBB Logs. These logs must be directly traceable to the CPR or IPMR with narrative explanations of MR use included in Format 5. The use of MR is indicative of a contractor's recognition and management of previously unknown internal tasks or risks.

DOE Contingency cannot be used to replenish MR. MR cannot be allocated beyond what exists; in other words, the balance cannot be negative.



- **What DOE will look for in EVM surveillance to ensure proper MR use**
  - Work package:
    - Changes apply to future tasks only, new work package/IMS tasks, or scope for a change at CA level
  - Planning Package and Summary Level Planning Package:
    - Change in assumption, scope, or basis of estimate
  - Rate changes including direct and indirect
- **Unauthorized uses will result in findings of noncompliance**

The DOE looks for proper usage and implementation of MR when conducting EVM surveillance as it often is an area of misuse or misunderstanding. At the work package level, changes are applied to future tasks only. These changes are incorporated into either replanned work packages or a new work package with all new tasks identified in the Integrated Master Schedule. When adding MR to open work packages, the preferred method is to close the work package to preserve the cost variance and replan the future, including the newly authorized scope. Changes are made beyond the freeze period (typically the current period plus one month) unless the urgency is well documented in the change documentation. Uses are in accordance with those previously mentioned, including scope changes at the Control Account level but within the scope of the project. These replanning actions are usually based on risk mitigation, realization or internal scope changes.

At the Planning Package and Summary Level planning package level, the surveillance team will look for changes in assumptions, scope, or basis of estimate. These are things that can show new work or changes in work being planned and/or changes to the basis of estimate.

Again, rate changes, either direct labor or indirect, are allowed as a basis for MR use. Illegitimate uses of MR to mask overruns, eliminate variances, manipulate data, and show acceptable indices will result in findings of noncompliance.



- **Contingency:**

- Owned by DOE
- Held outside the project scope, schedule and budget negotiated values, i.e. the Total Allocated Budget
- Held for:
  - **Funds** obligated by DOE to **ensure adequate funds are available** to pay for all project work
    - Tracks to the Estimate at Completion
    - Authorized overruns beyond the Contract Target Cost
    - Incremental FY funding
  - **Funds** authorized by DOE for **scope changes**, i.e. additions to the statement of work, authorized via contract modifications
    - Funding as part of the Contract Target Cost
    - Converted by the contractor to budget when added to the CBB

Now we will switch gears and discuss Funds and Contingency. Contingency, as used in this snippet, is a cost reserve owned by the customer, in this case the DOE. It is held outside the project scope, schedule, and budget that have already been provided to the contractor. On the performance baseline components chart recall that Contingency was shown above the Total Allocated Budget.

The contingency is the source for additional funding. DOE must ensure adequate funds are available to pay for all completed contractual work scope. It tracks to the estimate at completion, which represents the best estimate for the final cost of the project, plus profit, fees, and Other Direct Costs. Contingency funds are used to pay for overruns. DOE can also use the contingency as funding to increase the Contract Target Cost with budget and within-scope modifications to the current project statement of work. In this case, after receipt of the contract modification, the contractor adds the budget for the change to the Contract Budget Base.

# Contingency Examples



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- **Pay the bill**

- Project scope requirements
  - Original Statement of Work (SOW)
  - Changes and/or additions to the SOW
- Contractor overruns
  - SOW did not change; it just costs more than the contractor's estimate



Remember that the government has to have funding to pay the bill for the project scope requirements. The government also has to ensure that any changes or additional project scope have sufficient funding available. Should the contractor incur cost overruns, the contingency is available as funding to cover those allowable, actual costs.

# Consistent Approach Expected



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- **Non-M&O vs. M&O**

- Under a non-M&O contract, contingency is held by DOE outside the contract, thus requiring specific contract action to place and use on contract
- Under an M&O contract arrangement, all available funds, including contingency, may be available on contract, thus **NOT** requiring specific contract action to place on contract... **However DOE approval is required for contingency use**
  - Contingency must be held above the project level CBB
  - Specific controls must be established between DOE and M&O to prevent use of contingency until authorized by DOE
  - MR belongs to, and is managed and approved for use by the M&O PM

- **Common Understanding Internal to DOE**

- Among Site, PMSO, HQ Community
- Among Project Management and Contracting Community

The requirements of MR, contingency, budget, and funds must be consistently established and followed. The process is very similar whether the project is executed under either an M&O or non-M&O contract, even though significant differences may exist in contract funding mechanisms between M&O and non-M&O contracts.

For example, while under a non- M&O contract, contingency is held by DOE outside the contract and specific contract action must be taken to place and use contingency on contract, under an M&O contract arrangement, all available funds, including contingency, may be available on contract, thus NOT requiring specific contract action to place on contract. Nonetheless, specific, written DOE approval must still be obtained for any contingency use. Specifically, contingency must be held by the M&O above the project level CBB, and explicit controls must be established between DOE, M&O Management, and the project-level PM for use of any contingency.

The project level Project Managers are responsible for establishing and managing the MR. Approval for MR use outside the project PM is not required.

As stated previously, the purpose of this Snippet is to provide a common understanding and consistent approach for management reserve and contingency, both within DOE and among the DOE contractors.

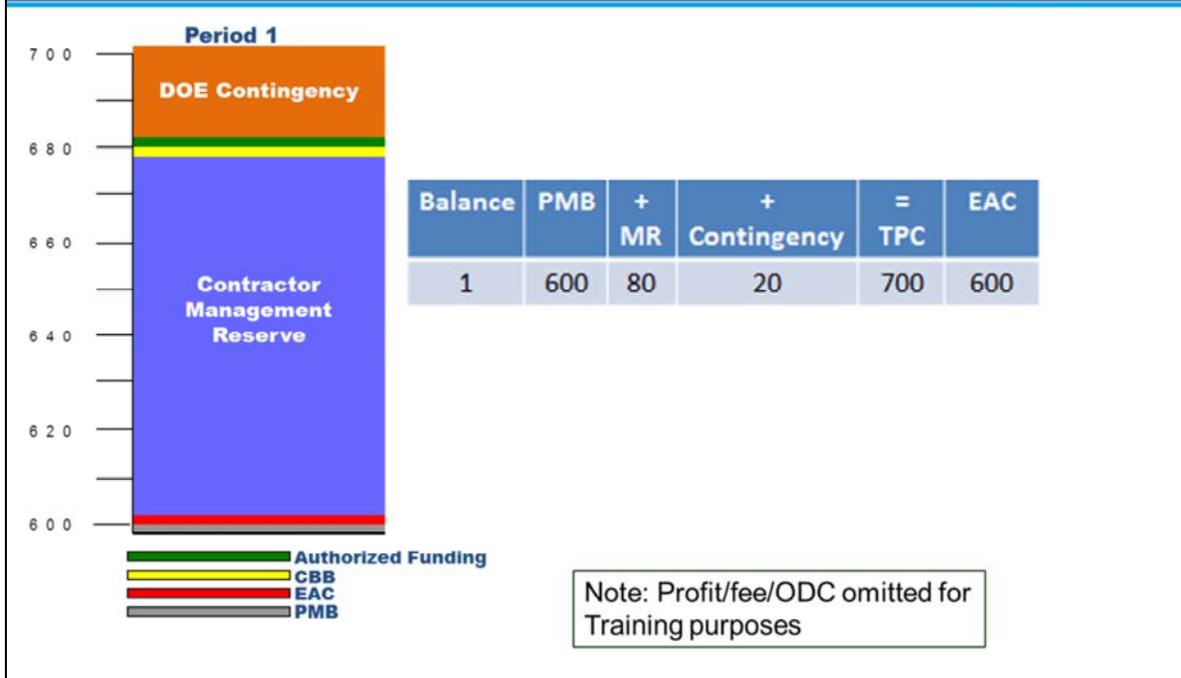
## PART 2



## Time-phased Scenarios

Part 2 provides detailed scenarios of how normal project changes impact the performance measurement baseline, management reserve, projected variances at completion, and DOE contingency.

# Scenario Period 1 Bar Chart

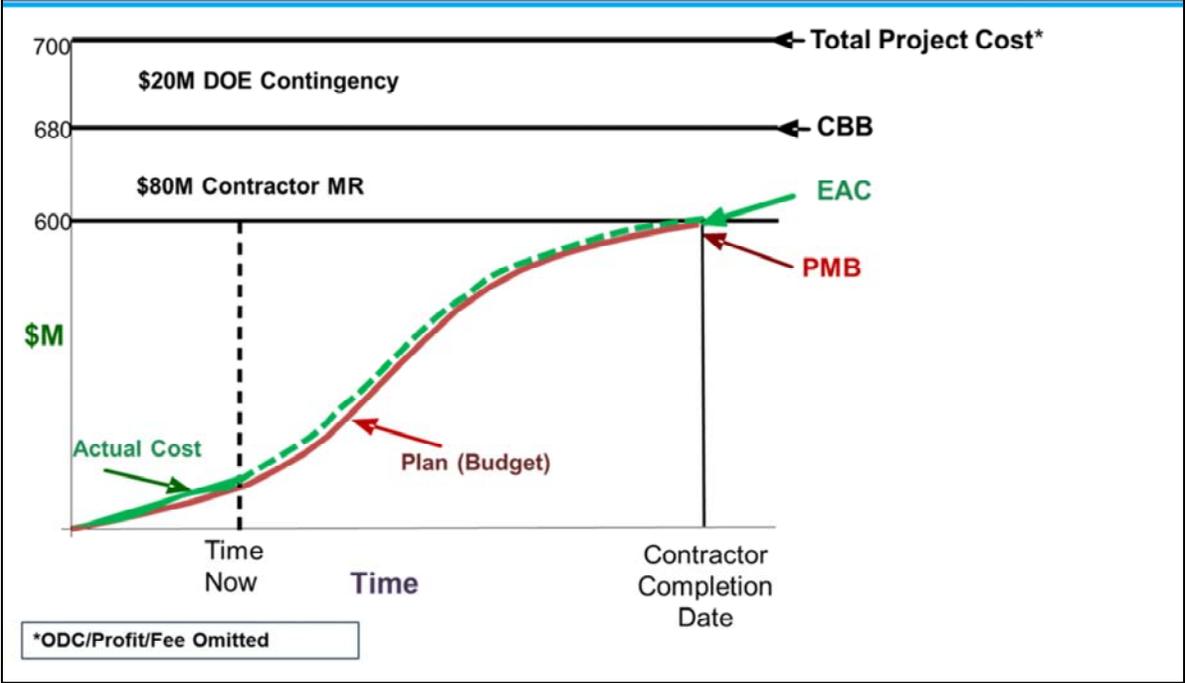


We are going to walk through several scenarios to demonstrate how changes in the project impact different elements. To simplify our examples, we are not including profit, fee, or Other Direct Costs (ODC). For all of the scenarios, the information will be presented in a table, a bar chart, and in an “S” Curve.

For the first scenario, we have an example of an active project. Note the legend at the bottom of the bar chart. The grey line represents the amount of the PMB, \$600M. The Red line represents the Estimate at Completion, which is currently \$600M. The Blue area represents the amount of Management Reserve the contractor has available for those scope changes that are within the contractual project statement of work but not yet allocated to any control account. The scale to the left of the bar shows that the MR is \$80M. The yellow line represents the Contract Budget Base. Since it is the sum of the MR and the PMB, it is \$680M on the scale. The green line represents the Authorized Funding (less profit/fee/ and ODC). At this point, the authorized funding from the DOE to the contractor is \$680M. The DOE customer’s Contingency is not part of the CBB, therefore it is above that point and is shown in orange. You can see by the scale the Contingency is \$20M.

The sum of the PMB plus the MR plus the contingency equals the Total Project Cost or TPC; therefore, the TPC is \$700M. The current Estimate at Completion is \$600M, which indicates that no total project variance at completion is expected for the scope of work represented by the PMB.

# Period 1 "S" Curve



This is an S curve which shows the same information as previously shown in the table and the bar chart associated with this scenario. We are showing each scenario in all three forms to reinforce the teaching points presented in each scenario. As the scenarios progress, you will see changes to each of these three visual representations - the table showing the current period changes, the bar chart, and the S curve.

## Period 2



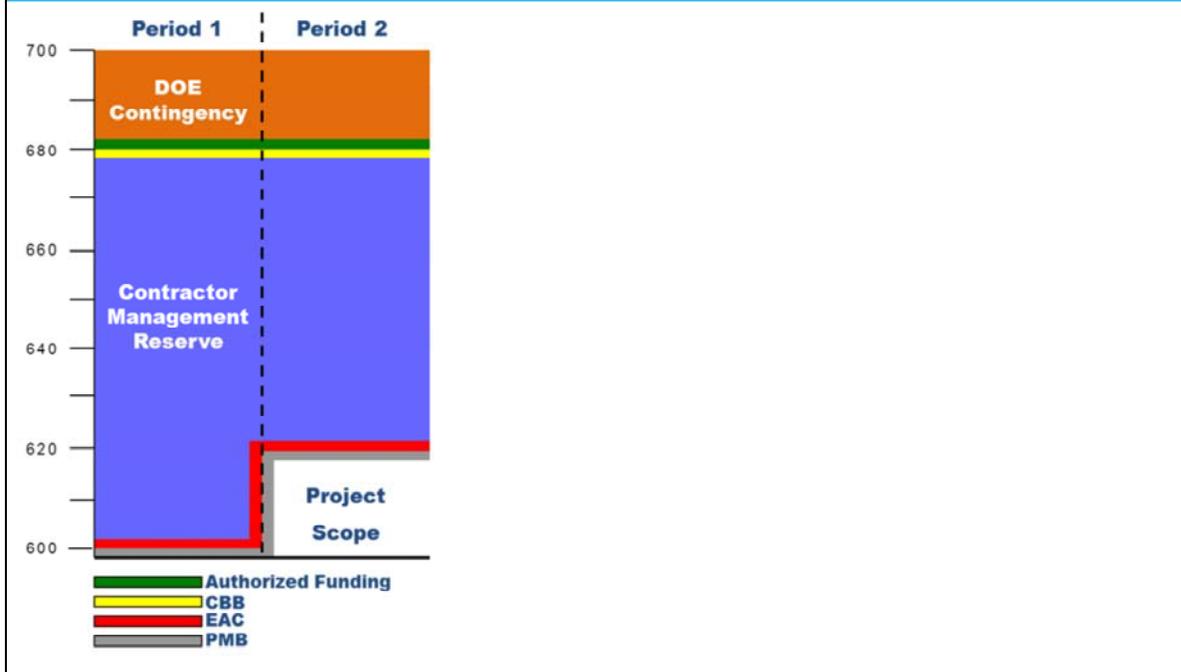
- Contractor applied MR due to the realization that waste treatment testing would need to be done
- This effort is required to meet the project statement of work, but was not planned within an existing control account

Balance	PMB	+ MR	+ Contingency	= TPC	EAC
Prior Period	600	80	20	700	600
<b>Period 2</b>	<b>20</b>	<b>(20)</b>			<b>20</b>
<b>Balance</b>	<b>620</b>	<b>60</b>	<b>20</b>	<b>700</b>	<b>620</b>

In Period 2, the contractor transferred management reserve to the performance measurement baseline because of the realization that waste treatment testing would need to be done. This effort was required to meet the project statement of work, but was not planned within an existing control account. Therefore, \$20M of MR was authorized to a control account for this scope.

Because of the internal application of budget for the waste treatment testing, the performance measurement baseline as well as the Estimate at Completion increased by \$20M. No contingency was used because the scope was not new to the project requirements, and there was no additional funding impact for the customer.

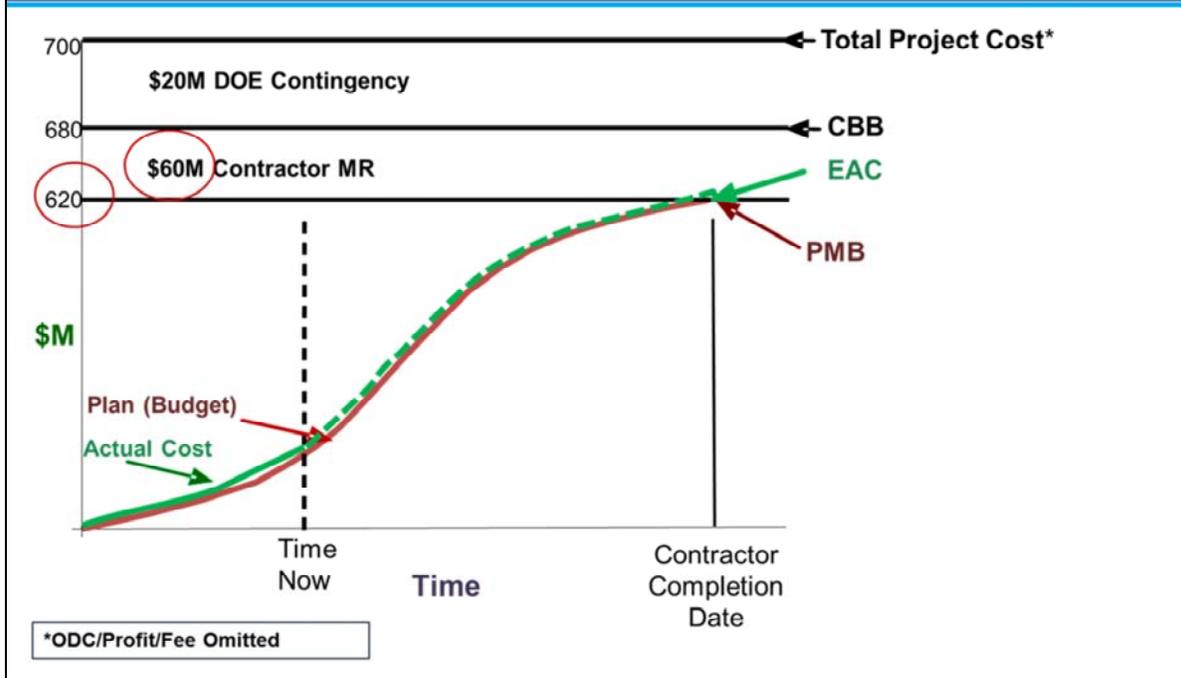
# Period 2 Bar Chart



Because \$20M worth of Management reserve was transferred to the performance measurement baseline to conduct the waste treatment testing scope that was not previously included in any control account, the PMB (grey line) and EAC (red line) is now at \$620M while the MR is reduced from \$80M to \$60M. Note that the contract budget base remains at \$680M since the sum of the PMB, now \$620M, plus the MR, now \$60M equals \$680M.

Because this was an internal application of budget from MR, the Contract Budget Base (yellow line), Authorized Funding (green line), and Contingency (orange area) did not change.

# Scenario 2 "S" Curve



The only changes to the S curves were that the PMB and EAC increased by \$20M and the MR was reduced by \$20M.

# Period 3



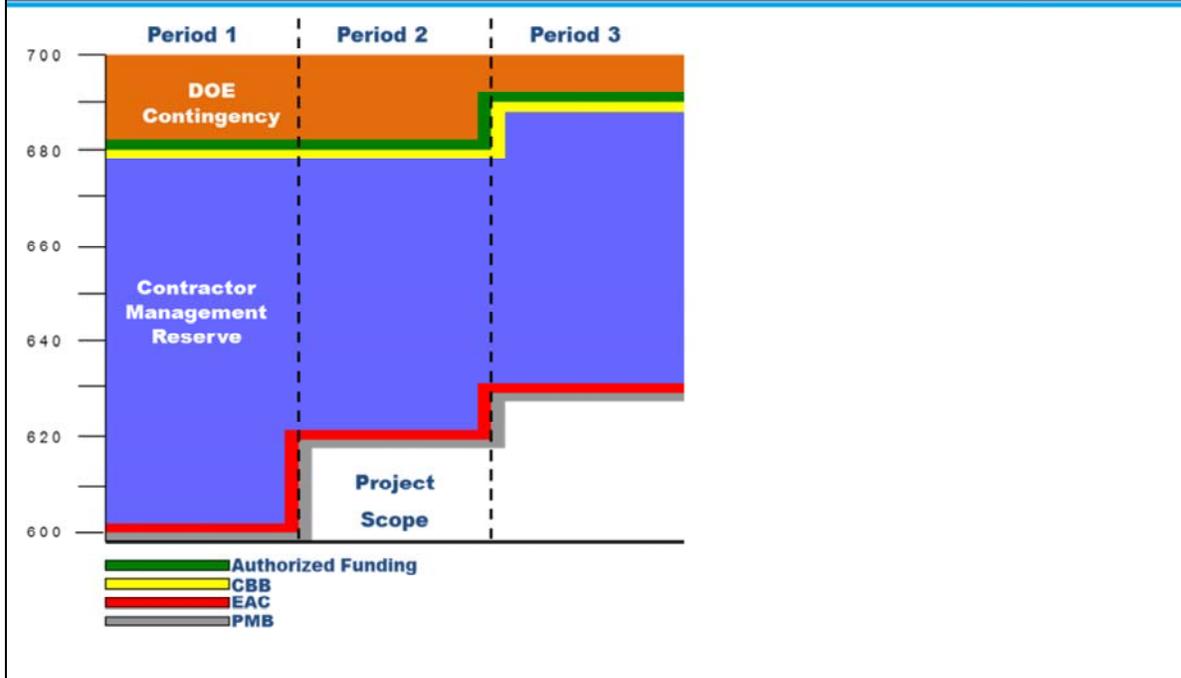
- The DOE customer modifies the contract to add two additional holding tanks, a new scope of work estimated at \$10M
- This out-of-scope change is an increase not only in the contractor PMB and EAC for this effort, but also the CBB
- This change decreases the available government contingency by \$10M

Balance	PMB	+ MR	+ Contingency	= TPC	EAC
Prior Period	620	60	20	700	620
<b>Period 3</b>	<b>10</b>		<b>(10)</b>		<b>10</b>
<b>Balance</b>	<b>630</b>	<b>60</b>	<b>10</b>	<b>700</b>	<b>630</b>

In Period 3, the DOE customer modified the contract to add two additional holding tanks, a new scope of work estimated at \$10M. This contract modification was an increase not only to the contractor’s performance measurement baseline and contract budget base, but it also increased the estimate at completion for that effort. MR was not affected, but the change decreased the available government Contingency by \$10M and increased the total contract value.

Why wasn’t management reserve used? The reason is because the two additional holding tanks were not part of the original contract scope of work. Thus a contract modification with additional budget was required.

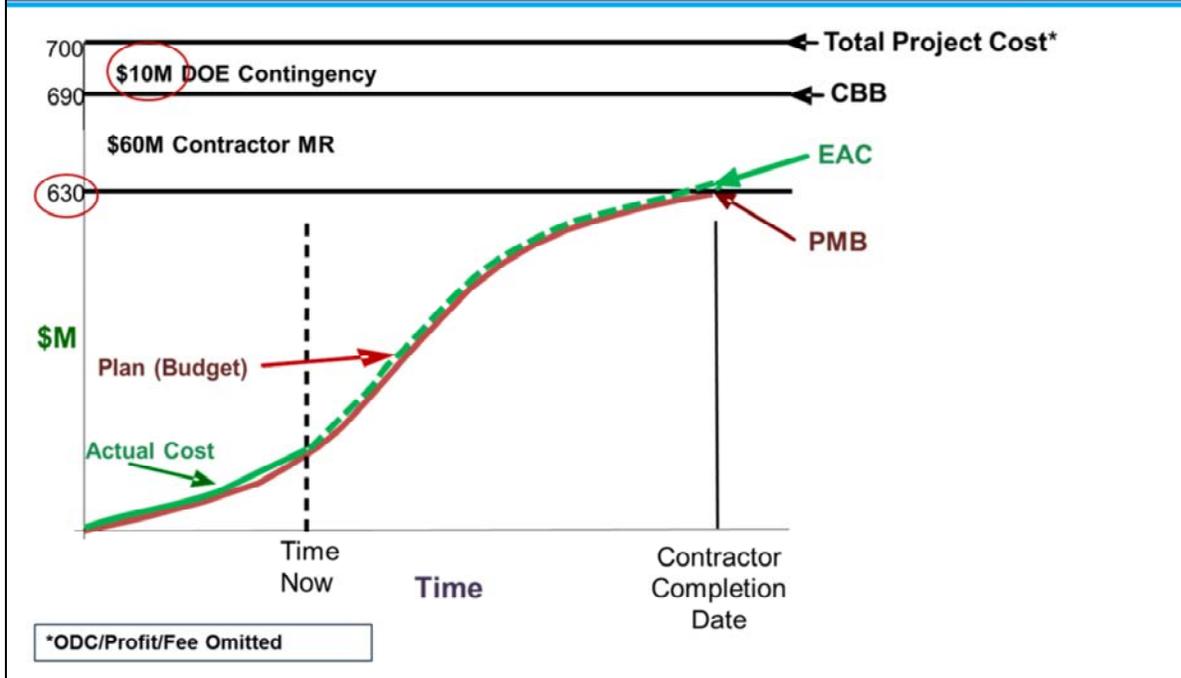
# Period 3 Bar Chart



On the bar chart, you can see how the application of contingency impacted the budget and funding profile.

The performance measurement baseline (grey line), estimate at completion (red line), contract budget base (yellow line), and the authorized funding (green line) all increased by \$10M. The contingency (orange area) was reduced by \$10M.

# Period 3 "S" Curve



Since new scope was added by contract modification, the CBB increased to \$690M and both the performance measurement baseline and estimate at completion increased to \$630M. The MR did not change but the DOE Contingency was reduced to \$10M.

## Period 4



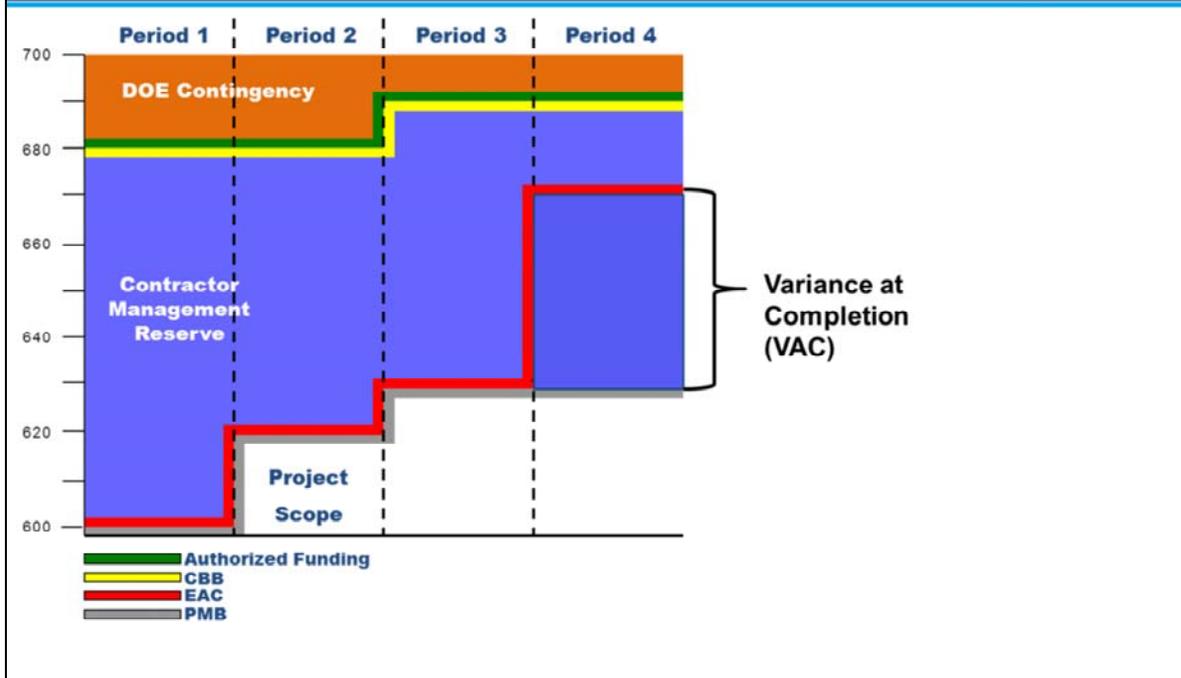
- A project wide bottom-up EAC exercise has resulted in a \$40M forecasted overrun to the current PMB

Balance	PMB	+ MR	+ Contingency	= TPC	EAC
Prior Period	630	60	10	700	630
<b>Period 4</b>					<b>40</b>
<b>Balance</b>	<b>630</b>	<b>60</b>	<b>10</b>	<b>700</b>	<b>670</b>

In period 4, the contractor conducted its annual project Comprehensive, or bottom-up, Estimate at Completion. Once all the new estimates were reviewed and summarized, they realized they were forecasting an overrun of \$40M against the performance measurement baseline.

Note that the PMB did not change with the incorporation of the EAC. The EAC simply was the best estimate at the time of what the responsible managers thought would be the ultimate cost of the work when it is completed. Because the contractor had \$60M of management reserve, the government did not have to increase funding as the contract budget base was not impacted. However, the government is on alert now that further overruns or use of MR could impact funding.

# Period 4 Bar Chart

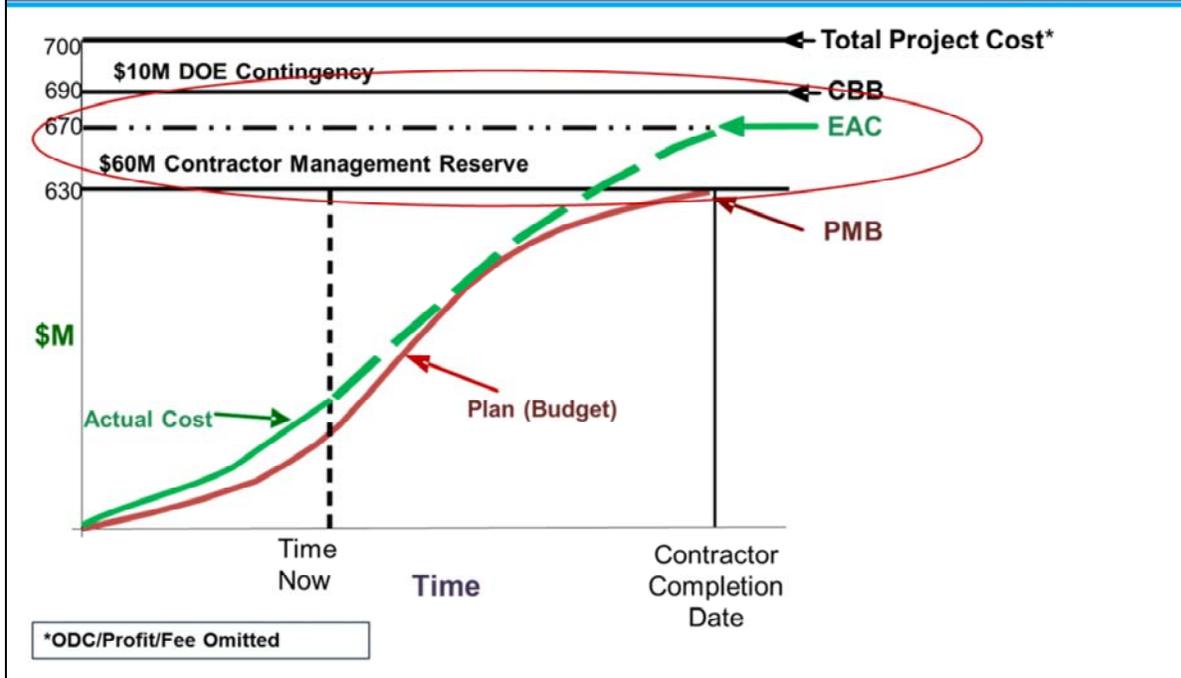


The bar chart shows how the estimate at completion (red line) increased by \$40 million because of the project bottom-up EAC. The difference between the PMB and the EAC is called the Variance at Completion. In this scenario, the contractor still has \$60M of MR; so at this point, there is no need for the government to increase the authorized funding (green line) because the projected EAC is within the boundaries of the CBB.

Said another way, if the contractor completed the project at this point with an actual overrun of \$40M and did not use any of the existing MR, the authorized funding would be sufficient.

However, the concern is that the project is not complete, and the government needs to track this very closely as any significant use of the \$60M of MR could cause an immediate need to increase the authorized funding on this project.

# Period 4 "S" Curve



The S curve shows the \$40M increase in the EAC. Again, the MR available for the contractor to use is still \$60M, but if MR greater than \$20 million is used and the estimate at **completion** is accurate, the contractor will overrun the current funding level.

## Period 5



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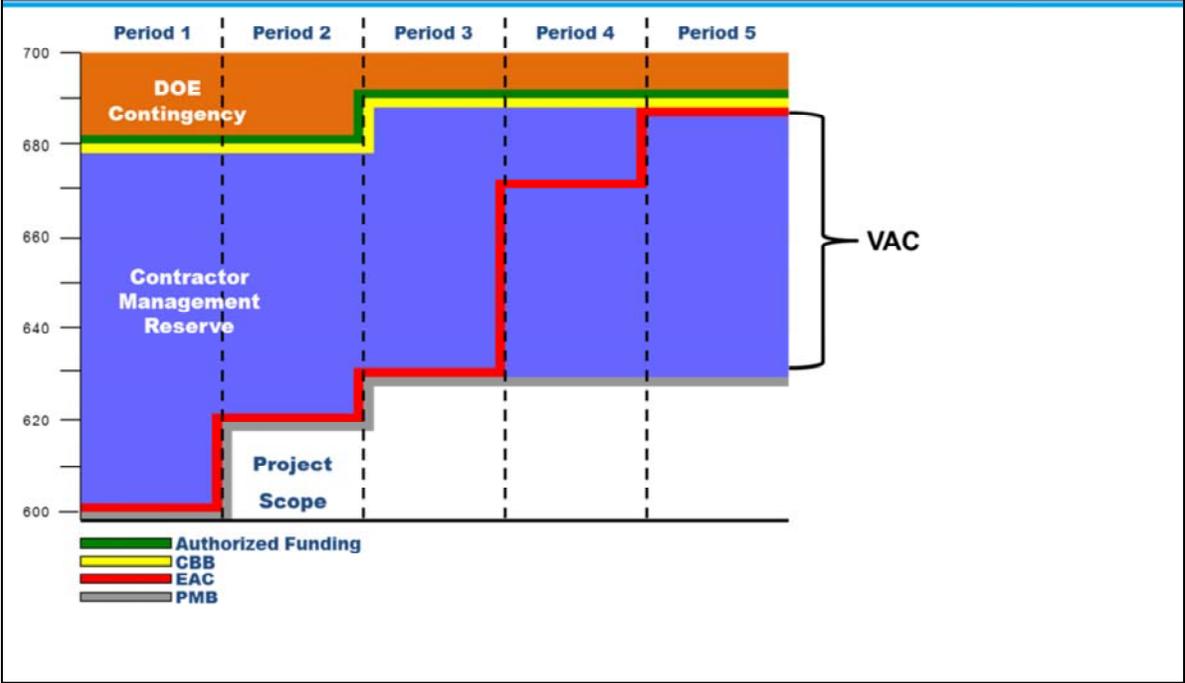
- Two tanks scrapped due to welding issues
- Overrun associated with two new tanks is \$20M

Balance	PMB	+ MR	+ Contingency	= TPC	EAC
Prior Period	630	60	10	700	670
<b>Period 5</b>					<b>20</b>
<b>Balance</b>	<b>630</b>	<b>60</b>	<b>10</b>	<b>700</b>	<b>690</b>

In Period 5, the weld process for the stainless steel containers proved more difficult than originally planned. Two tanks had to be scrapped and rebuilt. This caused an estimated \$20M increase in the Estimate at Completion.

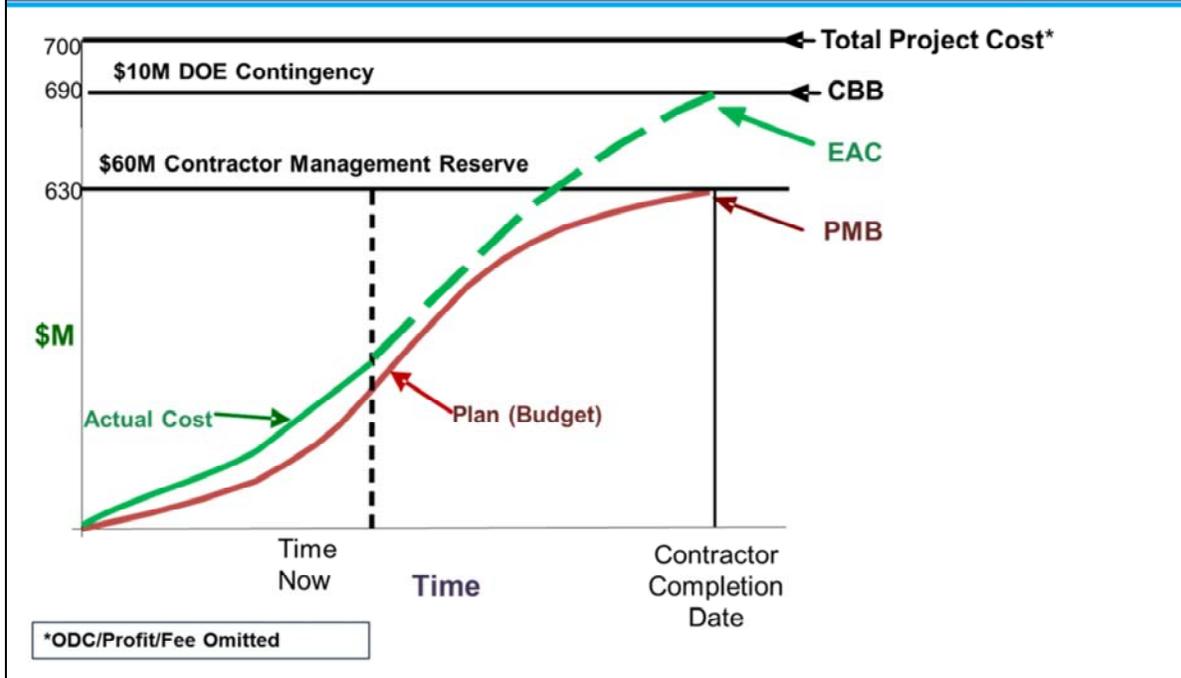
The overrun eliminated any possibility that there might be enough unused MR budget to offset any additional overruns. The DOE still holds \$10M of Contingency.

# Period 5 Bar Chart



The bar chart shows how the increase in the estimate at completion for the scope of work in the performance measurement baseline is now equal to the contract budget base. Note that the \$60M of management reserve is still available for the contractor's use for future work. Should the contractor transfer any MR to the PMB, it will cause the projected EAC to increase, thus requiring additional funding.

# Period 5 "S" Curve



The EAC curve increased to the CBB line and the contractor still has \$60M of MR; however, any use of it could set off an immediate need for additional funding. The DOE Federal Project Director (FPD) needs to watch this very carefully. The \$10M of contingency must be set aside or obligated to fund the projected overrun.

## Period 6, Scenario 1

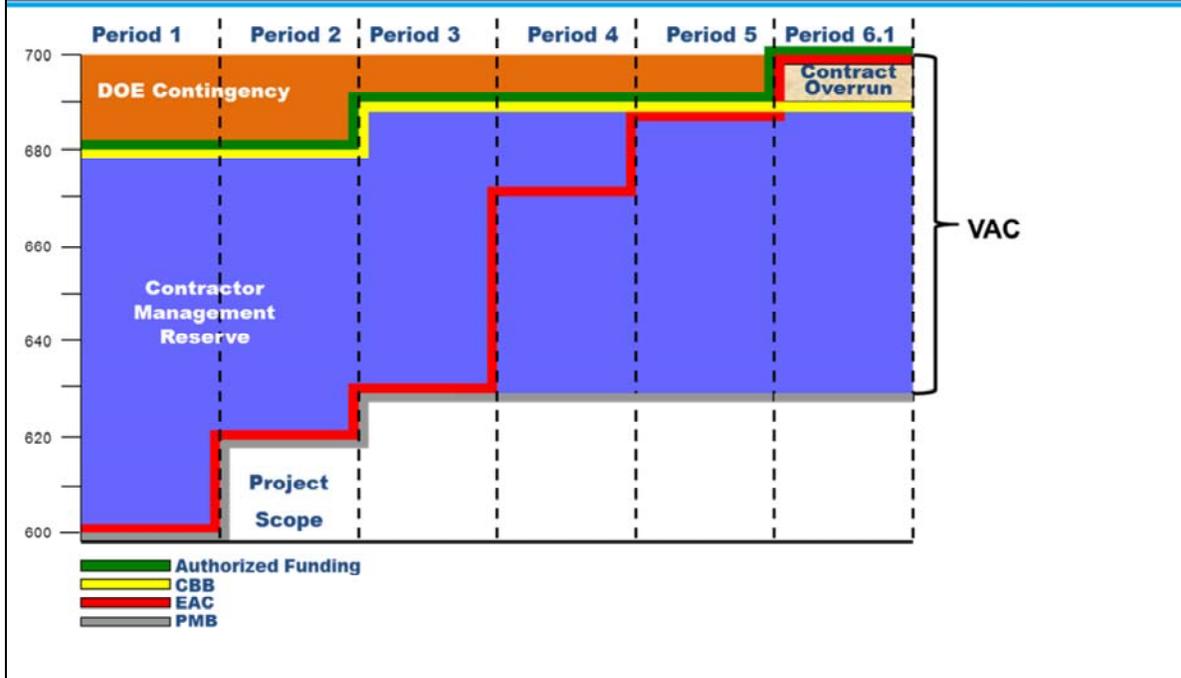


- The impact from the welding issues is \$10M more than originally projected as the contractor struggles continue
- Since the EAC exceeds the CBB, additional funding is needed to pay for the costs of the overrun
- \*The \$10M of contingency must be obligated to fund the projected overrun

Balance	PMB	+ MR	+ Contingency	= TPC	EAC
Prior Period	630	60	10	700	690
<b>Period 6.1</b>					<b>10</b>
<b>Balance</b>	<b>630</b>	<b>60</b>	<b>10*</b>	<b>700</b>	<b>700</b>

Period 6 will be approached with two different scenarios. The first scenario shows that the impact from the welding issues was \$10M more than originally projected as the contractor's struggles continue. This does not change the contract budget base since it is only an EAC and funding increase, but it does require the customer to change the funding authorization to accommodate the increase in the estimate at completion. The Contingency is gone as is any flexibility for the DOE customer to make additional project adjustments.

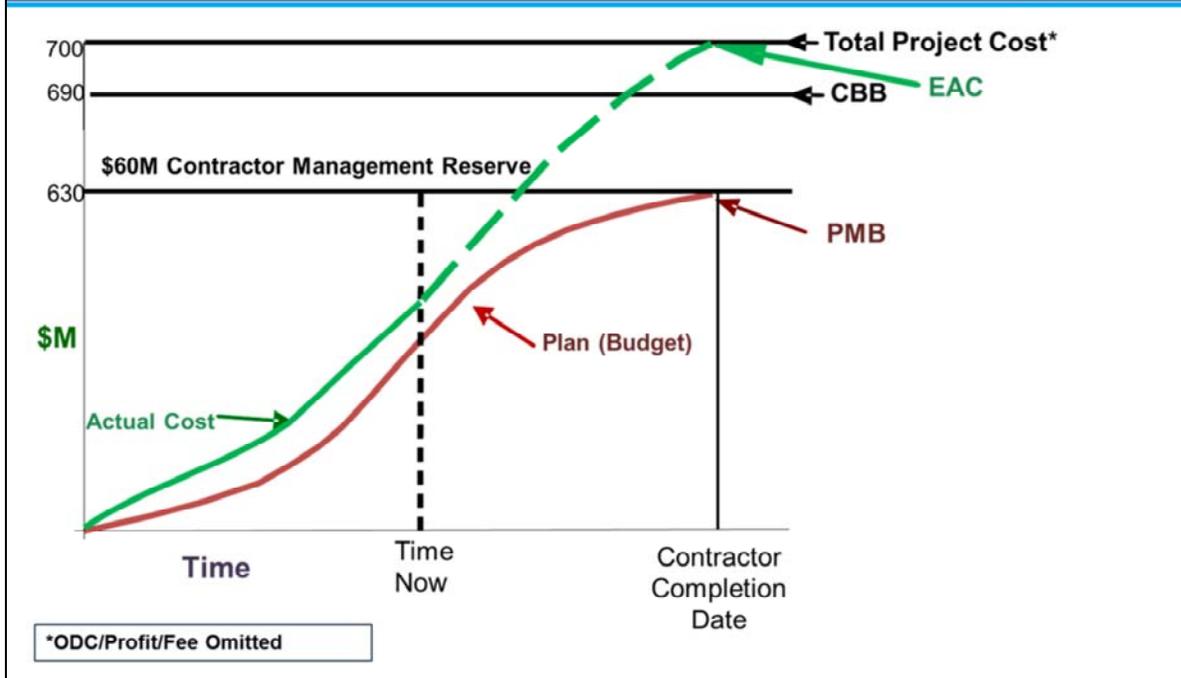
# Period 6, Scenario 1 Bar Chart



The bar chart shows that because of the increase in the estimate at completion, the government had to apply contingency, this time as funding for current scope as opposed to using the contingency for future scope changes. The Contingency is now gone as is any flexibility for the DOE customer to make additional project adjustments. If this project is not close to completion, the DOE Project Manager would need to pursue additional funding in case of further overruns.

Note that only the red EAC line and the green Authorized Funding lines increased but the yellow contract budget base line did not. Why is that? The answer is that the amount of budget provided to the contractor has not changed. This scenario helps to visualize how the DOE Contingency is not only used for funding additional scope, but in this example, it is being used to fund the overrun.

# Period 6, Scenario 1 "S" Curve



Once the EAC reached the TPC line, no Contingency remained. Contingency could only be applied via contract modification for increased scope if the EAC projection improved.

## Period 6, Scenario 2



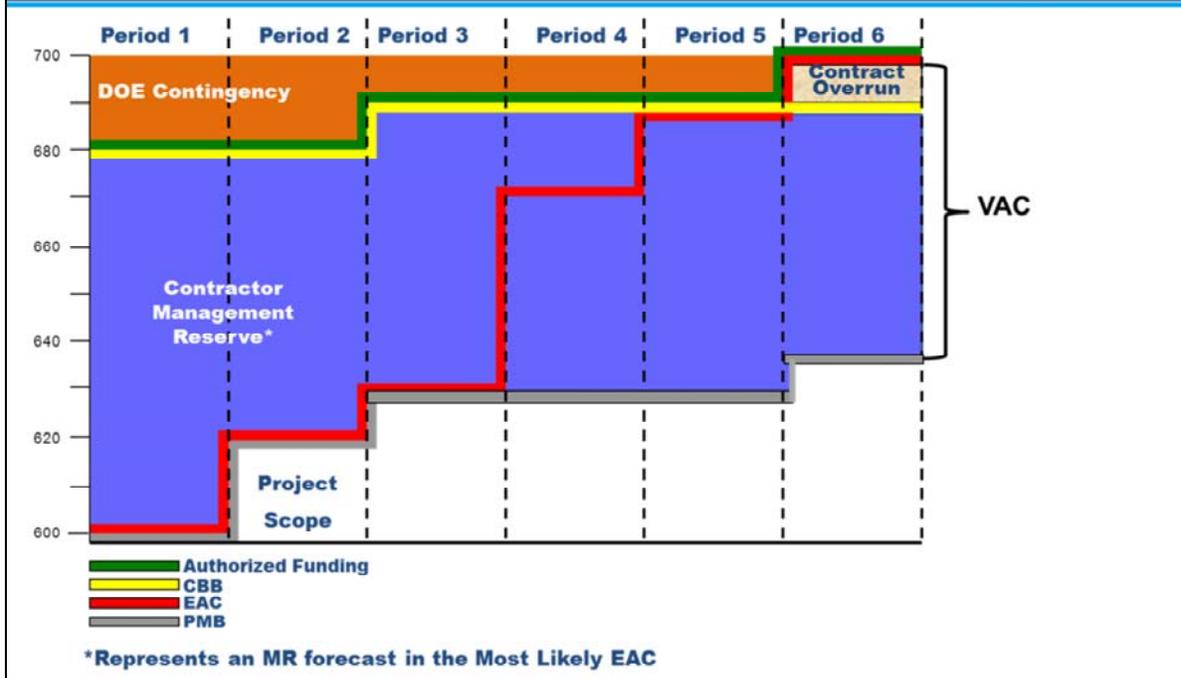
- The contractor applied \$10M MR to the PMB due to the realization that additional unanticipated ground water testing would need to be done as part of their risk mitigation program
- \*The \$10M of contingency must be obligated to fund the projected overrun caused by the application of MR to the PMB which caused an increase to the EAC

Balance	PMB	+ MR	+ Contingency	= TPC	EAC
Prior Period	630	60	10	700	690
<b>Period 6.2</b>	<b>10</b>	<b>(10)</b>			<b>10</b>
<b>Balance</b>	<b>640</b>	<b>50</b>	<b>10*</b>	<b>700</b>	<b>700</b>

Let's look at Period 6 with a different twist applied. The contractor applied \$10M of MR to the PMB due to the realization that additional unanticipated ground water testing would need to be accomplished. This was identified in its risk mitigation plan.

The additional MR caused the PMB to increase, the EAC to increase, and forced the need for additional funding. DOE must change the funding authorization to match the increase in the EAC. The Contingency is gone as is any flexibility for the DOE to make additional project adjustments.

# Period 6, Scenario 2 Bar Chart

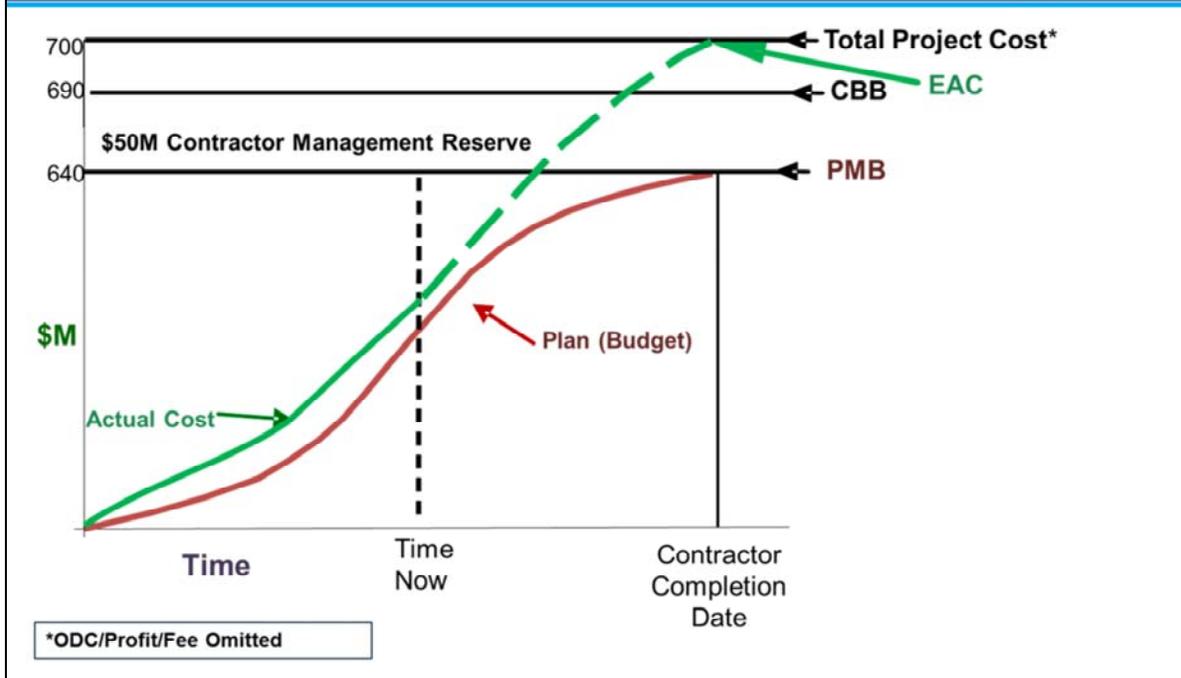


The only difference between the first scenario for Period 6 and this 2<sup>nd</sup> scenario is that the grey Performance Measurement Baseline line increased to show the transfer of budget from MR to the PMB for an internal scope change. The PMB increased to \$640M and MR was reduced to \$50M.

Although MR was available, the \$10M of contingency must be obligated to fund the projected overrun caused by the application of MR to the PMB, which also caused an increase to the EAC.

Again, the \$10M above the CBB is labeled here as “contract overrun” since it exceeds the CBB. The VAC, estimated at \$60M less the \$10M contract overrun, is considered estimated PMB overrun. What this means to the DOE is that if the contractor were to use any MR in the future, an increase to the authorized funding would be likely. DOE may need to take action to execute a Baseline Change Proposal (referred to as a BCP) to increase the TPC, thereby making additional contingency available based on current projections, and ensuring sufficient funding authorization is in place to complete the project.

# Period 6, Scenario 2 "S" Curve



In this scenario the EAC reached the TPC line because of the use of MR which also caused an increase to the EAC. Again there is no Contingency remaining.

The point of these two scenarios for Period 6 is to demonstrate that in either case, the contingency is depleted.

# Period 7 Over Target Baseline



- The contractor has received authorization to report to an Over Target Baseline (OTB)

Before OTB	
Total Allocated Budget (TAB)	
Contract Budget Base (CBB)	
Performance Measurement Baseline (PMB)	MR

After OTB	
Total Allocated Budget (TAB)	
Contract Budget Base (CBB)	Over Target Budget
Performance Measurement Baseline (PMB)	MR

In Period 7, the contractor received authorization to implement and report an Over Target Baseline (OTB). Recall that an OTB is a baseline that exceeds the Contract Budget Base, which becomes a new Performance Measurement Baseline for management purposes. The CBB is not adjusted as a result of an OTB.

In EVM terminology, before an OTB, the sum of the budgets distributed to control accounts and summary level planning packages, plus undistributed budget (UB) and management reserve (MR) equals the CBB which also equals the TAB. After the OTB, the TAB exceeds the CBB. The difference between the new TAB and the CBB is the amount of the new Performance Measurement Baseline, which resulted from the overrun and revised EAC, as well as the reduced amount of Management Reserve. Establishment of an OTB entails adding budget for the work remaining to be performed and possibly adjusting variances (cost, schedule or both). For more detailed information on an Over Target Baseline, please refer to Snippet 4.1 OTB OTS Implementation.

## Period 7 OTB



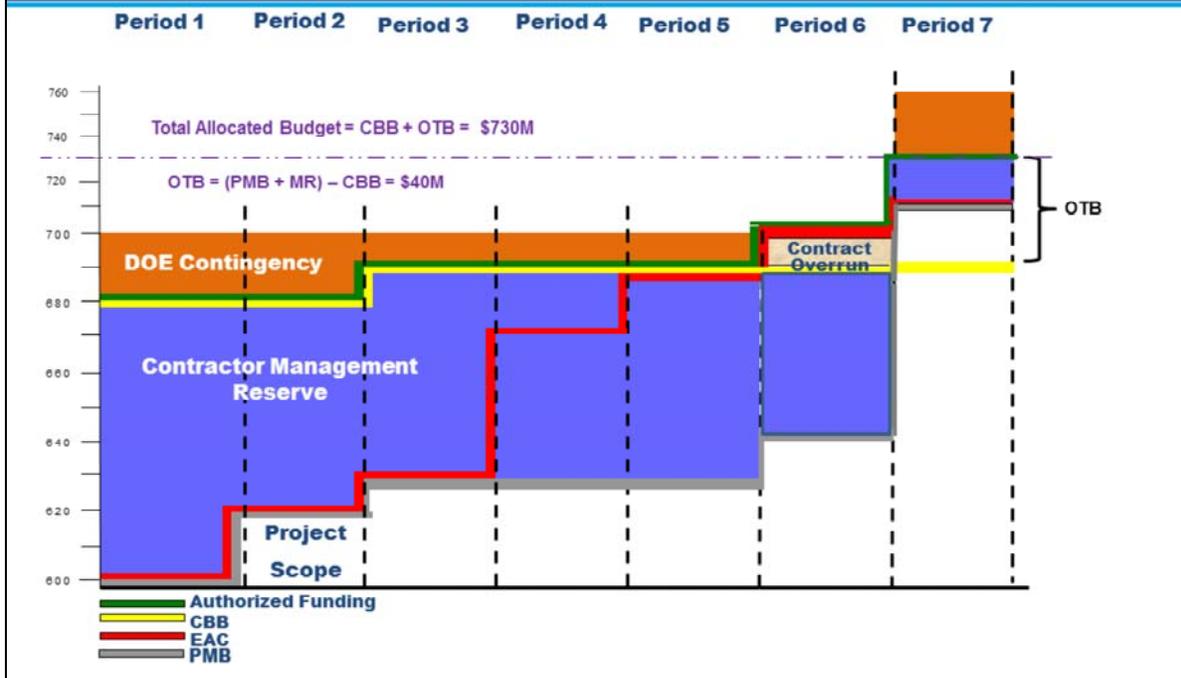
- Between Period 6 and Period 7, the contractor and DOE agreed to an OTB, thus allowing the contractor to provide a formal replan of its PMB and MR to reflect a realistic baseline to complete the project
- DOE also received Acquisition Executive approval for additional project funding; TPC (less profit/fees and ODC) is now \$760M
- Authorized Funding to the contractor is \$710M as designated by the green line, and the Contingency is \$30M

Balance	PMB	+ MR	+ Contingency	= TPC	EAC
Prior Period	640	50	10	700	700
<b>Period 7</b>	<b>70</b>	<b>(30)</b>	<b>20</b>	<b>60</b>	<b>10</b>
<b>Balance</b>	<b>710</b>	<b>20</b>	<b>30</b>	<b>760</b>	<b>710</b>

Let's take a look at how the OTB looks on our Bar Chart. In our scenario, the contractor was obviously showing signs of trouble as the EAC overran the contract budget base in period 6. Between Period 6 and Period 7, the contractor and DOE agreed to an Over Target Baseline, thus allowing the contractor to provide a formal replan of its PMB and MR to reflect a realistic baseline to complete the project.

The government also received Acquisition Executive approval for additional project funding. The TPC (less profit/fees and ODC) is now 760 million dollars. Authorized Funding to the contractor is 730 million dollars, reflected as budget of 710 million dollars in the PMB and 20 million dollars in MR. The DOE Contingency is 30 million dollars. The EAC is currently 710 million dollars.

# Period 7 OTB Bar Chart

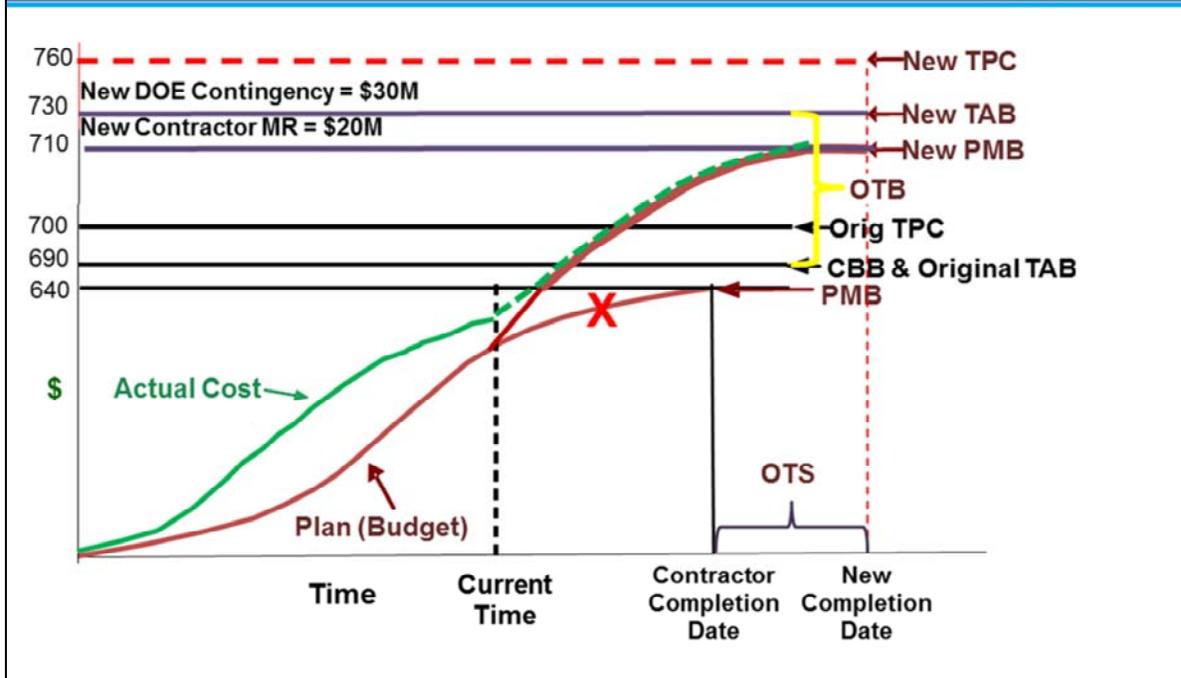


Let's take a look at how the OTB looks on our Bar Chart. The post OTB Management Reserve (blue area) is \$20M. The post OTB Performance Measurement Baseline (grey line) increased from \$640M to \$710M.

The Contract Budget Base as shown by the yellow line remains at \$690M since this is an OTB, not a change in scope. The authorized funding is \$730M as shown by the green line. The EAC (red line) increased by \$10M since Period 6.

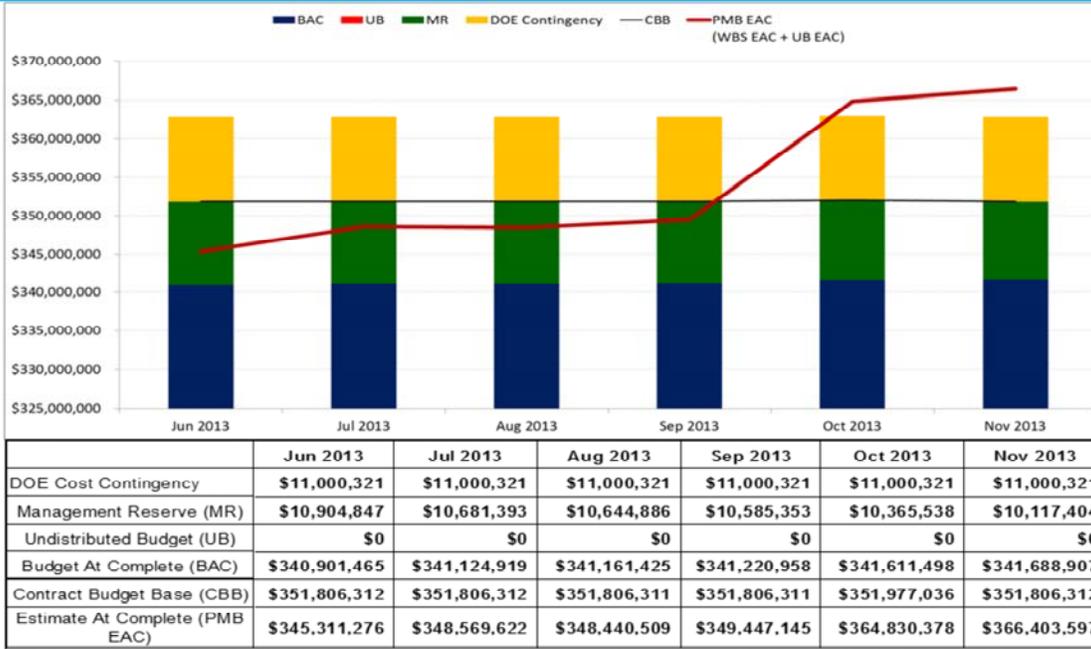
By definition, the OTB is the PMB, \$710M, plus the MR of \$20M, minus the CBB of \$690 which equals \$40M. The sum of the OTB, \$40M, plus the CBB, \$690M, equals the Total Allocated Budget, \$730M.

# Period 7 OTB "S" Curve



The New TPC, TAB, PMB along with the OTB and Over Target Schedule (OTS) are shown on this S curve chart.

# PARS II Project Funding Status



From the examples that we have shown throughout this training module, the need for funding status is apparent. The DOE FPD can use the PARS II Project Funding Status report to track whether sufficient funding is available to complete the project. An example of this report is shown here. This report can also identify ongoing trends that may indicate that an Over Target Baseline is imminent.

Major components of Total Project Cost (TPC) are plotted in a stack column. This allows the analyst to identify the current balances of each major TPC component, mainly DOE Contingency and CBB. Further analysis should look at how the contractor's reported forecast (EAC) is plotted against the TPC and if additional funding may be required to complete the project. Extreme increases in the EAC may indicate that an Over Target Baseline should be considered.

Focus areas for analysis include:

A comparison of the contractor's reported forecast (EAC) against the Total Project Cost to determine if additional funding may be required to complete the project.

Verification that all components of Total Project Cost are being accurately reported, the height of each column for each period is the same or very close, and any indications that the risk reserves and contractor baseline have not been reported accurately, or are being used improperly.

The indicators include: Fluctuations in the CBB line without corresponding reverse changes in the DOE Contingency, a significant change in Contingency balance that is not reflected in the CBB line, and a decrease in Contingency with an associated increase in MR without any change to the Budget at Completion.

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## EARNED VALUE MANAGEMENT

Aviation Management  
Executive  
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Energy Reduction at  
HQ  
Facilities and  
Infrastructure  
Freedom of Information  
Act  
Financial Assistance  
Information Systems  
Procurement and  
Acquisition  
**Earned Value**  
Lessons Learned  
Reviews and  
Validations  
Documents and  
Publications  
RCA and CAP

Earned Value Management (EVM) is a systematic approach to the integration and measurement of cost, schedule, and technical (scope) accomplishments on a project or task. It provides both the government and contractors the ability to examine detailed schedule information, critical program and technical milestones, and cost data.

- EVMS Surveillance Standard Operating Procedure (ESSOP) - 26 Sep 2011 (pdf)
- EV Guideline Assessment Templates - (MS Word)
- DOE EVMS Cross Reference Checklist - (pdf)
- DOE EVMS Risk Assessment Matrix - (MS Word)
- Formulas and Terminology "Gold Card" - Sep 2011 (pdf)
- Slides from the OECM Road Show: Earned Value (EV) Analysis and Project Assessment & Reporting System (PARS II) - May 2012 (pdf)
- DOE EVM Guidance

### EVM TUTORIALS

**Module 1 - Introduction to Earned Value** (pdf 446.86 kb) July 17, 2003

This module is the introduction to a series of online tutorials designed to enhance your understanding of Earned Value Management. This module's objective is to introduce you to Earned Value and outline the blueprint for the succeeding modules. This module defines Earned Value management. It looks at the differences between Traditional management and Earned Value management, examines how Earned Value management fits into a program and project environment, and defines the framework necessary for proper Earned Value management implementation.

<http://energy.gov/management/office-management/operational-management/project-management/earned-value-management>

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For information relative to EVMS procedures, templates, helpful references, and training materials, please refer to OAPM's EVM Home page. Check back periodically for updated or new information.

Thank you