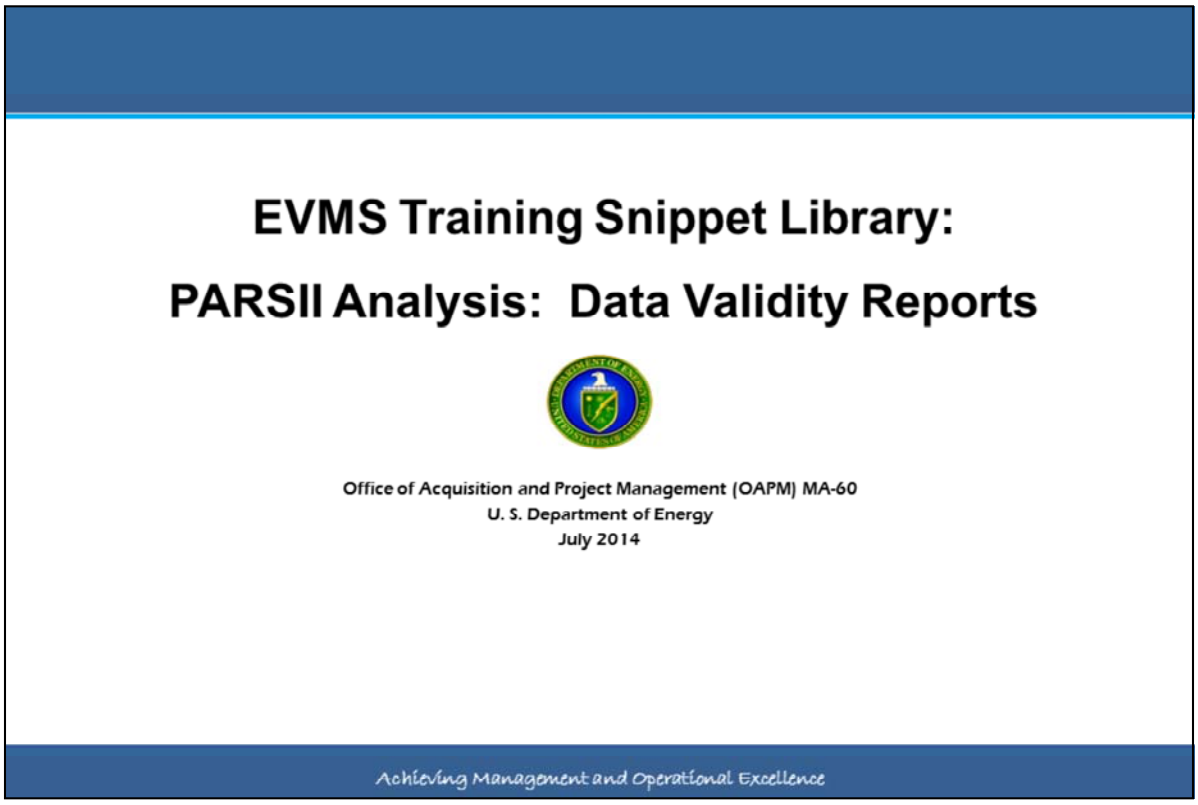
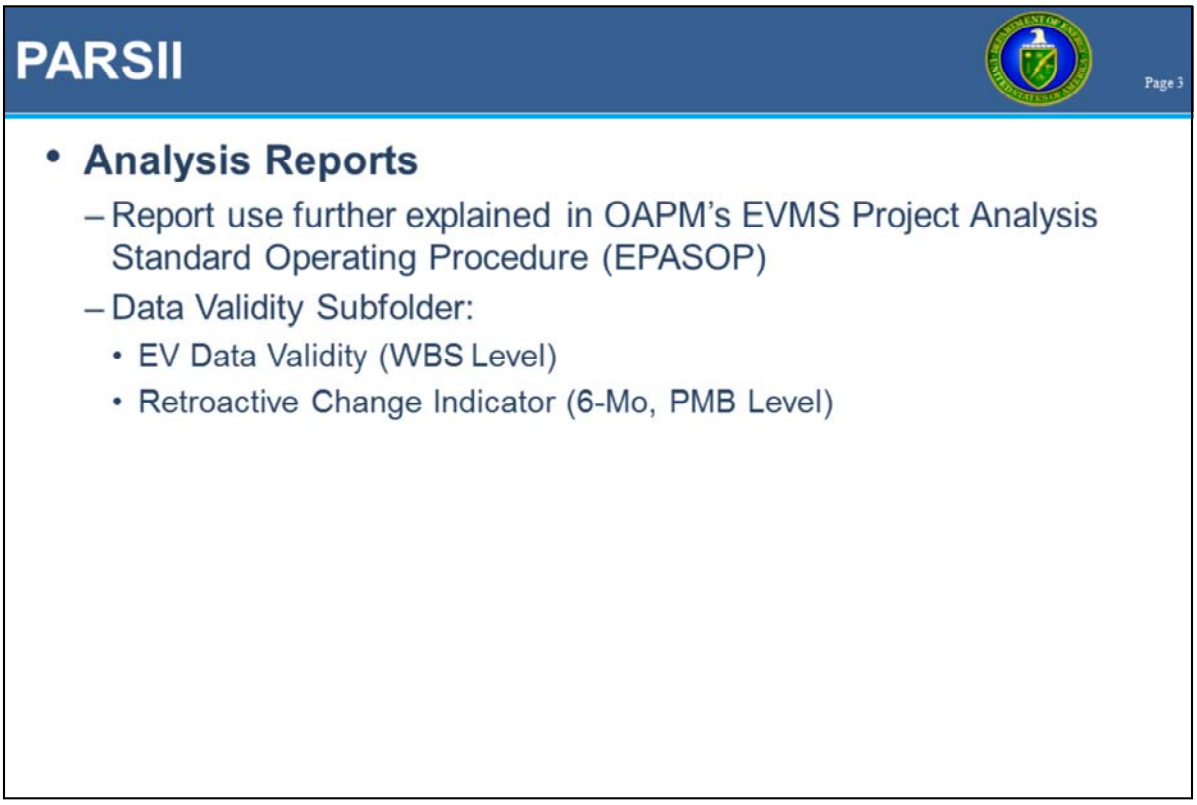


This EVMS Training Snippet, sponsored by the Office of Acquisition and Project Management (OAPM) is one in a series regarding PARSII Analysis reports. PARSII offers direct insight into EVM project data from the contractor's internal systems. The reports were developed with the users in mind, organized and presented in an easy to follow manner, with analysis results and key information to determine the status and health of the project. Snippets will help users understand the specific information provided by each report and what it tells them about project health and/or EVM system health.

This particular snippet focuses on the purpose and use of reports to assist in determining EVM data validity.

In PARS 2 under the SSS Reports selection on the left, there are folders to the right. The reports being discussed are in the Analysis Reports folder. That folder is broken down into various subfolders pertaining to OAPM's EVMS Project Analysis Standard Operating Procedure (EPASOP). This Snippet covers the subfolder named Data Validity.



These reports are useful for anyone responsible for project management. There are two reports that will be discussed: the EV Data Validity (WBS Level) Report and the Retroactive Change Indicator (6-Mo, PMB Level) Report.

Why Assess Data Validity?

Page 4

- **Data analysis depends on accurate data**
- **EV data receives high visibility**
  - Briefed at DepSec level for PARS II reportable capital asset projects
  - Critical that EVMS data reported to stakeholders is accurate
- **Trends and indices mean nothing if the data is incorrect**

Before we discuss the report content, why are we concerned with data validity? First and foremost, to *use the EV data to manage the project and make informed decisions and projections*, we first must be able to rely on data accuracy and reliability. The EV data is used to manage the project and make project level decisions throughout DOE, particularly including the FPD, the Project Management Support Office, the Office of Acquisition and Project Management, and the Deputy Secretary. The contractors also have access to the data on their projects. Therefore it is critical that all EVMS data is accurate. The other reports, like those that track variances, trends, and EACs, quickly lose effectiveness when reported data is incorrect.

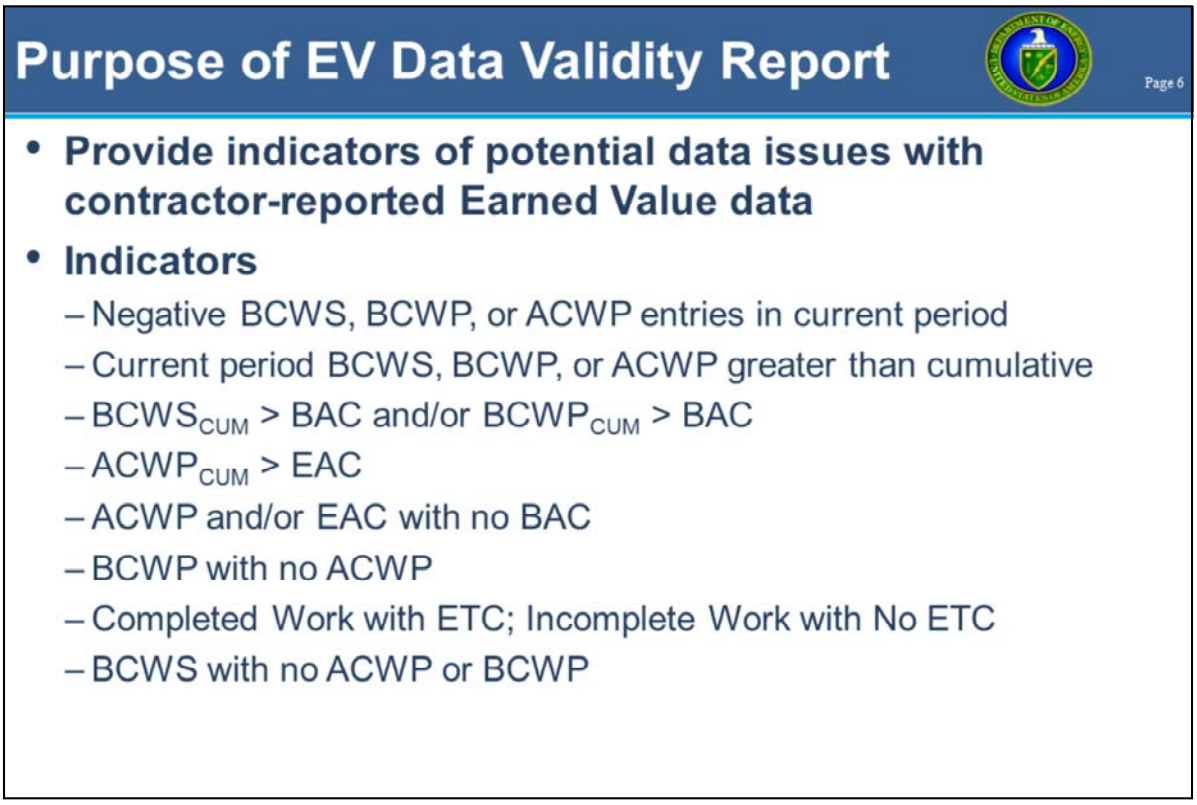
Who Is Responsible?

Page 5

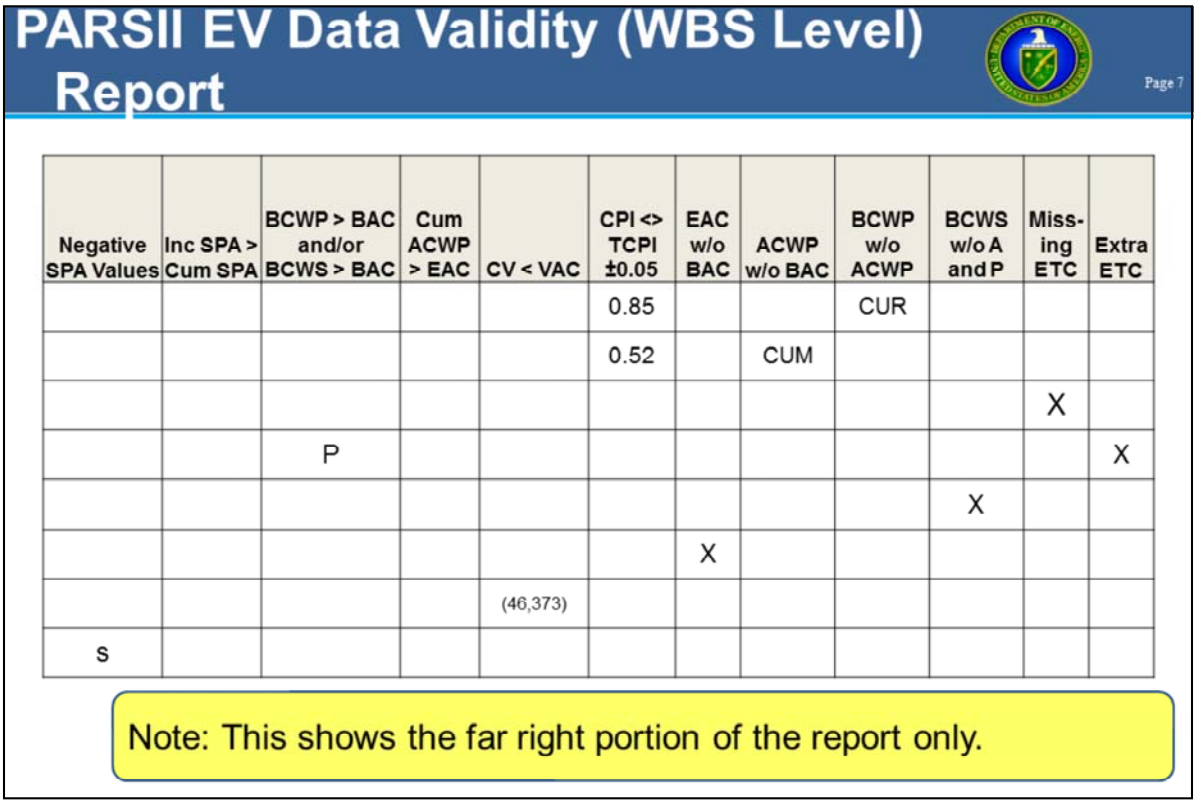
- **Responsibility**
  - Contractor - primary
  - FPD and IPT - 'boots on the ground' verification
  - HQ - 'trust but verify'
- **Primary purpose of a surveillance process**
- **Physical Verification**
  - Physical verification by technical team's knowledge of project status
    - Does the data reflect reality?

Whose responsibility is it to ensure the data is accurate? The contractor has primary responsibility, as data integrity is a contractual requirement. The FPD and IPTs are responsible for review and approval of the data. They also provide the 'boots on the ground' verification. DOE HQ staff has oversight responsibilities, which include trust but verify the data as well. These responsibilities are the primary purpose of the EVMS surveillance process required by DOE Order 413.3B.

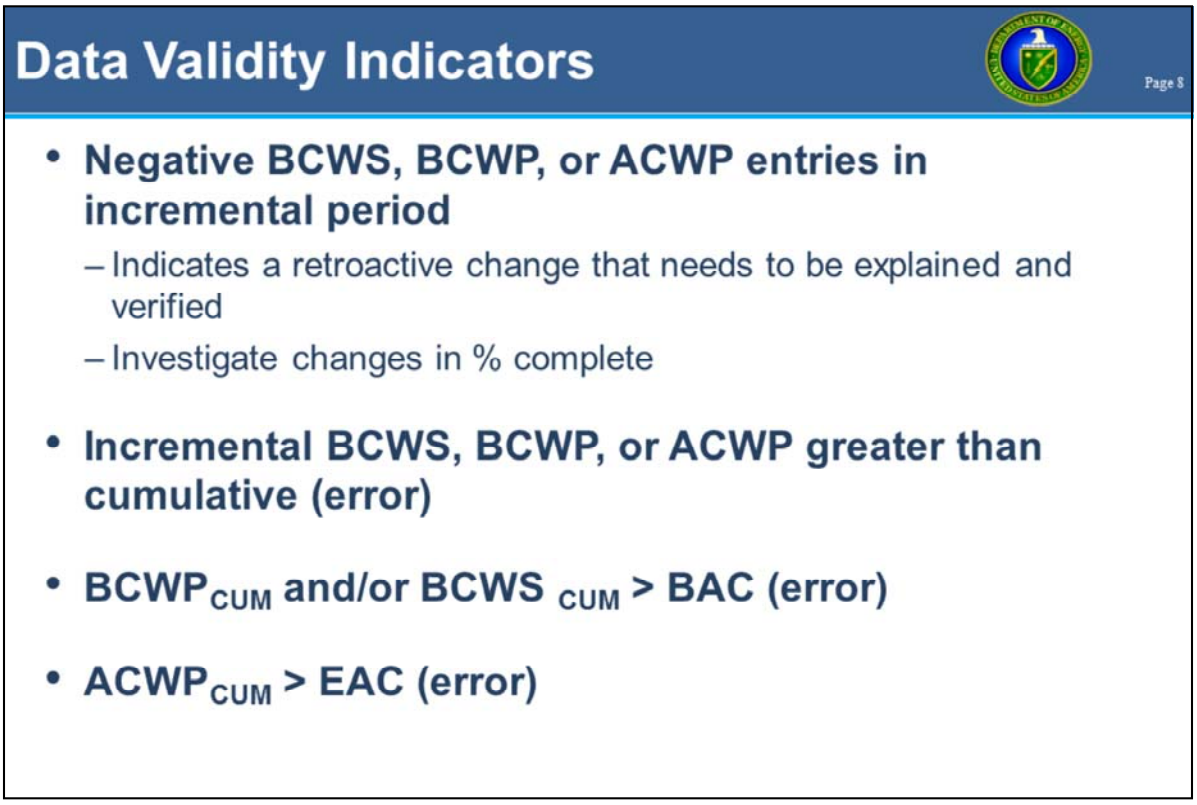
Physical verification is a responsibility of the FPD who provides the insight as to whether the data being reported reflects reality.



PARS II automatically issues warnings upon the contractor's upload if there are concerns with the validity of the data. The contractor may or may not take the opportunity to make corrections. The PARS II EV Data Validity (WBS Level) Report provides a concise and complete report of typical data integrity metrics to identify errors or issues. As the name suggests, these metrics determine the validity and accuracy of EVM data produced by the contractor for management decision making. *Concerns in this area not only apply to Project performance but also to systemic concerns with the contractor's EVMS.* These metrics reflect the trustworthiness of EVM based reports. The indicators listed are discussed in detail in the following slides.



This is just a partial view of the PARS II EV Data Validity Report. What you don't see here is that the report shows all fields required to determine if the areas of concern shown on this portion of the report are tripped. We will examine each of these features in detail.



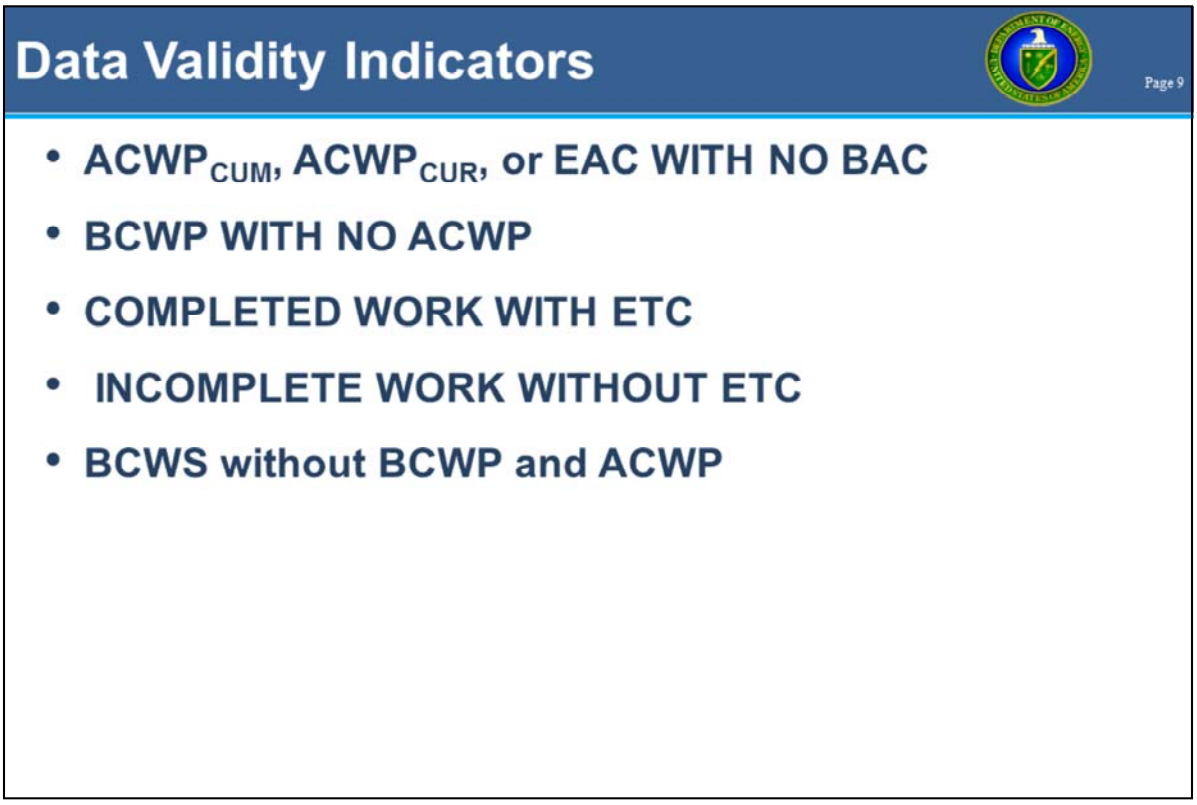
The first indicator is **NEGATIVE $BCWS_{CURRENT}$, $BCWP_{CURRENT}$, or $ACWP_{CURRENT}$.**
The budgeted cost for work scheduled (BCWS) is the time-phased project budget. The summation of BCWS for all reporting periods equals the total project budget at completion. When the initial baseline is established, there should be no instances of negative BCWS. However, as work progresses there may be legitimate reasons for re-planning of budget. Negative BCWP in the current period indicates that previously claimed performance is being reversed. While this might occur due to re-plan actions it should be explained. Negative ACWP in the current period indicates prior charges are being reversed. This may be due to routine accounting adjustments or correction of errors. Instances of current period negative values should be investigated further to determine the root cause.

The next indicator is INCREMENTAL BCWS, BCWP, OR ACWP is GREATER THAN CUMULATIVE.
The $BCWS_{CUM}$, $BCWP_{CUM}$, and $ACWP_{CUM}$ are calculated by the sum of the current period values to date. Therefore, it is impossible for the $BCWS_{CURRENT}$, $BCWP_{CURRENT}$, and $ACWP_{CURRENT}$ to be greater than the cumulative. Should this occur, consider this an error in the EVMS data.

The next indicator is **$BCWS_{CUM}$** greater than **BAC.**
The budgeted cost for work scheduled (BCWS) is the project budget time-phased over the period of performance. The summation of BCWS for all reporting periods should equal the budget at completion (BAC). In other words, $BCWS_{CUM}$ should equal BAC on the month the project is planned to complete. Due to this relationship, the value of $BCWS_{CUM}$ should never exceed BAC. If $BCWS_{CUM}$ is greater than BAC, consider this an error in the EVMS data and pursue corrective action. There is no plausible explanation.

The next indicator is $BCWP_{CUM}$ greater than BAC.
The budgeted cost for work performed (BCWP) is the amount of BCWS earned for the completed work to date. The $BCWP_{CUM}$ may not exceed the value of the BAC since BCWP is always based on the BCWS. The project is considered complete when $BCWP_{CUM}$ equals the BAC. If $BCWP_{CUM}$ is greater than the BAC, consider this an error.

Next is the $ACWP_{CUM}$ greater than EAC.
The Estimate at Completion (EAC) consists of two components, the actual costs incurred to date ($ACWP_{CUM}$) plus the estimate of future costs to be incurred for the completion of the remaining work. The estimate to complete (ETC) is the estimated cost for the work remaining only. The $ACWP_{CUM}$ can only be greater than the EAC if the ETC is negative; i.e. indicating that previously reported ACWP will be reduced. There may be limited cases that would require a negative ETC, although not the norm. If this condition exists, further investigation is required.



Another indicator is ACWP$_{CUM}$, ACWP$_{CURRENT}$, or EAC WITH NO BAC.
The actual cost of work performed (ACWP) is the total dollars spent for labor, material, subcontracts, and other direct costs in the performance of the contract statement of work. These costs are controlled by the accounting general ledger and must reconcile between the accounting system and the EVMS. If work is performed and ACWP incurred without applicable BAC, it indicates a potential misalignment between the work and the requirements of the contract.

The estimate at completion is the sum of the ACWP and the estimate to complete (ETC). Therefore the same rule applies. There should be no work package without BAC and EAC. If there are work packages that contain EAC or ACWP but no BAC, this issue should be reviewed and questioned as it is most likely an error and potentially a noncompliant situation

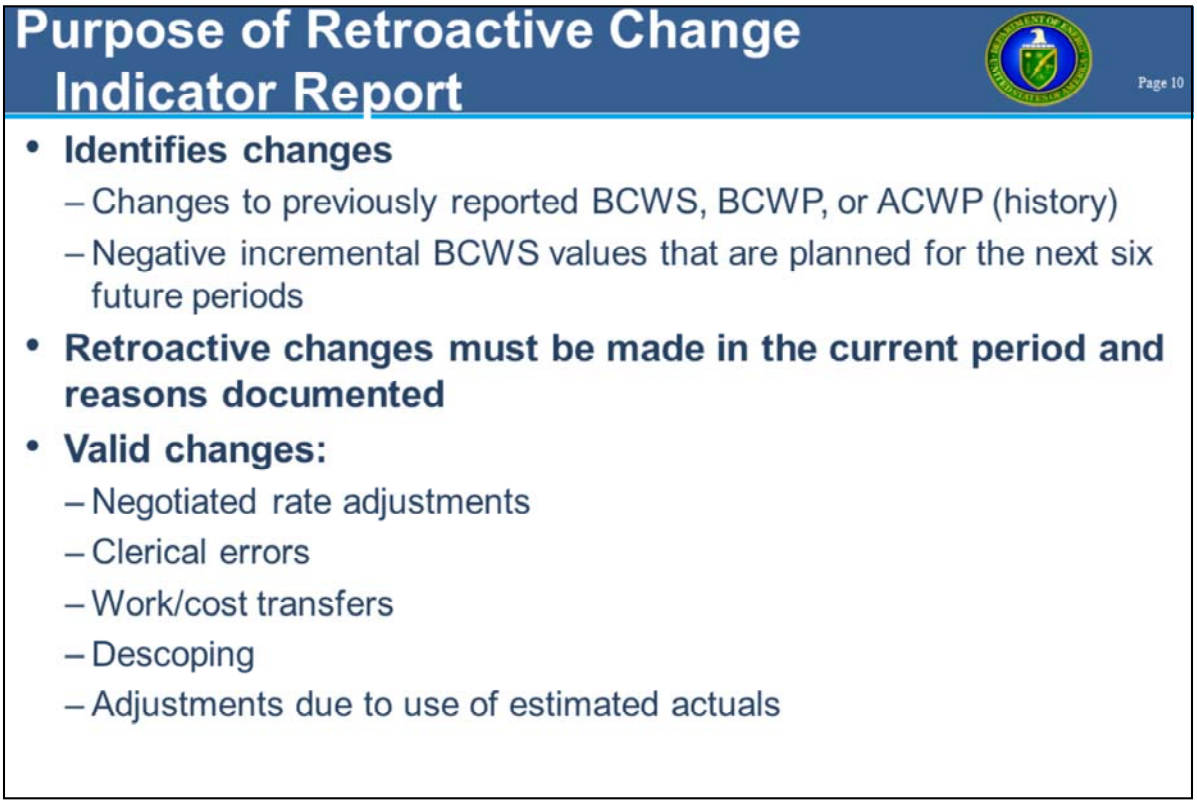
The next indicator is **BCWP WITH NO ACWP.**
Since work or materials must be paid for, it is not possible to earn BCWP without incurring ACWP. For materials, the contractor is expected to use estimated actuals to report ACWP in the same period as the BCWP is earned, thus avoiding false variances. This condition may also occur for elements using the Level of Effort (LOE) earned value technique since with LOE BCWP is earned with the passage of time. In this case, it would signify the support work that was planned to occur is not occurring due to some delay. The delay is likely in the work the LOE function would support. Either way, this condition should be flagged and investigated to determine the root cause.

Next is the COMPLETED WORK WITH ETC indicator.

Work is considered complete when the Control Account (CA) or Work Package (WP) $BCWP_{CUM}$ equals the BAC. The estimate to complete (ETC) is the to-go portion of the estimate at completion (EAC). The ETC should be zero if the work is complete as there should be no projected future cost left to incur. This condition may exist if labor or material invoices are lagging behind and have not yet been paid, which indicates improper use of estimated actuals. This situation requires investigation to determine the root cause and corrective action.

Next is the INCOMPLETE WORK WITHOUT ETC.
This metric is the opposite of the previous one. If work has not been completed, there should be a forecast of the remaining costs to be incurred. If this condition exists consider it an error that requires corrective action.

The next indicator is BCWS without BCWP and ACWP.
This indicator identifies active open control accounts where work is scheduled in the current period; however, no performance or costs have been reported. This is not an error but may point to performance issues.



The next report that pertains to data validity is the PARS II Retroactive Change Indicator (6-months; PMB Level) Report. The purpose of the report is to highlight discrepancies in Earned Value data reporting based on the time-phased data reported in the last 6 reporting periods. The report identifies retroactive changes made to previously reported BCWS, BCWP, and ACWP data, as well as negative BCWS values that are planned for future periods. Since this report covers a 6 month window, it should be reviewed minimally every 6 months; although a review every 1 to 3 months is recommended to allow for real-time investigation.

The ANSI/EIA-748 states that an organization must be able to make routine accounting adjustments and correct data errors, but it should also control changes to prior and current period data to prevent inappropriate changes from being made to previously reported data. Corrections should always be made if wrong data is affecting the management value of the system, but management reports will also be compromised if current plans or project history (performance to date information) is constantly changing.

The term ‘retroactive’ applies when previously reported BCWS, BCWP, or ACWP was erroneous and needs to be corrected. The process to make the change is to make it in the current period. Previously reported data, i.e. history, is not typically changed and the cumulative effect of the change is shown in the current period. Examples of valid reasons to change previously reported data include:

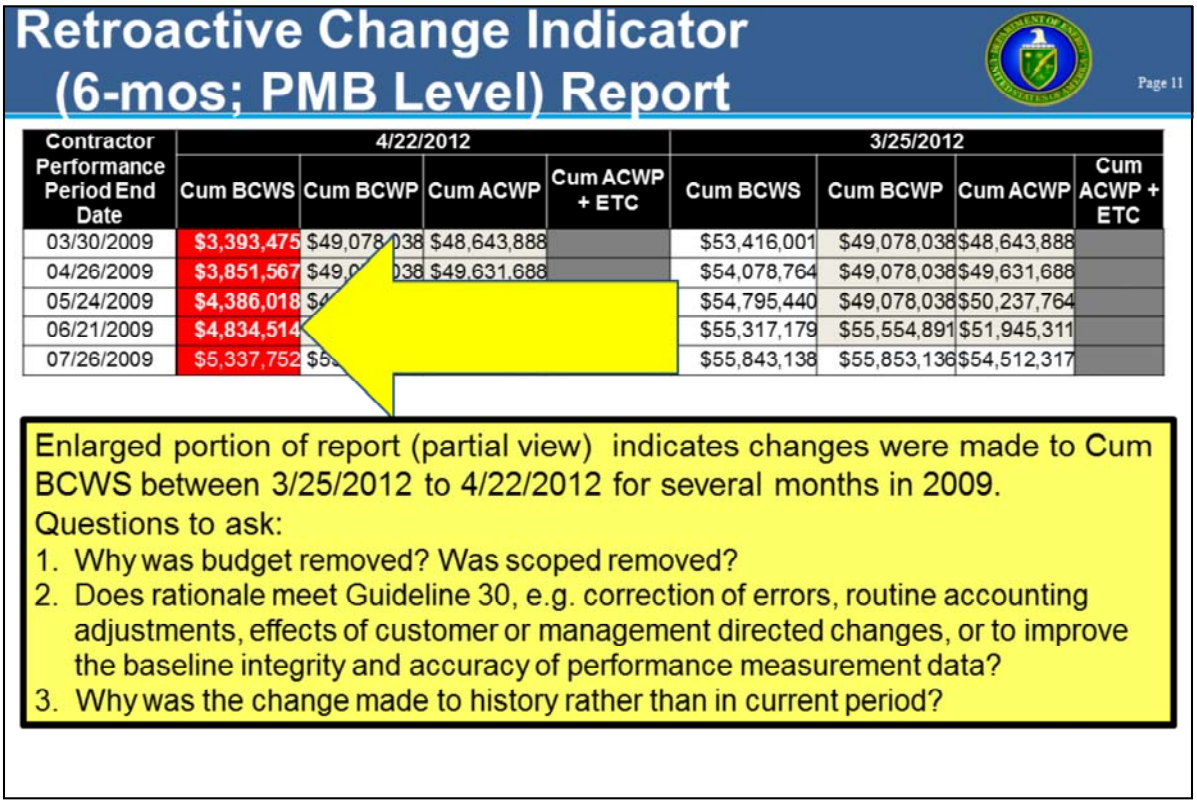
Negotiated indirect rates or overhead rate adjustments: While the impact of the rate changes may go back to the beginning of the fiscal year; the sum of the impact is reported in the ACWP for the reporting month that the customer negotiated and authorized the

change.

Clerical errors that effect BCWS, BCWP, and ACWP should be corrected as soon as discovered.
Work/cost transfers occur when it is discovered that the work was erroneously assigned to an incorrect WBS.

Work in process termination: When an open work package is not to be completed, BCWS and BAC are set equal to the BCWP in the current period.

Another example is adjustments to previously reported ACWP when actual costs replace estimated actuals.

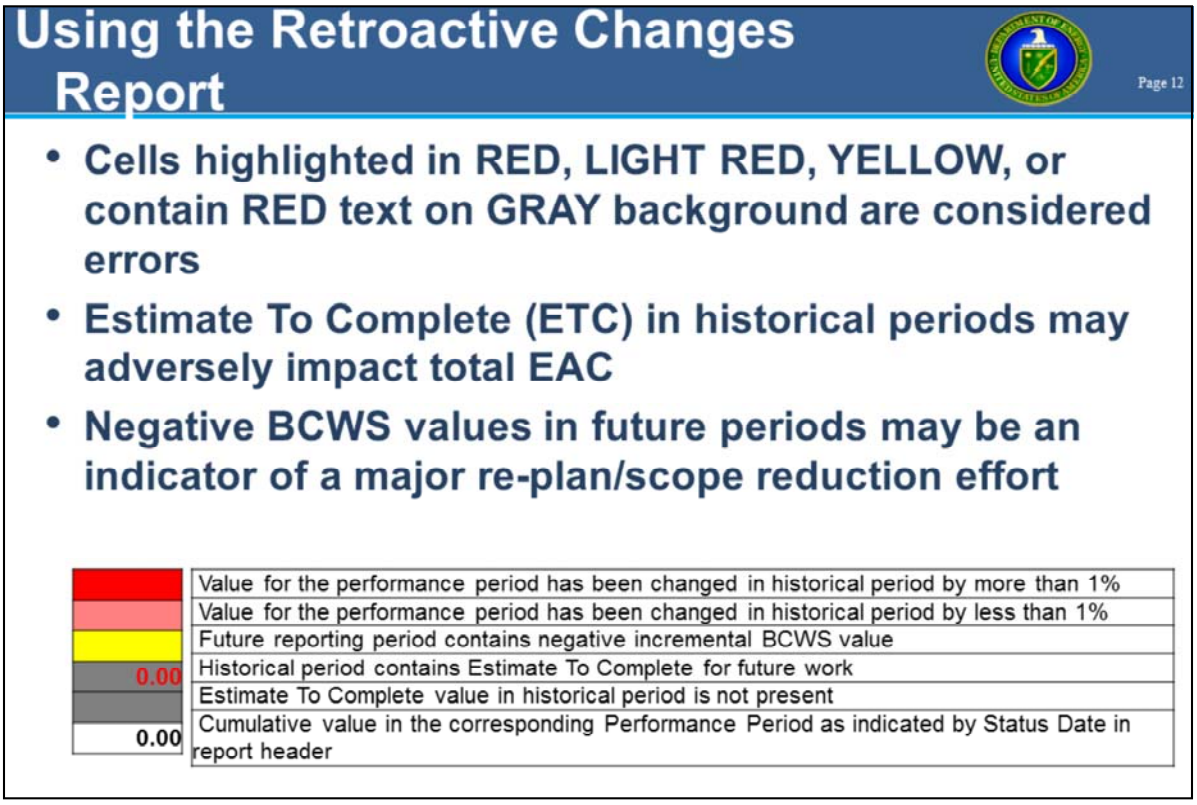


When a change to history occurs or a future negative BCWS is planned, the field where the change was made will be identified with a background color. The legend is presented on the next slide.

While there may be a reason for these kinds of changes, an excessive amount may indicate the system lacks discipline.

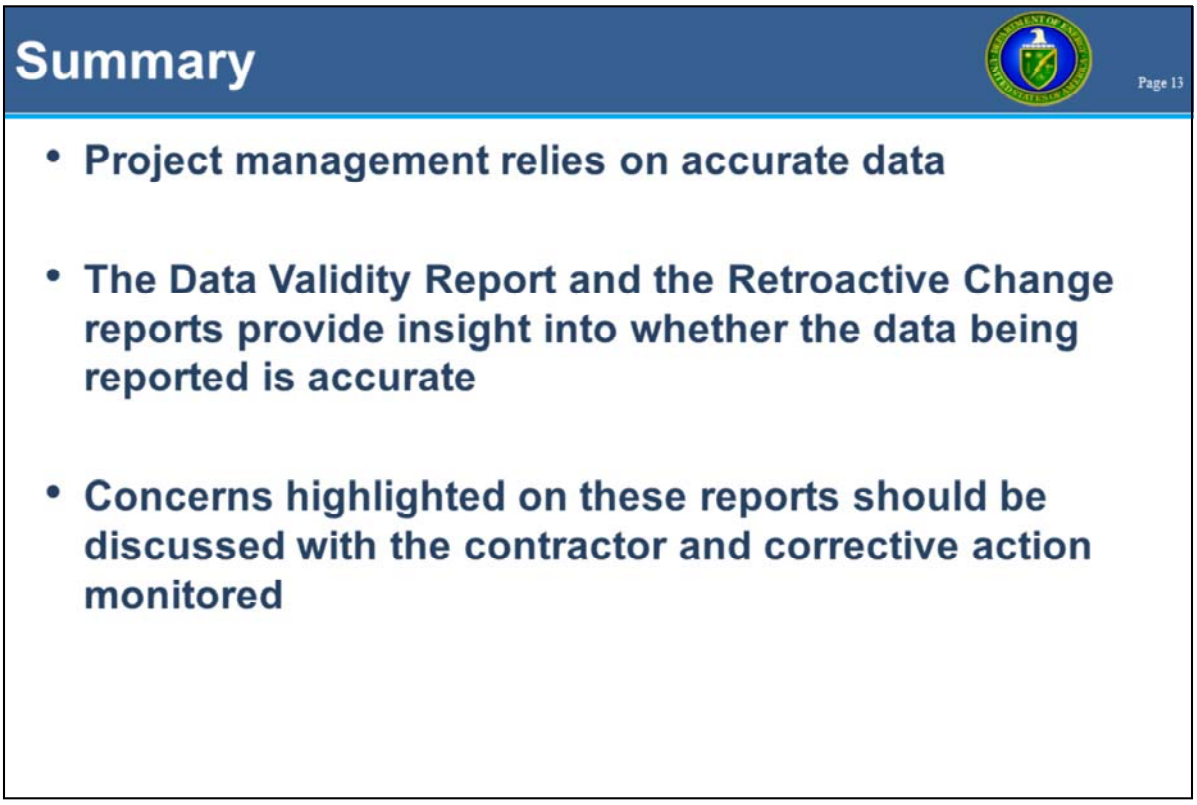
Questions to ask when changes have been identified include:

Why was budget removed? Was scope removed?
Does the rationale meet Guideline 30, e.g. correction of errors, routine accounting adjustments, effects of customer or management directed changes, or to improve the baseline integrity and accuracy of performance measurement data?
Why was the change made to history rather than in the current period?

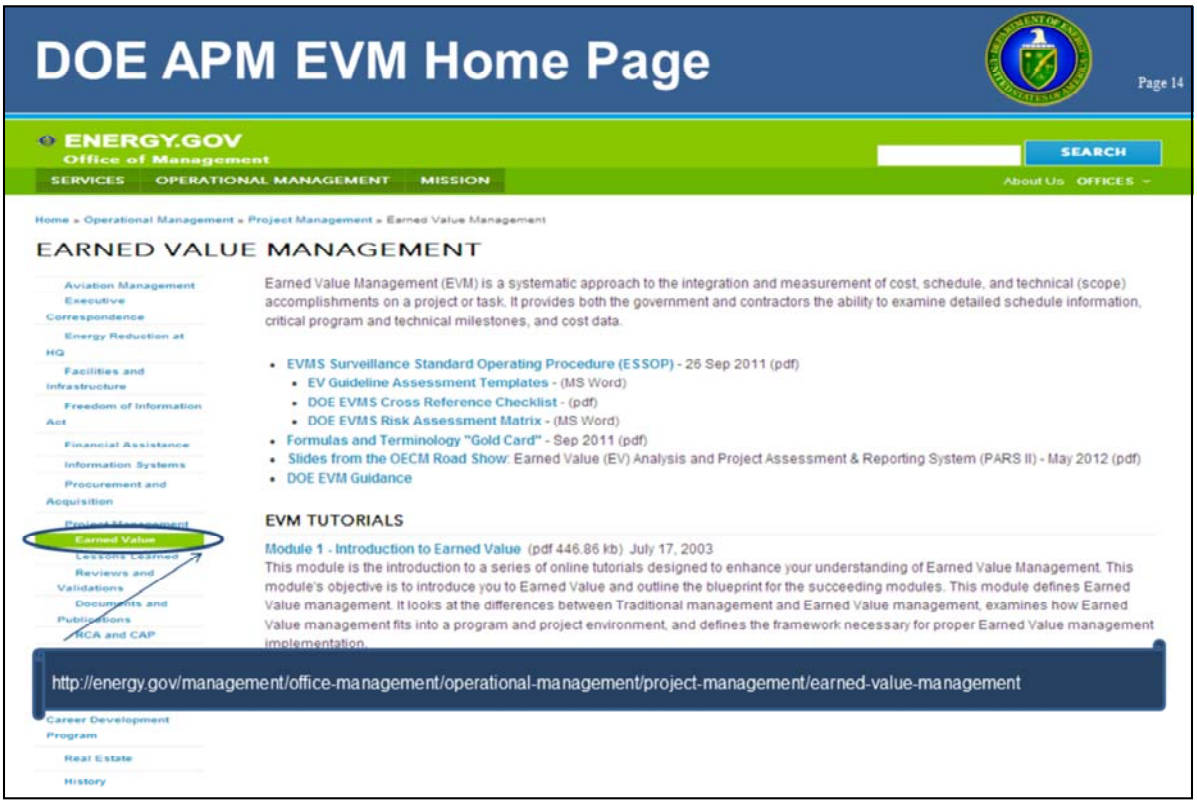


The Report should not have any cells highlighted in RED, LIGHT RED, YELLOW, or contain RED text on GRAY background (see Legend for color definitions). Any of these conditions is considered an error and should be evaluated.

- While a light red highlight indicates a smaller degree of impact than a bright red highlight, historical period data must maintain integrity and not change in subsequent periods.
- The Estimate To Complete (ETC) in historical periods may adversely impact the EAC.
- Negative BCWS values in future periods may be an indicator of a major re-plan/scope reduction effort and should be analyzed in detail as they may be skewing progress and at-complete performance metrics.



Project management relies on accurate data in order to make predictions regarding technical, cost, and schedule performance. The Data Validity Report and the Retroactive Change reports provide insight into whether the data being reported is accurate. The FPD should communicate all concerns highlighted on these reports to the contractor so corrections are implemented where needed. The FPD should also monitor these corrective actions to ensure they are made in a timely manner and monitor data validity reports to avoid reoccurrence.



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.