



The Department of Energy's Project Reporting and Assessment System (PARS)

PARS Empower Leadership Tools and Data Validation Module 2 PARS User Advanced Training

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Welcome to the second of eight sessions which comprise the Department of Energy's Project Reporting and Assessment System advanced user training. The analysis and reporting capabilities of PARS provide decisions makers at all levels to best manage these projects over their lifecycle. In this course we will look at the Leadership Tool and Data Validity in the Earned Value Management System and Project Analyst Standard Operating Procedure (EPASOP). Unlike the basic user course where the EPASOP and PARS were introduced, the focus here will be on looking at data in PARS and using this data for analysis.

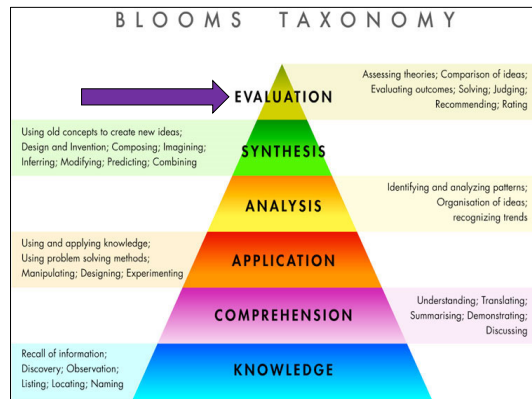


Training Objectives

- **Assess which Empower and PARS tools and capabilities to use in analyzing projects.**
- **Apply DOE EVMS and Project Analysis Standard Operation Procedure to projects**
- **Evaluate Projects using appropriate dashboards, views, charts, and reports information**
- Assess data provided to DOE through the use of EVMS metric tests and data quality reports
- **Building advanced pre-filters in Empower**

AT COMPLETION - EARN 8 CEU/PDUS

- Federal Employees – Will be added to CHRIS
- Contractor Employees – Certificate will be emailed



This second session will focus on the first three training objectives. The course is now looking at using the tools for data analysis, and project evaluation.

I would like to thank the Federal Project Directors providing material for the is course, Pam Marks from Salt Waste Processing Facility, Janelle Armijo from Safety Significant Confinement Ventilation System, and Janet Diediker from Tank-Side Cesium Removal System Demonstration Subproject. You will see material from their projects throughout the course.



Leadership Dashboard / Analysis

- The Leadership Dashboard is not referenced in the EPA SOP but worth review.
- Provided for leaders to gain reports and graphics for a portfolio of projects.
- Good use of Grouping by Program, Site or a collection of projects.
- At Level 1 Only, but Drilling can take place
- Can Export View, Chart and Report to share with users who do not have a PARS account.
- Optional – Leaders may or may not have PARS Accounts
- Useful for all for a quick check of projects
- Top Level generally reflect MR as part of Budget

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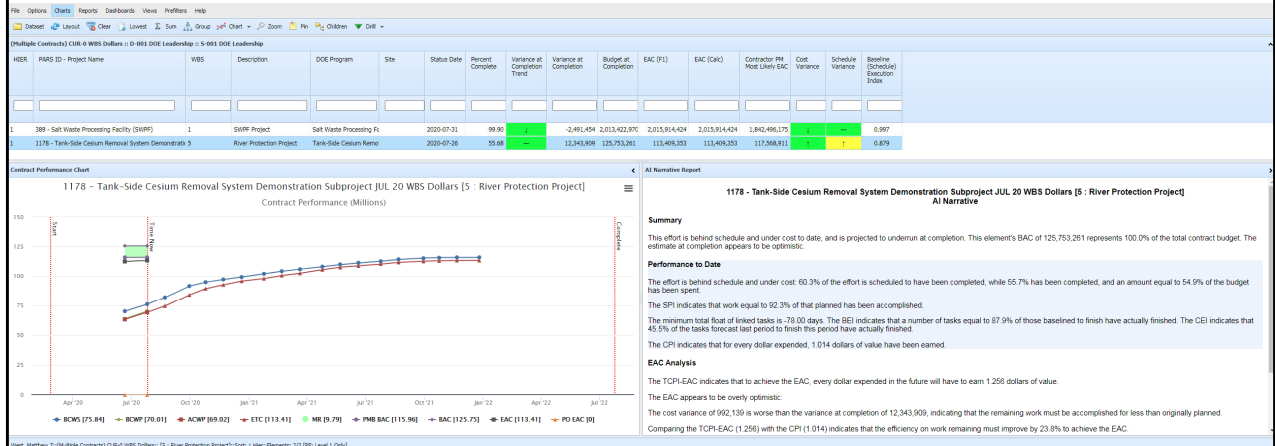
In using the Leadership Dashboard, this was built to focus on top level reports for leaders looking at this level rather than drilling into the analysis on a project. It is further set up to consider a portfolio level look at the projects a leader has under their prevue or to look at a specific site. It is useful for all users in terms of this top level view.



Leadership Dashboard / Analysis

Three parts to the Leadership Dashboard:

- DOE Leadership View
- Contract Performance Chart
- AI Narrative Report



The Leadership Dashboard will start with the project that you are on and open with the pre-filter – Level 1 Only. You will need to open the dataset and add the remainder of projects you want to add to the view by selecting all contracts or holding the control key down while adding projects. Once you have done this, you will be able to group and sum by group to provide Portfolio, Program, Site or Project specific items. For example, if you have project with 5 subprojects, you may want to do this to combine these to gain knowledge at the project level rather than at just the subproject level. One item to note, the Contract Performance Chart is tied to one project/subproject at a time and does not show the aggregate. We will now take a look at each of the tri-pane items in more detail.



Leadership Dashboard / Analysis

The DOE Leadership View:

- Level 1 detail
- Minimal acronyms
- Focuses on big picture view of the project
- Includes management reserve
- Mix of trending values and numbers.
- Includes multiple reported EACs from the Contractor
- Can Group and Sum

HIER	PARS ID - Project Name	WBS	Description	DOE Program	Site	Status Date	Percent Complete	Variance at Completion Trend	Variance at Completion	Budget at Completion	EAC (F1)	EAC (Calc)	Contractor PM Most Likely EAC	Cost Variance	Schedule Variance	Baseline (Schedule) Execution Index
1					El	2020-07-31	79.47	—	-19,144,082	251,345,462	270,489,544	270,489,544	0	—	—	0.924
1					or	2020-07-31	10.72	↑	73,244,418	81,909,029	8,664,611	8,664,611	81,909,029	—	↑	1.000
1					mi	2020-07-31	93.94	—	2,759,524	168,000,000	165,240,476	165,224,717	168,000,000	—	↑	0.999
1	1178 - Tank-Side Cesium Removal Sy 5		River Protection Project		Tank-Side	2020-07-26	55.68	—	12,343,909	125,753,261	113,409,353	113,409,353	117,568,911	↑	↑	0.879
1					Pr	2020-07-26	53.15	—	1,228,892	101,112,722	99,883,830	99,883,830	104,595,000	↓	↓	0.894
1					Sci	2020-07-24	25.45	—	447,416	87,834,119	87,386,702	87,386,702	0	—	↑	0.932
1					Call	2020-06-30	39.12	↑	1,182,304	70,449,299	69,266,995	60,914,411	0	—	↓	0.848
1					et	2020-07-26	9.12	—	31,886,939	237,367,405	205,480,466	205,480,466	205,480,466	—	↑	1.544

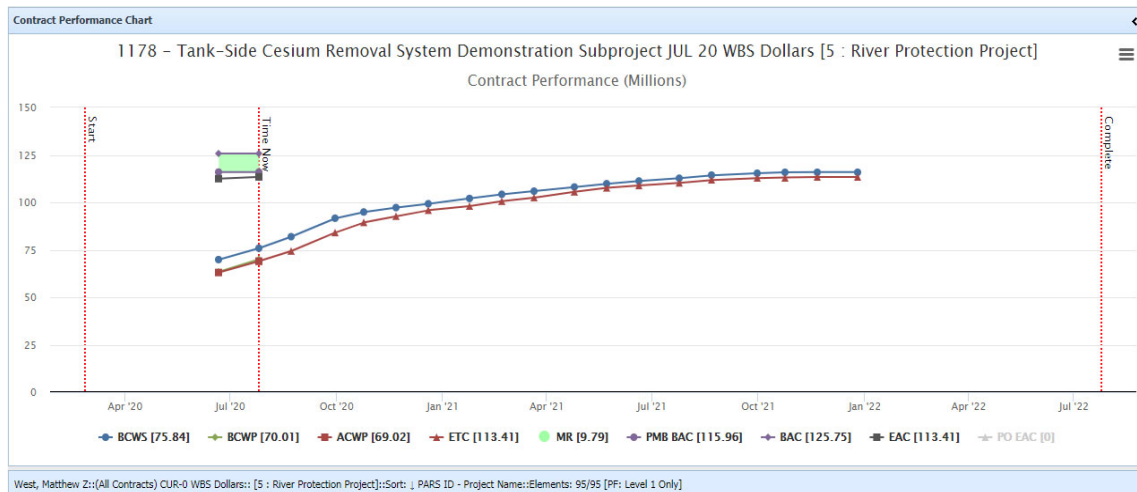
The Leadership sort view provides select data to leadership on the projects they have responsibility for. There are trends and values for the variance along with budget to put this in perspective. A project with a 2 million dollar variance but a budget of \$250,000,000 is different that \$2 million for a \$50,000,000 project. Multiple Estimates at Completion (EAC) from the Contractor are provided. The Format 1 (F1) EAC reflects the EAC the contractor cost system provides, while the EAC (Calc) sums up the reported “Actual Cost of Work Performed” and the Estimate to Complete values from each Control Account Manager (CAM) + any undistributed budget. All values are contractor reported values. Generally you expect to see the be the same to gain confidence in that the values reported to the government are the same as the cost system report. The last EAC value provided is the Contractor Project Managers Most Likely EAC. This can and generally does differ from the calculated value, as the project manager should be looking at all items holistically and taking into account the risks that are likely, both threats and opportunities. In addition to cost and schedule variance trend, a value for the Baseline Execution Index (BEI) is provided. The BEI is a count of the tasks completed / the number of baseline tasks planned to be complete. If this is less than 0.95 then further investigation is needed as to why they are not completing the planned tasks. If there is a good Schedule Variance (Green) then the contractor may be working tasks not planned, which can create a bow wave of tasks

in the future which can be unrealistic to achieve.



Leadership Dashboard / Analysis

- The Contract Performance Chart provides a snapshot for many key values for all users, not just senior leadership



The contract performance chart on the Leadership dashboard provides a graphical view of what is planned, earned and actual cost for up to time now (status date) as well as the Budget, Calculated EAC, and MR. For the future period data, planned work and Estimate to Complete is provided. For DOE, rather than limit to a contract, the Start and Complete dates are the Critical Decision 2, Approve Performance Baseline, and Estimated CD-4, Project Completion” dates such that this report is project based. In this case, from CD-2 to the first data reported, there is a gap. A contractor is allowed two periods before data is required after the baseline is set and for 2020 the pandemic added a delay such that the first month reported was June 2020. In the chart, the PO EAC or Project Office EAC is turned off as we are not asking the Federal Project Director for an EAC at this time. If a project end data moves to the right of the Complete line, it is likely to miss schedule commitment and if the EAC is above the BAC, it is likely to be over budget. This one chart can provide a great deal of information to the leader using it.



Leadership Dashboard / Analysis

1178 - Tank-Side Cesium Removal System Demonstration Subproject JUL 20 WBS Dollars [5.05.40 : LAWPS - Cesium Removal Capability] AI Narrative

Summary

This effort is behind schedule and under cost to date, and is projected to underrun at completion. This element's BAC of 115,962,822 represents 92.2% of the total contract budget. The estimate at completion appears to be optimistic.

Performance to Date

The effort is behind schedule and under cost: 65.4% of the effort is scheduled to have been completed, while 60.4% has been completed, and an amount equal to 59.5% of the budget has been spent. The SPI indicates that work equal to 92.3% of that planned has been accomplished.

The minimum total float of linked tasks is -78.00 days. The BEI indicates that a number of tasks equal to 87.9% of those baselined to finish have actually finished. The CEI indicates that 45.5% of the tasks forecast last period to finish this period have actually finished.

The CPI indicates that for every dollar expended, 1.014 dollars of value have been earned.

EAC Analysis

The TCPI-EAC indicates that to achieve the EAC, every dollar expended in the future will have to earn 1.035 dollars of value. The EAC appears to be overly optimistic:

The cost variance of 992,139 is worse than the variance at completion of 2,553,469, indicating that the remaining work must be accomplished for less than originally planned.

The EAC of 113,409,353 is less than the CPI Forecast of 114,319,579.

Key Earned Value Data Anomalies

No key anomalies detected. (See the DQI report for other possible database anomalies.)

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The AI Narrative Report on the Leadership dashboard provides an written understanding of what the Earned Value Data is telling the user. This report was added to the dashboard to help the infrequent user understand if the project is on track, struggling or ahead. In the case of Project 1178, The bottom line is that it is behind schedule (Covid-19 related), under cost, and projected to complete below the PMB. Performance , EAC and Anomalies round out the report. Under performance are a few additional items not in the Sort View, such as total float and Current Execution Index (CEI). The minimum total float being negative should be understood and the CEI being 45.5% for the period show in this case the effect of Covid-19 on the project. The EAC notes that it is less than the CPI Forecast (Independent EAC) which is generally considered the basement for a project, again something that you would want to investigate further. Given these three components of the Leadership Dashboard the user can get a top level view of a projects health and a good idea of its future. It can help guide the analyst in areas they might want to investigate further. As you remember from the basic course, the Sort View, Chart, and Report can each be extracted to provide as a spreadsheet, graphic, or narrative in tools used with your leadership, as generally a leader does not have a PARS account.



Checks on Learning – Leadership Dashboard

Given the following two projects, please answer the following questions

HEER	PARS ID - Project Name	WBS	Description	DOE Program	Site	Status Date	Percent Complete	Variance at Completion Trend	Variance at Completion	Budget at Completion	EAC (F1)	EAC (Cac)	Contractor PM Most Likely EAC	Cost Variance	Schedule Variance	Baseline (Schedule) Execution Index
1	1024 - Safety Significant Confinement Ventilation System	01	TRU WASTE	Safety Significant Op	TRU WASTE	2020-09-21	40.5%	Red	-29,598,124	166,818,481	236,407,000	236,407,000	212,947,840	-	-	0.840
2	1024 - Utility Shaft Project	01	TRU WASTE	Utility Shaft Project	TRU WASTE	2020-09-21	34.7%	Green	39,874	169,843,529	169,524,800	169,524,800	174,325,454	-	-	0.856
2222	SUMMARY	SUM (Of: Level 1 On)					41.1%	Yellow	-29,598,600	438,762,410	407,961,800	407,961,800	486,973,297	-	-	0.851

Contract Performance Chart

AI Narrative Report

SUMMARY JUN 20 WBS Dollars [SUMMARY : PF: Level 1 Only]
AI Narrative

Summary
This effort is behind schedule and over cost to date, and is projected to overrun at completion. This element's BAC of 438,762,410 represents 12.4% of the total contract budget. The estimate at completion appears to be reasonable.

Performance to Date
The effort is behind schedule and over cost: 53.9% of the effort is scheduled to have been completed, while 41.2% has been completed, and an amount equal to 41.9% of the budget has been spent. The SPI indicates that work equal to 76.3% of that planned has been accomplished. The minimum total float of linked tasks is -205.00 days. The SEI indicates that a number of tasks equal to 85.1% of those baselined to finish have actually finished. The CEI indicates that 20.8% of the tasks forecast last period to finish this period have actually finished. The CPI indicates that for every dollar expended, 0.961 dollars of value have been earned.

EAC Analysis
The TCPI-EAC indicates that to achieve the EAC, every dollar expended in the future will have to earn 0.909 dollars of value. Estimate at Completion appears reasonable.

Key Earned Value Data Anomalies
No key anomalies detected.
(See the DQ report for other possible database anomalies.)



Checks on Learning – Leadership Dashboard

(Multiple Contracts) CUR-0 WBS Dollars :: D-001 DOE Leadership

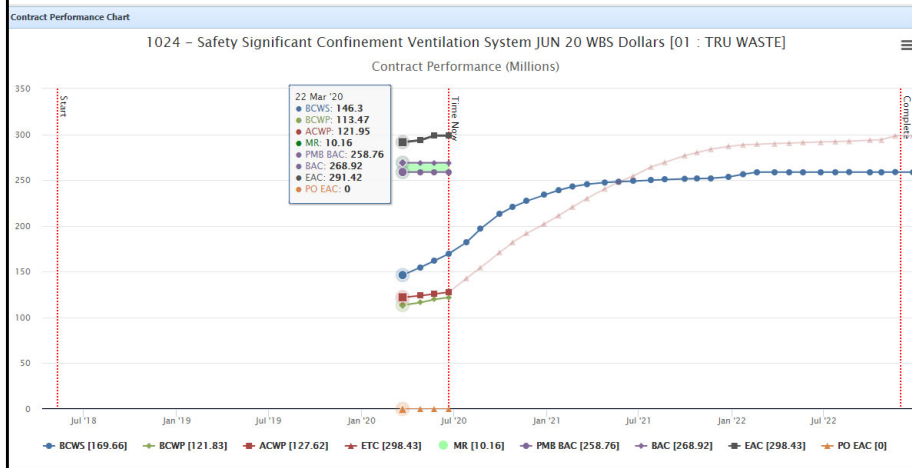
HIER	PARS ID - Project Name	WBS	Description	DOE Program	Site	Status Date	Percent Complete	Variance at Completion Trend	Variance at Completion	Budget at Completion	EAC (F1)	EAC (Calc)	Contractor PM Most Likely EAC	Cost Variance	Schedule Variance	Baseline (Schedule) Execution Index
1	1024 - Safety Significant Confinement Ventilation System	01	TRU WASTE	Safety Significant Co		2020-06-21	45.30	—	-29,508,124	268,918,881	298,427,005	298,427,005	312,647,843	—	—	0.845
1	1064 - Utility Shaft Project	01	TRU WASTE	Utility Shaft Project		2020-06-21	34.59	+	308,724	169,843,529	169,534,805	169,534,805	174,325,454	+	—	0.856
#####	SUMMARY		SUM (PF: Level 1 Only)				41.16	—	-29,199,400	438,762,410	467,961,810	467,961,810	486,973,297	+	—	0.851

- In looking at the Contractor PM Most Likely EAC, what does it mean when it exceeds the Budget at Completion?
 - The project will exceed the current Contract Budget Base (PMB + MR)
 - The projects are both likely to exceed the Contract Budget Base (PMB + MR)
 - Looking at both project summary The PM projects it will take 48.2 million additional dollars to complete
 - One Project is likely to exceed Contract Budget Base and one is not.
 - Answers A – C are correct
- In looking at the Baseline (Schedule) Execution Index, what does 0.851 for both project represent?
 - It is under 0.95 and warrants further investigation
 - It is above .75, so no problem
 - It means that they are not completing the number of tasks than the baseline schedule shows as planned to be completed at this time
 - It means the project cannot recover
 - Answer A and C are correct
 - Answer A, C and D are correct

- In looking at the Contractor reported EAC from Format 1 and EAC (Calculated) they are the same. What does this mean?
 - The contractors cost tool and the data used to calculate EAC (ACWP + ETC + UB) agree.
 - The project has a problem as the F1 should align to the PM Most Likely EAC
 - Both are correct
 - None are correct
- Cost Variance is Green and Schedule Variance is Red and Flat – What does this mean? Remember that Red means less than or equal to 10%.
 - The schedule variance dollar value is more than 10% lower than it would be if the project was on schedule per the baseline.
 - The schedule variance is getting worse.
 - Cost Variance is greater than -5% and less than 10%
 - Cost Variance for 1064 is improving
 - Answers A, C and D are all correct
 - Answers A and D are correct



Checks on Learning – Leadership Dashboard



5. The project has work scheduled past Completion. This means the project is projected to complete after the Baseline CD-4 date.
 - A. True
 - B. False
6. Can the MR available to the contractor cover the likely overrun?
 - A. Yes
 - B. No
7. What does it mean with ETC is greater than BCWS in the future?
 - A. The Contractor is projecting that the cost to complete the remaining work is higher than the current planned effort.
 - B. The planned work requirements should be relooked to make sure they represent the project.
 - C. In Spring of 2021, the costs will exceed the planned effort, likely as tasks not earned get moved to the right.
 - D. All of the above.
 - E. None of the above.



Checks on Learning – Leadership Dashboard

SUMMARY JUN 20 WBS Dollars [SUMMARY : PF: Level 1 Only] AI Narrative

Summary

This effort is behind schedule and over cost to date, and is projected to overrun at completion. This element's BAC of 438,762,410 represents 12.4% of the total contract budget. The estimate at completion appears to be reasonable.

Performance to Date

The effort is behind schedule and over cost: 53.9% of the effort is scheduled to have been completed, while 41.2% has been completed, and an amount equal to 41.9% of the budget has been spent.

The SPI indicates that work equal to 76.3% of that planned has been accomplished.

The minimum total float of linked tasks is -206.00 days. The BEI indicates that a number of tasks equal to 85.1% of those baselined to finish have actually finished. The CEI indicates that 20.8% of the tasks forecast last period to finish this period have actually finished.

The CPI indicates that for every dollar expended, 0.981 dollars of value have been earned.

EAC Analysis

The TCPI-EAC indicates that to achieve the EAC, every dollar expended in the future will have to earn 0.909 dollars of value.

Estimate at Completion appears reasonable.

Key Earned Value Data Anomalies

No key anomalies detected.

(See the DQI report for other possible database anomalies.)

- 8. In looking at a CEI of 20.8% and a BEI of 85% , what does it mean?**
- A. Given that the SPI show that 76.3% planned work is accomplished, there is no issue.
 - B. In the current period, they are not following their plan in the schedule.
 - C. Of all planned activities in the baseline, 85% have completed, but of those forecast to complete this period, only 20.8% have.
 - D. Answers A and C are correct
 - E. Answers B and C are correct



Top Level Tool: PB-K Table

Live Demo & Discussion

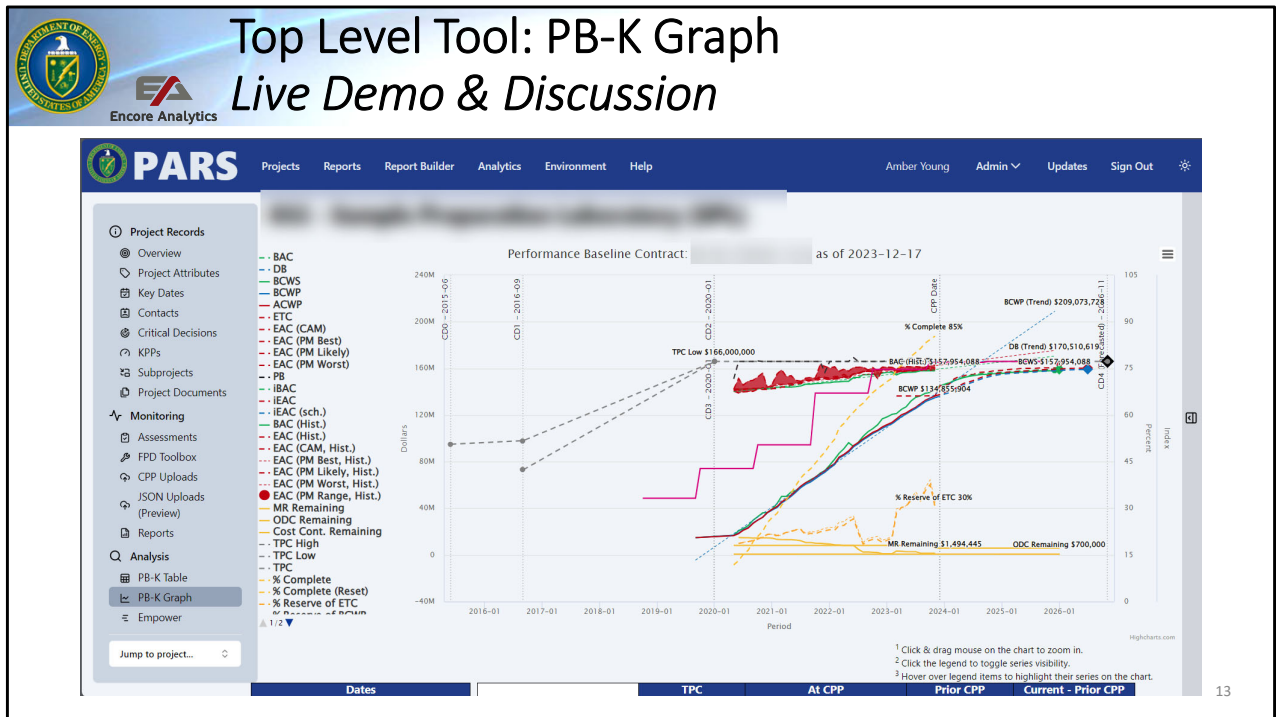
The screenshot displays the PARS software interface. The top navigation bar includes 'PARS', 'Projects', 'Reports', 'Report Builder', 'Analytics', 'Environment', 'Help', 'Amber Young', 'Admin', 'Updates', and 'Sign Out'. The left sidebar contains a navigation menu with categories like 'Project Records', 'Monitoring', 'Assessments', 'FPD Toolbox', 'JSON Uploads', 'Reports', 'Analysis', and 'Empower'. The main content area shows project details for '832 - Sample Preparation Laboratory (SPL)'. It includes a 'General' tab with a table of key dates and a 'PB-K Table' section with a list of project attributes.

CPP Status Date	2023-12-17	2023-11-26
QA Period	2024-02	2024-01
PM RVO		Green
Date in of Latest CPP Upload	2024-03-27 16:12	
	2023-12-17	

Name	PM	PM
Acronym		
Program		
Program Budget		
Site		
State		
Contract ID		
Information Tech		
PM Contract		
Increment		
Project No.		
Current CD		
Current FPO		
Current CD4		
Phase IN		



Top Level Tool: PB-K Graph Live Demo & Discussion



Report Builder: Tool to pull data out for options you may need.



Benchmarking Indicators

Watchlist factors use the following benchmarks (BM):

- **BM01 - iEAC breaches PB**
- **BM02 - cost increases from CD-1 to CD-2 as well as cost increases from CD-0 to CD-1 (correlates w/ completed projects)**
- **BM03 - CD-2 approved outside of 18 to 21% complete (correlates w/ completed projects)**
- **More are being developed such as comparing SPI/CPI for discrete work only with LOE and apportioned removed**



Project Analysis Plan

Producing
trustworthy
data and
knowledge
for
management

- **Current** - As agreed to or directed, such as time now, end of reporting period, or a predetermined specific period of time.
- **Accurate** - Without error, mistake, miscalculations, or anomalies.
- **Complete** - Comprehensive, all inclusive, total, or entire.
- **Repeatable** - Ability to reproduce current, accurate, complete, and auditable results.
- **Auditable** - Ability to trace the source through the entire system/process to validate the results.
- **Compliant** - Demonstrated as meeting the above characteristics and applicable policies, requirements, and procedures

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DOE, in working with the Energy Facilities Contractors Operating Group or EFCOG Project Control Workgroup have a goal for data, both used by a contractor and provided to the government, in this case PARS, to meet the following standards:

Be Current
Be Accurate
Be Complete
Be Repeatable
Be Auditable
and be Compliant

These are critical for the data to lead to knowledge which management and leadership can use to make timely decisions with respect to project execution.

Knowledge vs Information – We live in a world where we all are drowning in information while we thirst for knowledge*. The need for actionable information for leadership and management at all levels is critical and the reason we use earned value data to provide tools like PARS and Empower to help make sense of the information and provide knowledge for each reporting period. We will now delve

further in to the Project Analysis Plan as documented in the EPA SOP.



The Project Analysis Plan

DASHBOARD	CHART	REPORT	VIEW
Data Validity	DOE Data Validity	Validity	DOE Data Validity
Schedule Health	DOE Schedule Health	Schedule Assessment	DOE Schedule Health
Variance Analysis	DOE Variance Analysis	Six Period Summary	DOE Variance Analysis
Trend Analysis	1. DOE Trend Analysis 2. Schedule Execution Indexes 3. MR-UB Trends	1. Earned Schedule 2. BCWS Volatility	1. DOE Trend Analysis 2. Earned Schedule
Forecast	DOE Forecast (EAC to IEACs)	1. Six Period Summary 2. AI Narrative Report (EAC Analysis)	1. DOE Forecast 2. CPI vs TCPI EAC

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The project analysis plan for a project's data is setup to follow five steps. The goal is to understand the variance, trends, and forecasts to inform management and leadership decisions. Within Empower and PARS there are many additional areas you can focus on, based on the basics to help chase down root causes when there are issues detected. The table identifies the five steps aligned with the 5 dashboards set up in Empower. The steps include reviewing the data validity, which looks at the cost data, then schedule health, variances, trends and forecasts. As you look at the data each month, it is easier to find anomalies and to know which items you have already researched and accepted versus areas you are looking for improvements over time. The first two, help identify if the user puts trust in the data towards the EFCOG goal of data that is current, accurate, complete, repeatable, auditable, and compliant. We will focus on Data Validity for the rest of this session and then in turn take on each of the remaining in a separate session.



Data Validity (Cost Data)

- Many of the metrics described in this EPASOP are designed to provide insight into the performance of a project. This is based on belief in the data provided.
- If a contractor's data has one or more of the conditions being tested for by these metrics, the Analyst should investigate further.
- The data validity dashboard has three tools, a report, chart and view. The view is below.

File Options Charts Reports Inputs Dashboards Views Prefilters Admin Help

Dataset Layout Clear Lowest Sum Group Chart Zoom e/notebook Pin Children Drill

1178 - Tank-Side Cesium Removal System Demonstration Subproject JUN 20 WBS Dollars in D-002 DOE Data Validity

HIER	WBS	DEI	LL	LVL	% Complete	% Spent	Complete	Tasks	Incomplete Tasks	Discrete Tasks	B/L Incomp Tasks	CAH	Element Type	EVM	DQI	VAR	Negative BCWS Cur	Negative BCWP Cur	Negative ACWP Cur	BCWS Cum > BAC	BCWP Cum > BAC	ACWP Cum > BAC	ACWP Cum with no BAC	ACWP Cur with no BAC	BCWP Cum with no ACWP	Completed Work with ETC	Incomplete Work without ETC
1	5	River	1		50.44	50.13	0	751	285	280	259		WBS	NA	EFRI	scV	5	0	1	0	0	0	0	0	0	1	0
11	5.05	Trea	2		54.70	54.36	0	751	285	280	259		WBS	NA	ESR	sc	5	0	1	0	0	0	0	0	0	1	0
111	5.05-4	LAW	3		54.70	54.36	0	751	285	280	259		WBS	NA	ESR	sc	5	0	1	0	0	0	0	0	0	1	0
1111	5.05-4	Tank	4		84.19	89.25	0	207	40	39	36		WBS	NA	EFRI	sc	0	0	0	0	0	0	0	0	0	0	0
11111	5.05-4	Tank	5		87.94	102.47	0	79	16	16	12	Stafford Michs	CA	NA	EFRI	scCV	0	0	0	0	0	0	0	0	0	0	0
111111	5.05-4	C-1	x	6	100.00	98.29	1	4	0	0	0	Stafford Michs	WP	LOE	ESR	CV	0	0	0	0	0	0	0	0	0	0	
1111111	5.05-4	C-1	x	6	100.00	120.00	1	12	0	0	0	Stafford Michs	WP	LOE	EFRI	CV	0	0	0	0	0	0	0	0	0	0	

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Data integrity indicators are metrics designed to provide confidence in the quality of the data being provided from the contractor's EVM System. Many of the metrics described in this EPASOP are designed to provide insight into the performance of a project. If a contractor's data has one or more of the conditions being tested for by these metrics, the Analyst should investigate further. The data validity dashboard has three tools as a start point to look at key indicators of data quality. First we will take a look at the Sort View



Data Validity (Cost Data)

DQI	VAR	Negative BCWS Cur	Negative BCWP Cur	Negative ACWP Cur	BCWS Cum > BAC	BCWP Cum > BAC	ACWP Cum > EAC	ACWP Cum with no BAC	ACWP Cur with no BAC	BCWP Cum with no ACWP	Completed Work with ETC	Incomplete Work without ETC
EPSP	HCV	5	0	1	3	0	0	0	0	0	1	0
ESZ	HC	5	0	1	3	0	0	0	0	0	1	0
ESZ	HC	5	0	1	3	0	0	0	0	0	1	0
EPSP	HC	5	0	1	3	0	0	0	0	0	0	0
EPSP	HCV	0	0	0	0	0	0	0	0	0	0	0
ESZ	HC	0	0	0	0	0	0	0	0	0	0	0
EPSP	CV	0	0	0	0	0	0	0	0	0	0	0

There are two indicators and several data quality indicator metrics on this view. The Data Quality Indicator column and Variance Indicator.

- The metrics listed are :
- Negative BCWS, BCWP, or ACWP entries in current period
- $BCWS_{CUM} > BAC$
- $BCWP_{CUM} > BAC$
- $ACWP_{CUM} > EAC$
- $ACWP_{CUM}$ with no BAC
- $ACWP_{CUR}$ with no BAC
- $BCWP_{CUM}$ with no ACWP
- Completed Work with ETC
- Incomplete Work without ETC

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Data integrity indicators are metrics designed to provide confidence in the quality of the data being provided from the contractor's EVM System. Many of the metrics described in this EPASOP are designed to provide insight into the performance of a project. If a contractor's data has one or more of the conditions being tested for by these metrics, the Analyst should investigate further. The data validity dashboard has three tools as a start point to look at key indicators of data quality. First we will take a look at the Sort View

The Data Quality Indicator Column has up to four flags. E (Earned Value Data), S (Schedule Data), I (Integration Data), and F (Forecast Data). "E" means that one or more Cost DQI flags is tripped. In this case you can see that three of the metrics indicate flags. One key to note, a flag is not a fail, it means the user should take a closer look. It may be ok or it may indicate an area in the EVMS that needs attention.

The VAR or Variance column indicates that a variance report may be needed. As PARS is used across many systems, the VAR column is set to a percent threshold and does not include a dollar threshold at this time (it may in the future). A letter in this column mean that there is a likelihood that a Control Account Manager (CAM) should have a Variance report in the Format 5 report placed in the DMS area of PARS. C and

S are Cost and Schedule on a cumulative basis while c and s mean for the current period. A “V” is based on tripping a variance threshold. It is recommended that the user read the IPMR / CPR format 5 report to gain further insight from the CAM and project manager.

There are nine metric categories on this report.

NEGATIVE $BCWS_{CUR}$, $BCWP_{CUR}$, $ACWP_{CUR}$

The budgeted cost of 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 backed out. While this might occur due to re-plan actions it should be explained. Negative ACWP in the current period indicates prior charges are being backed out. 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.**

While negative values in the current period may be valid, they should be investigated. Authorized changes to previously reported data must be reflected in the current period BCWS, BCWP, or ACWP – never made retroactively to previously reported periods.

Remember there is a Retroactive Changes Report (in the Project Reports Tab – Project Summary Excel workbook), discussed in greater detail below, which shows when reported history was changed by comparing each monthly upload of data.

$BCWS_{CUM} > BAC$

The BCWS is the project budget time-phased over the period of performance. The summation of BCWS for all reporting periods should always equal the budget at completion (BAC) for the same level. In other words, the $BCWS_{CUM}$ should equal BAC on the month the project is planned to complete. **If $BCWS_{CUM}$ is greater than BAC, consider this an error in the EVMS and pursue corrective action.**

$BCWP_{CUM} > BAC$

The budgeted cost of work performed (BCWP) is the amount of BCWS earned by the completion of work to date. **The $BCWP_{CUM}$ may not exceed the value of BAC. The project is considered complete when $BCWP_{CUM}$ equals BAC. If $BCWP_{CUM}$ is greater than the BAC, consider this an error.**

$ACWP_{CUM} > EAC$

The Estimate at Completion (EAC) consists of two components, the actual costs incurred to date ($ACWP_{CUM}$) plus the estimate of all future costs, i.e. the Estimate to Complete (ETC). **The $ACWP_{CUM}$ can only be greater than 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.**

$ACWP_{CUM}$, $ACWP_{CUR}$, or EAC WITH NO BAC

The actual cost of work performed (ACWP) is the total dollars spent on 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 EVMS. Work should only be performed if there is a clear contractual requirement. **If there are Work Breakdown Structure (WBS) elements that contain EAC or ACWP but no BAC, consider this an issue that needs to be investigated.**

BCWP WITH NO ACWP

Since work or materials must be paid for, it is not possible to earn BCWP without incurring ACWP. For material receipts not yet billed, the contractor is expected to use estimated actuals to report ACWP in the same period as the BCWP, thus avoiding false variances. This condition may also occur for elements using the Level of Effort (LOE) earned value technique. 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 further investigated to determine the root cause.**

COMPLETED WORK WITH ETC

Work is considered complete when the Control Account (CA) or Work Package (WP) $BCWP_{CUM}$ equals 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 have not been paid yet which indicates improper use of estimated actuals (also referred to as 'accruals'). This situation requires investigation to determine the root cause and corrective action.

INCOMPLETE WORK WITHOUT ETC

This metric is the opposite of section 2.1.7 of this SOP. 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.**

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.**



Data Validity (Cost Data)

DQI	VAR	Negative BCWS Cur	Negative BCWP Cur	Negative ACWP Cur	BCWS Cum > BAC	BCWP Cum > BAC	ACWP Cum > EAC	ACWP Cum with no BAC	ACWP Cur with no BAC	BCWP Cum with no ACWP	Completed Work with ETC	Incomplete Work without ETC
EPSP	BCV	5	0	1	3	0	0	0	0	0	1	0
ESZ	HC	5	0	1	3	0	0	0	0	0	1	0
ESZ	HC	5	0	1	3	0	0	0	0	0	1	0
EPSP	HC	5	0	1	3	0	0	0	0	0	0	0
EPSP	BCV	0	0	0	0	0	0	0	0	0	0	0
ESZ	CV	0	0	0	0	0	0	0	0	0	0	0

There are two indicators and several data quality indicator metrics on this view. The Data Quality Indicator column and Variance Indicator.

- The metrics listed are :
- Negative BCWS, BCWP, or ACWP entries in current period
- $BCWS_{CUM} > BAC$
- $BCWP_{CUM} > BAC$
- $ACWP_{CUM} > EAC$
- $ACWP_{CUM}$ with no BAC
- $ACWP_{CUR}$ with no BAC
- $BCWP_{CUM}$ with no ACWP
- Completed Work with ETC
- Incomplete Work without ETC

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Looking at this data presented, there are flags in Negative BCWS and Negative ACWP in the current period and Completed work with ETC. It may be correct to see the negative data in the current period if associated with a re-planning of budget for schedule and for ACWP if they prior charges are being backed out, such as part of a routing accounting adjustment. In this case, it is important for project analysts to understand the root cause of this.

The Completed work with ETC is one that should be reviewed and resolved. When the work is complete on a work package, no further cost should be estimated. You may see this when additional work is identified on a closed work package and the contractor did not set up an ETC work package to manage this future work. This is one of the indicators that cost data is not being managed correctly.



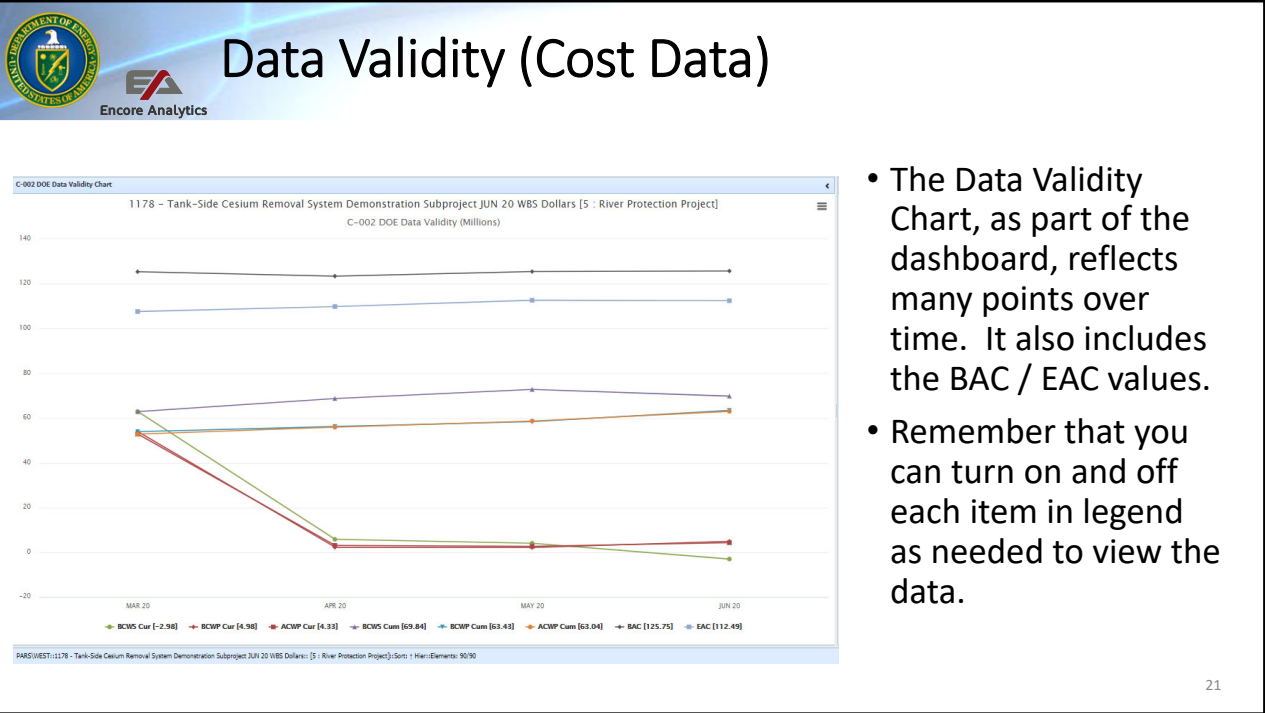
Data Validity (Cost Data)

DQI	VAR	Negative BCWS Cur	Negative BCWP Cur	Negative ACWP Cur	BCWS Cum > BAC	BCWP Cum > BAC	ACWP Cum > EAC	ACWP Cum with no BAC	ACWP Cur with no BAC	BCWP Cum with no ACWP	Completed Work with ETC	Incomplete Work without ETC
EFSI	scV	5	0	1	0	0	0	0	0	0	1	0
ESI	sc	5	0	1	0	0	0	0	0	0	1	0
ESI	sc	5	0	1	0	0	0	0	0	0	1	0
EFSI	sc	0	0	0	0	0	0	0	0	0	0	0
EFSI	scCV	0	0	0	0	0	0	0	0	0	0	0
ESI		0	0	0	0	0	0	0	0	0	0	0
EFSI	CV	0	0	0	0	0	0	0	0	0	0	0

There is another view with additional metrics for DQI. Under Views, this is S-034 DOE EVM DQI (Shown above). This view has additional DQI Metrics for the user to consider.

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There is a view with additional DQIs for cost data. This is under Views – Global – S-04 DOE EVM DQI. Although not discussed here as it adds additional metrics beyond those listed in the EPA SOP, the user should be aware and take a look at the flags this view might present.



- The Data Validity Chart, as part of the dashboard, reflects many points over time. It also includes the BAC / EAC values.
- Remember that you can turn on and off each item in legend as needed to view the data.

The data validity chart packaged with the dashboard, lets the user take a look a look at current and cumulative BCWS, BCWP, and ACWP for each period of data in PARS / Empower along with the budget and estimate at complete based on the CAM reported ETC values. This helps a user see in time when changes took place. In this case, the March to April 2020 period reflects a replan in current work associated with Covid -19.



Data Validity (Cost Data)

Validity Report	
1178 - Tank-Side Cesium Removal System Demonstration Subproject JUN 20 WBS Dollars [5.05.40 : LAWPS - Cesium Removal Capability] Validity Report	
WARNING	
Negative current period BCWS	BCWS (cp) < 0
EAC is optimistic	EAC < CPI Forecast
INFORMATION	
BAC change	BAC (cp) <=> BAC (cp-1)
EAC change	EAC (cp) <=> EAC (cp-1)

- The Data Validity Report provides warnings and Information
- Format 3 is currently not supported in PARS Empower – such that Format 3 warnings are not useful at this time.

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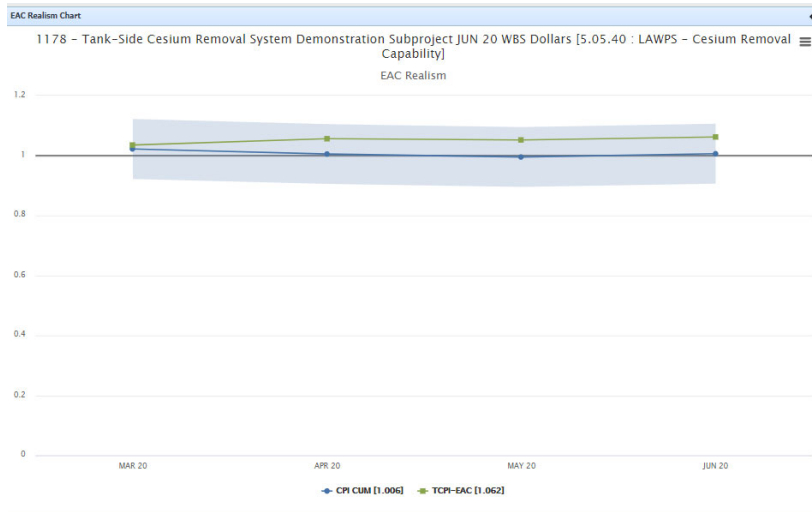
The Data Validity Report provides warning areas to consider. At this time, reference to Format 3 or 4 are likely not useful as DOE does not collect all information needed to make these work in the PARS version of Empower. For this report, I would ignore the Format 3 warnings, until further notice.

You do see that there is negative BCWS to investigate, likely associated with Covid-19 for this projects. Current Negotiated Cost may not align during the time periods negotiations are ongoing, as is the case here. The optimist EAC uses the two formula to help see if EAC is in a range the user would expect. When the EAC is below the IEAC based on CPI forecast data, it may be optimistic or it may be correct, but the user would want to understand why when it is flagged.

One thing to note, for many of the DOE projects, the top line includes MR. To use these reports and charts, it is recommended that the user select the active element of the project rather than the top line, as the top line will likely include MR rather than just the PMB. In looking at this data, the EAC Realism chart can also be helpful as discussed on the next slide.



Data Validity (Cost Data)



- The EAC Realism Chart helps the user see if the To Complete Cost Performance Index is close to the Cost Performance Index
- Being more than 10% above or below the CPI value (blue highlight), generally denotes that the contractor cannot recover the

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This chart of the PMB of a project shows the contractor EAC is likely realistic as it is inside the blue highlight. The cost performance index (CPI) is at or above 1.0 which indicates good performance. The to complete performance index (TCPI) is within the 10% range above/below the CPI.

When a contractor is consistently above or below the 10% range, then history has shown that it is not likely they will recover the performance and if the EAC is showing that they are on track, it should be questioned.



Data Validity (Cost Data)

Value for the performance period has been increased in any period greater than 5%
 Value for the performance period has been increased in any period greater than 1% and less than 5%
 Value for the performance period has been decreased in any period greater than 1%
 No value or \$0 has been reported for the period

* Only past reporting periods and the field where a change was made will be listed on this report if there is no listing below the current reporting period date for each of the last 6 months; that means there were no historical changes

Timephased Period Date	CPP Status Date: 12/03/2023			CPP Status Date: 10/29/2023			CPP Status Date: 09/30/2023			CPP Status Date: 09/03/2023			CPP Status Date: 08/27/2023		
	CUM BCWS	CUM BCWP	CUM ACWP	CUM BCWS	CUM BCWP	CUM ACWP	CUM BCWS	CUM BCWP	CUM ACWP	CUM BCWS	CUM BCWP	CUM ACWP	CUM BCWS	CUM BCWP	CUM ACWP
10/01/2022	\$0,807,142	\$4,511,829	\$2,990,310	\$0,807,142	\$4,511,829	\$2,990,310	\$0,807,142	\$4,511,829	\$2,990,310	\$0,807,142	\$4,511,829	\$2,990,310	\$0,807,142	\$4,511,829	\$2,990,310
11/01/2022	\$1,392,319	\$1,175,662	\$1,696,310	\$1,392,319	\$1,175,662	\$1,696,310	\$1,392,319	\$1,175,662	\$1,696,310	\$1,392,319	\$1,175,662	\$1,696,310	\$1,392,319	\$1,175,662	\$1,696,310
12/01/2022	\$3,734,761	\$2,497,068	\$4,427,858	\$3,734,761	\$2,497,068	\$4,427,858	\$3,734,761	\$2,497,068	\$4,427,858	\$3,734,761	\$2,497,068	\$4,427,858	\$3,734,761	\$2,497,068	\$4,427,858
01/31/2023	\$3,423,407	\$1,837,227	\$5,175,452	\$3,423,407	\$1,837,227	\$5,175,452	\$3,423,407	\$1,837,227	\$5,175,452	\$3,423,407	\$1,837,227	\$5,175,452	\$3,423,407	\$1,837,227	\$5,175,452
02/29/2023	(\$488,853)	\$1,902,052	\$1,828,380	(\$488,853)	\$1,902,052	\$1,828,380	(\$488,853)	\$1,902,052	\$1,828,380	(\$488,853)	\$1,902,052	\$1,828,380	(\$488,853)	\$1,902,052	\$1,828,380
03/31/2023	\$3,446,964	\$3,326,479	\$3,557,162	\$3,446,964	\$3,326,479	\$3,557,162	\$3,446,964	\$3,326,479	\$3,557,162	\$3,446,964	\$3,326,479	\$3,557,162	\$3,446,964	\$3,326,479	\$3,557,162
04/30/2023	\$3,306,817	\$1,971,191	\$757,575	\$3,306,817	\$1,971,191	\$757,575	\$3,306,817	\$1,971,191	\$757,575	\$3,306,817	\$1,971,191	\$757,575	\$3,306,817	\$1,971,191	\$757,575
05/31/2023	\$3,400,930	\$2,093,963	\$1,765,349	\$3,400,930	\$2,093,963	\$1,765,349	\$3,400,930	\$2,093,963	\$1,765,349	\$3,400,930	\$2,093,963	\$1,765,349	\$3,400,930	\$2,093,963	\$1,765,349
06/30/2023	\$1,687,341	\$1,673,688	\$1,023,990	\$1,687,341	\$1,673,688	\$1,023,990	\$1,687,341	\$1,673,688	\$1,023,990	\$1,687,341	\$1,673,688	\$1,023,990	\$1,687,341	\$1,673,688	\$1,023,990
07/31/2023	\$1,233,871	\$1,425,705	\$1,589,717	\$1,233,871	\$1,425,705	\$1,589,717	\$1,233,871	\$1,425,705	\$1,589,717	\$1,233,871	\$1,425,705	\$1,589,717	\$1,233,871	\$1,425,705	\$1,589,717
08/31/2023	\$1,681,324	\$1,304,490	\$928,956	\$1,681,324	\$1,304,490	\$928,956	\$1,681,324	\$1,304,490	\$928,956	\$1,681,324	\$1,304,490	\$928,956	\$1,681,324	\$1,304,490	\$928,956

- Retroactive Change report in the Project Summary Workbook (not in Empower).
- In some cases this correct, but should be understood.

There are valid reasons to change previously reported data, to 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.
- Adjustments to previously reported ACWP when actual costs replace estimated actuals.

While these kinds of changes are acceptable, an excessive amount may indicate the system lacks discipline and these changes should be documented. Questions to ask when changes have been identified include:

- Why was budget removed? Was scope removed?

- Does the rationale meet EIA-748 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 current period?



Data Validity (Cost Data)

1178--Tank-Side-Cesium-Removal-System-Demonstration-Subproject-JUN-20- WBS-Dollars-[SUMMARY]-[LL=x]- Data-Quality-Indicators-Report

Ref: DCMA-EA-PAM-200.1, EVMS Program Analysis Pamphlet (PAP), Mar-2016
Planning & Scheduling Excellence Guide (PASEG), June-2012
DCMA-EVMS-Compliance-Metrics (DECM)-3.3, May-2019
DOE-EVMS-Test-Metric-Specification (DOE), March-2019

WARNING		
Zero budget work package	Ec	PAP, 5.6c
LOE with CUM SV	Ec	Custom
Completed work with ETC	Ec	PAP, 5.9c
ACWP on completed work	Ec	PAP, 5.11c
Negative BCWS CUR	Ec	PAP, 5.15c
EV method 0-100 and more than one period	Ec	DECM, 10A103ac
Work or planning package with negative BAC	Ec	DECM, 10A109ac
Account with zero or negative EAC	Ec	DECM, 27A103ac
Non-material ACWP_c > 0 BCWP_c = 0	Ec	DECM, 16A501ac
Non-material BCWP_c > 0 with ACWP_c = 0	Ec	Custom
Open WP with BAC < prior BAC	Ec	Custom
Negative ACWP CUR	Ec	Custom
CUM CV < VAC	Ec	PAP

- The Data Quality Report is one that you can use to dig deeper into a project
- This report should be run at the lowest level turning on the “Sum” option and selecting the Summary element in the sort view.
- This is based on DOE and DoD – with additional criteria over the Data Validity Report



Microsoft Word Document 25

Empower has a Data Quality Report, one that has upto 150 DQI flags. These flags are based on requirements from both Department of Defense and Department of Energy. While DOE is working to remove some of these from PARS, all 150 plus are included at this time. The category of flag (E, S, I or F) is included and one of the four references are also shown. Again, these are warnings – for instance as Zero budget work package can be fine in some cases. The user needs to understand the project and consider the warning in terms of the project being reported.

A full copy of the report is include and contains 10 pages. For many of the schedule warnings, there can be a long list of activities to consider, may of which are fully acceptable in the right context. This report is best used by a person with a solid understanding of EVMS, but it is helpful in identifying which elements and activities may be contributing to the root cause for an observed issue.



Data Validity (Cost Data)

Audit Metrics Report

1178 - Tank-Side Cesium Removal System Demonstration Subproject JUN 20 WBS Dollars [5 : River Protection Project]
Audit Metrics

Attribute	Metric	Test	M	Value	Total	Percent	Goal	Note
01.	01.01	WBS failed to be product-oriented and does not align with WBS narrative	*	*	*	*	= 0%	
	01.02	Number of incomplete CA/SLPP where WBS dictionary scope does not match WAD scope	*	*	*	*	= 0%	
	02.01	Number of differences between CA WBS BAC in the RAM and the IPMR/CPR F1	*	*	*	*	= 0%	
	02.02	Number of WBS elements and descriptions that do not align with the WBS dictionary	*	*	*	*	= 0%	
	02.03	Number of incomplete BL activities where EVM WBS code does not match FC IMS WBS code	*	0	259	0.0 %	= 0%	
	03.01	Number of differences between the CPPI/PMR reporting upload requirements and actual uploads (Manual)	*	*	*	*	= 0%	
	04.01	Number of products/deliverables that have been decomposed into logical parent and child relationships	*	*	*	*	= 0%	
	04.02	Number of HDV/CI work being performed by subcontractor that was not separately identified	*	*	*	*	= 0%	
02.	01.01	Number of OBS elements where BAC in RAM does not match BAC in IPMR/CPR F2	*	*	*	*	= 0%	
	02.01	Number of HDV/CI subcontractor work not appropriately identified by activity and assigned in the OBS	*	*	*	*	= 0%	
03.	01.01	Number of incomplete WPs where linked activities physical % complete does not match physical % complete in EVMS	*	22	23	95.7 %	<= 5%	
	01.02	Number of incomplete CA/WP/PP where FC IMS start or finish do not align with EVMS ACWP/ETC	*	37	51	72.5 %	= 0%	
	01.03	Number of incomplete discrete WP/PP/SLPP where FC IMS finish does not align with time-phased ETC in EVMS	*	3	33	9.1 %	= 0%	
	01.04	Number of incomplete CAs where EVMS BL start/finish does not align to WAD start/finish	*	*	*	*	<= 5%	
	01.05	Number of incomplete CAs in EVMS where BL BAC in WAD does not align to CA BAC	*	*	*	*	<= 5%	
	01.06	Number of incomplete WP/PP where EVMS EOC type and number does not align with FC IMS EOC	*	*	*	*	<= 5%	
	01.07	Number of total hours for incomplete WP/PPs in BL IMS does not align to EVM system	*	*	*	*	<= 5%	
	01.08	Number of differences between RAM WBS budget totals and CPR Format 1 BAC	*	*	*	*	= 0%	
	01.09	Number of CA/WP/PP/SLPP having BL IMS WBS codes that do not match EVMS WBS code	*	0	51	0.0 %	= 0%	
	02.01	Number of incomplete subcontractor CAs that do not reconcile to Prime EVMS	*	*	*	*	<= 5%	

For further analysis into compliance, the Audit Metrics report and export are used. This will have a full session

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Empower has incorporated a metrics report which captures all of the DOE compliance metrics for an EVMS. Of these – about 50% are automated and the balance are a hybrid or manual test. These require a human to review and add to them.

This will be discussed in detail in the final session of this course.



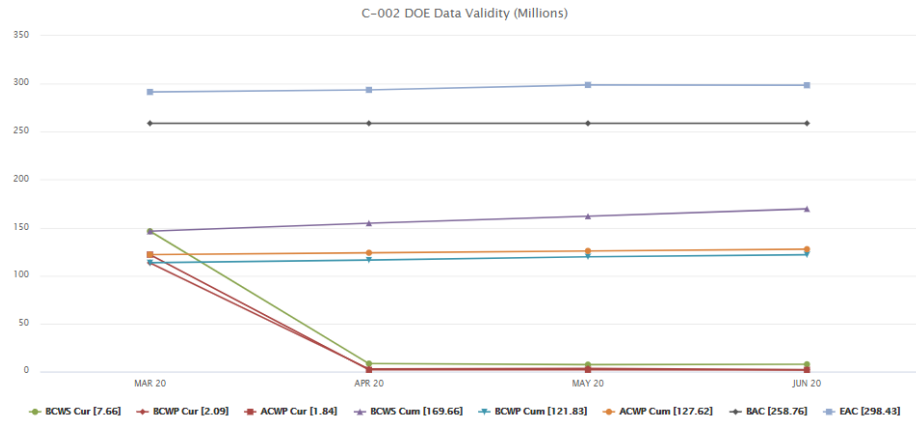
Checks on Learning – Data Validity

HIER	WBS	DESC	LL	LVL	% Complete	% Spent	Complete	Tasks	Incomplete Tasks	Discrete Tasks	Bill Incomp Tasks	CAM	Element Type	EVM	DQI	VAR	Negative BCWS Cur	Negative BCWP Cur	Negative ACWP Cur	BCWS Cum > BAC	BCWP Cum > BAC	ACWP Cum > BAC	ACWP Cum with no BAC	ACWP Cur with no BAC	BCWP Cum with no ACWP	Completed Work with ETC	Incomplete Work without ETC
			<input checked="" type="checkbox"/>																								
1	01	TRU W		1	45.30	47.46	0	1656	532	517	532		WBS	NA	ESL	ccsv	0	0	0	0	0	0	0	0	4	0	0
11	01.08	New U		2	47.08	49.32	0	1628	518	503	518		WBS	NA	EFSL	ccsv	0	0	0	0	0	0	0	0	4	0	0
111	01.08.01	Safety		3	47.08	49.32	0	1609	518	503	518		WBS	NA	EFSL	ccsv	0	0	0	0	0	0	0	0	4	0	0
1111	01.08.01.01	New F		4	42.28	43.80	0	1019	329	326	329		WBS	NA	EFSL	ccsv	0	0	0	0	0	0	0	0	0	0	0

- In looking at the Data Validity Sort View what does the DQI for 01.08 indicate?
 - There is a flag for Cost and Schedule Integration Only
 - EFSL means that the data is not acceptable as an upload.
 - There is a flag for further investigation for cost, schedule, integration and forecast.
 - The project will not be able to complete on budget or schedule.
 - Answers C and D are correct
- BCWP Cum with no ACWP means
 - You generally should not see this as you can not earn BCWP without incurring ACWP.
 - If you have material ordered and have not been invoiced yet, the use of estimated actuals would prevent false variances and flags here.
 - LOE work may have been delayed and indicate this flag.
 - All are correct
- Green in most of the metrics means
 - There is a high likelihood that the cost data from the EVMS meets quality standards.
 - The project has good performance.
 - No further analysis is needed.
 - Both A and B are correct
- Variance (VAR) with one or more letters (CcSsV) means
 - There is a likely requirement for a VAR narrative to be written and submitted in Format 5 report
 - Format 5 report, if required, should be filed in the Document Management System of PARS
 - A threshold in Empower was triggered based on percentage to highlight the need for a VAR.
 - At 47% complete you do not have to write a VAR narrative.
 - Answers A, B and C are all correct
 - Answers A and C are correct



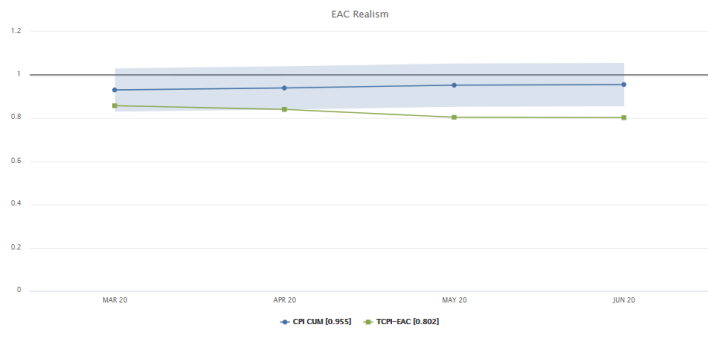
Checks on Learning – Data Validity



5. What does BCWS, BCWP, and ACWP current mean when dropping between March and April in this chart?
 - A. Work scheduled, earned and charged dropped to almost zero yet the project is only 47% complete
 - B. A pandemic may have stopped work
 - C. BCWP Cum will remain flat until work starts again
 - D. All of the Above
6. Does the project need to replan BCWS?
 - A. Yes
 - B. No
 - C. Not able to tell from this chart
7. Did the budget increase as EAC did?
 - A. Yes.
 - B. No



Checks on Learning – Data Validity



8. In looking at the EAC Realism chart and Validity Report, the user
- A. may question if the project EAC is realistic.
 - B. Should investigate what the trend for TCPI between March and June means.
 - C. The project cannot recover in terms of cost and schedule
 - D. TCPI of 0.8 means that the project has more funds than work for the work remaining.
 - E. CPI of .955 means the project ACWP is higher than the BCWP or the project is not as efficient as planned during execution.

Validity Report

WARNING	
EAC is pessimistic	TCPI-EAC - CPI (cum) < -0.10
INFORMATION	
EAC change	EAC (cp) <= EAC (cp-1)
Schedule performance poor	SPI < 0.8 and % COMP > 15%



Checks on Learning – Data Validity

Data Quality Indicators Report

Ref: DCMA-EA PAM 200.1, EVMS Program Analysis Pamphlet (PAP), Mar 2016
Planning & Scheduling Excellence Guide (PASEG), June 2012
DCMA EVMS Compliance Metrics (CECM), 3.3, May 2019
DOE EVMS Test Metric Specification (DOE), March 2019

WARNING		
Zero budget work package	E	PAP, 5.i
LOE with CUM SV	E	Custom
BCWP with no ACWP	E	PAP, 5.i
Budgets not identified by Element of Cost	E	DECM, 08A103;
Work or planning package with negative BAC	E	DECM, 10A109;
Account with zero or negative EAC	E	DECM, 27A103;
Non-material ACWP_c > 0 BCWP_c = 0	E	DECM, 16A501;
Non-material BCWP_c > 0 with ACWP_c = 0	E	Custom
CUM CV < VAC	E	PAF
Material BCWP_c > 0 with ACWP_c = 0	E	Custom
BL/MS WBS does not match EV cost tool WBS	E	DOE, 03.01.0;
Greater than 7% L1 BAC and 10% L1 BCWS exceeding SV or CV thresholds in three consecutive periods	E	DOE, 05.04.0;
Consecutive ACWP CUR = 0 with BCWP CUR > 0	E	DECM, 12A401;
Dollar value of CAWP non-material direct EOCs where ACWP exceeds \$1000 and BCWP = 0	E	Custom
Dollar value of CAWP non-material direct EOCs where BCWP exceeds \$1000 and ACWP = 0	E	Custom
Dollar value of CAWP non-material direct EOCs where ACWP_c exceeds \$1000 and ACWP_c = 0	E	Custom
Dollar value of CAWP non-material direct EOCs where ACWP_c exceeds \$1000 and BCWP_c = 0	E	Custom
Dollar value of CAWP material direct EOCs where BCWP = 0 and ACWP = 0	E	DOE, 21.01.0;
Dollar value of CAWP material direct EOCs where ACWP > 0 and BCWP = 0	E	DOE, 21.01.0;
Dollar value of CAWP material direct EOCs where BCWP_c = 0 and ACWP_c = 0	E	DOE, 21.01.0;
Number of PPSLPPs and incomplete WPs without time-phased ETC by EOC	E	DOE, 27.02.0;
Non-material ACWP = 0 BCWP = 0	E	Custom
Non-material BCWP > 0 with ACWP = 0	E	Custom

9. The data quality report is used to

- A. take a deeper dive into data quality.
- B. Provides data quality indicators based on Department of Defense and Department of Energy metrics.
- C. Flags mean that the data is not acceptable
- D. Zero budget work package flag is cost flag that means the data is not representative of the system.
- E. Consecutive ACWP current = 0 with BCWP current > 0 is a flag you need to look deeper into
- F. The data quality report should be used with elements at lowest level with the Summary element selected
- G. All are correct
- H. A, B, E, and F are correct
- I. A, C, E are correct