Deltek | ACUMEN

Acumen Fuse®

Exercise Workbook

Revision 1.01

1 Introduction to Acumen Fuse Training

1.1 Exercise

Lesson 1 is an introduction to Acumen Fuse and related concepts. It does not demonstrate the Acumen Fuse interface, so there is no formal exercise other than to look up the definition of Acumen in a dictionary:)

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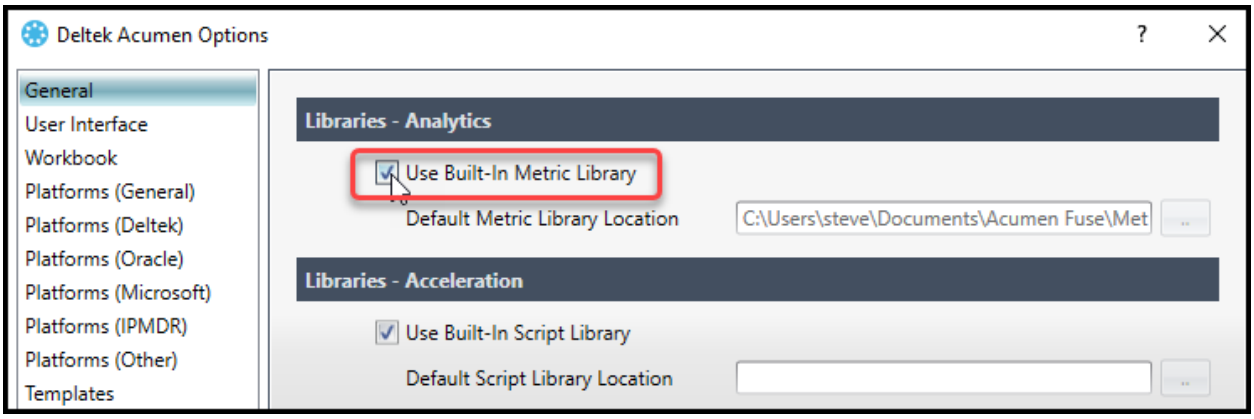
2 Getting to Know Acumen

2.1 Exercise – Set Up User Standard Options

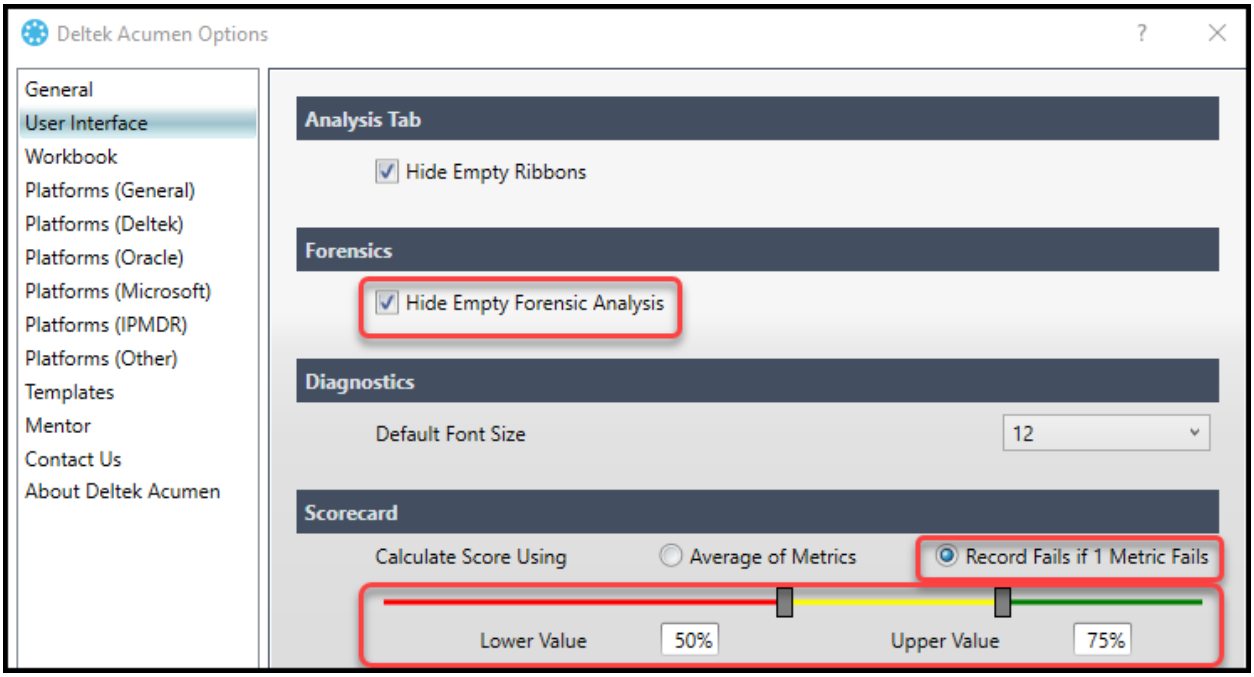
Using your installation of Deltek Acumen, set up options to prepare for analyzing the health of an Oracle P6 xer file.

1. Click the home button and choose Deltek Acumen Options.

2. In the General page toggle to Use Built-in Metric Library.



3. In the User Interface page toggle on 'Hide Empty Ribbons' and confirm the scorecard is set to 'Record Fails if 1 Metric Fails' and the color spectra are as below.



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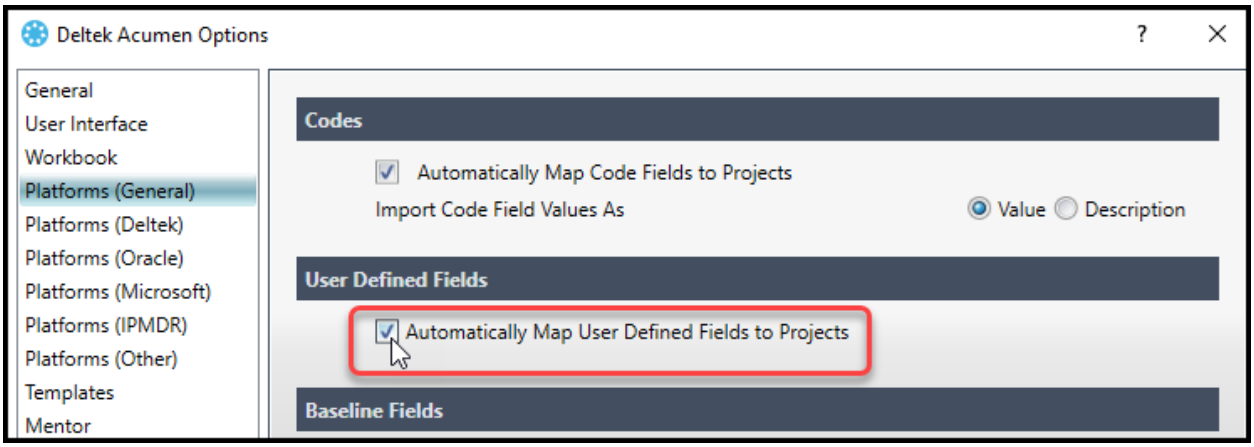
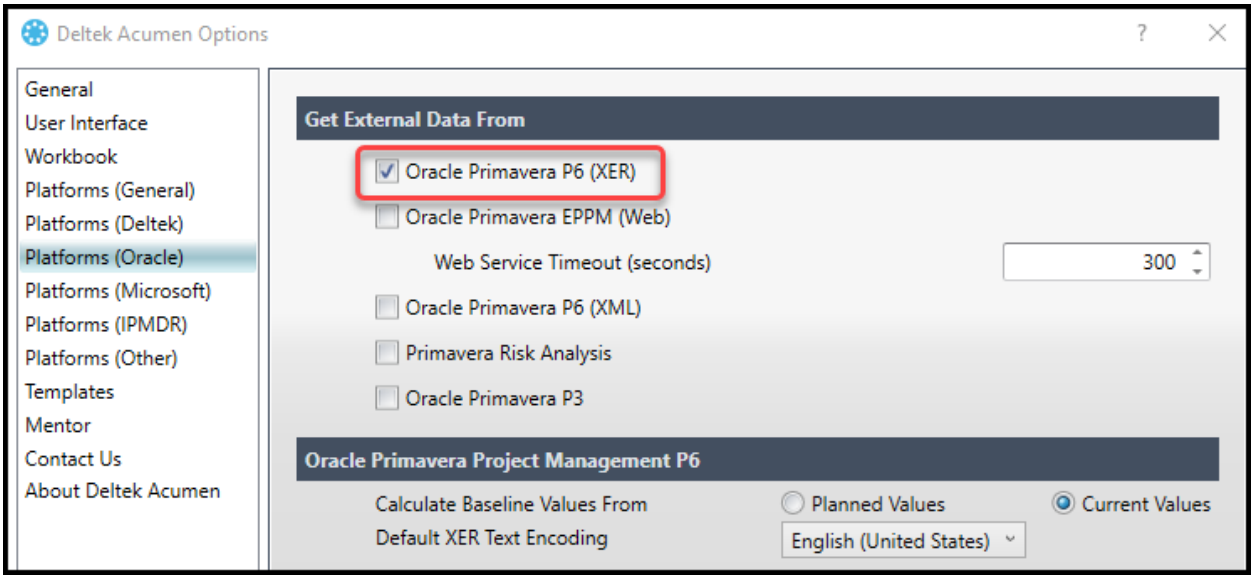
4. In the Platforms (General) page Codes and User Defined Fields toggle to Automatically Map Code Fields and User Defined Fields.



5. In Platforms (Oracle) Get External Data From, toggle on Oracle Primavera P6 (XER) and confirm all other source files are deselected.



To reduce clutter in the ribbon groups, you can deselect all other Platforms for 'Get External Data From' in Platforms (Deltek), Platforms (IPMDR), and Platforms(Other).

6. Right click on the Oracle Primavera button and choose to Add Oracle Primavera to the quick access toolbar.

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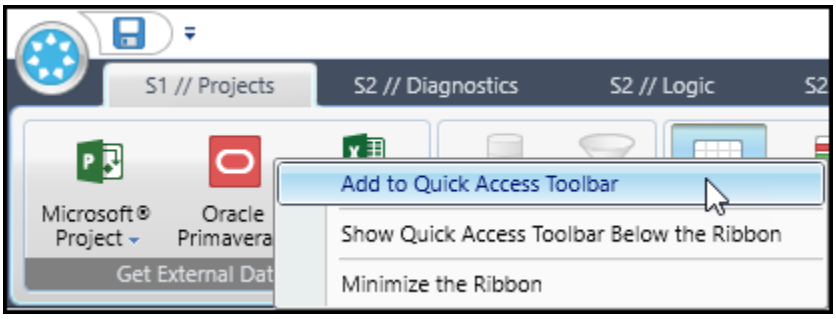
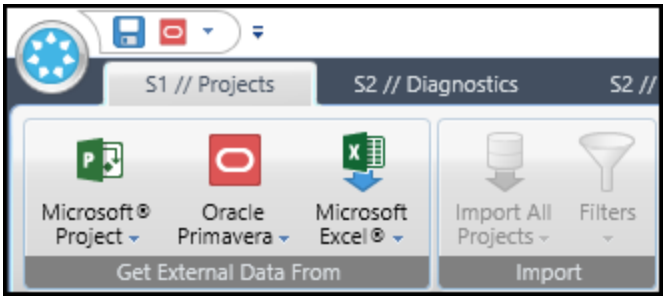


The quick access toolbar appears as below.



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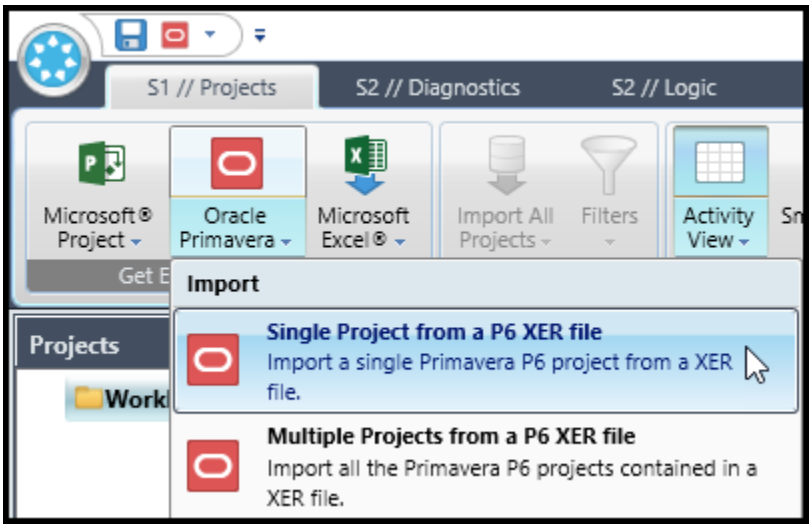
3 Viewing a Single Schedule

3.1 Exercise – Importing and Viewing a Schedule

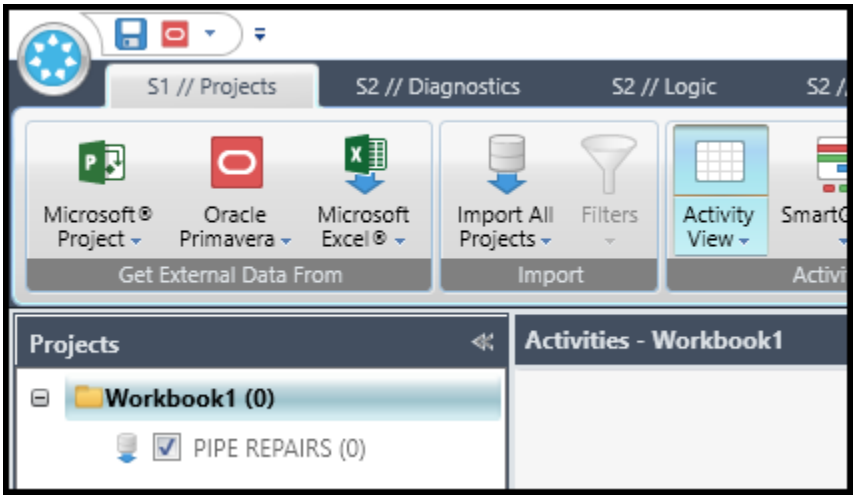
Import a schedule and review its contents in S1 // Projects.

1. In S1 // Projects and Get External Data From ribbon group select the bottom portion of the Oracle Primavera button then choose Single Project from a P6 XER file.



2. Choose the Pipe Repairs.xer file and open.

3. Again, select the PIPE REPAIRS schedule and OK to link the schedule to Workbook1.



4. In the Import ribbon group choose Import All Projects.

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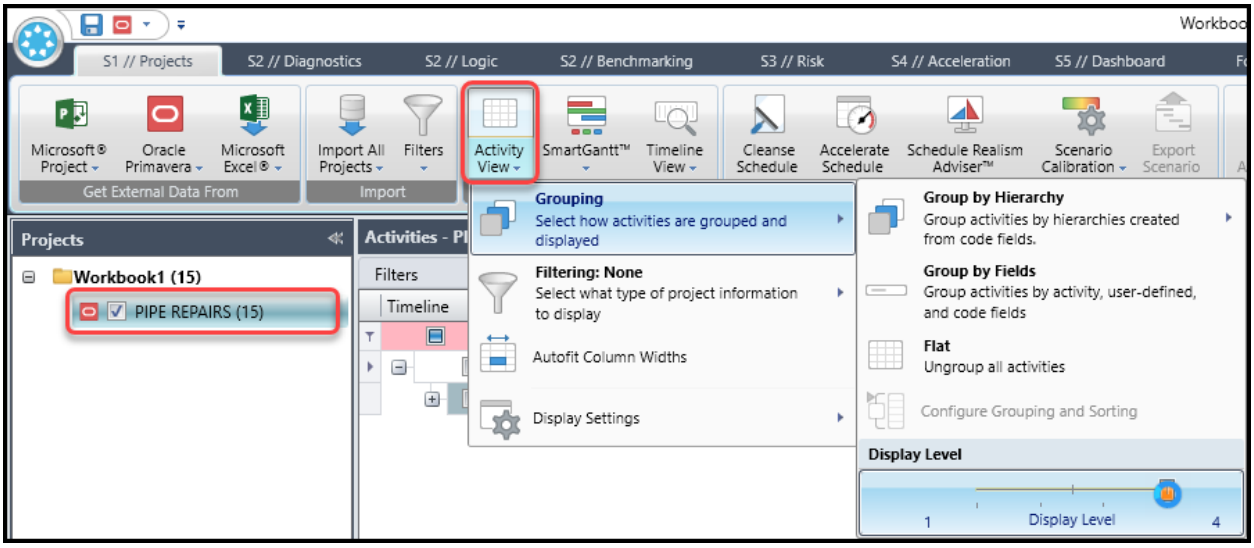
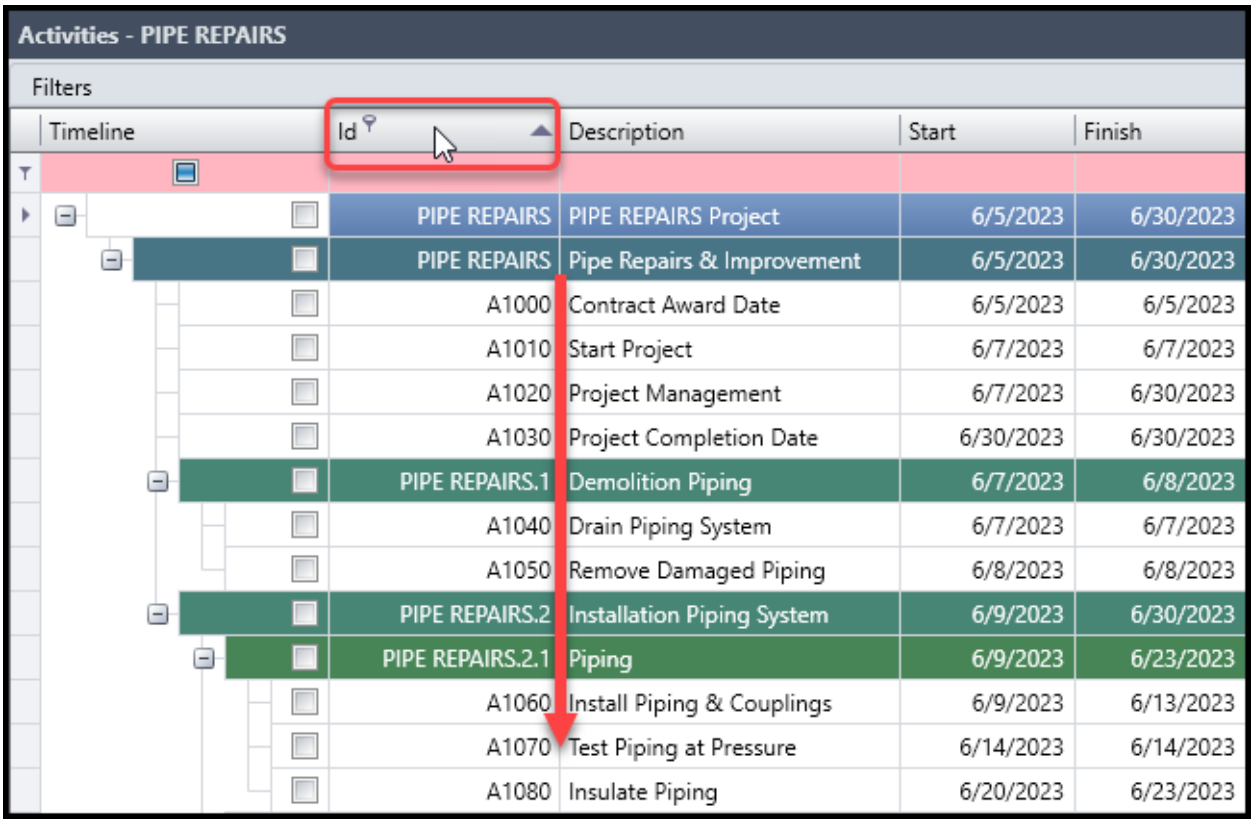
5. In the navigator pane left click on PIPE REPAIRS to select it then choose Activity View | Grouping and scroll the toggle to Display Level 4.



6. Confirm the Activity IDs are in ascending order and if not click the Id header until they appear in ascending Activity ID order.



Timeline	Id	Description	Start	Finish
	PIPE REPAIRS	PIPE REPAIRS Project	6/5/2023	6/30/2023
	PIPE REPAIRS	Pipe Repairs & Improvement	6/5/2023	6/30/2023
	A1000	Contract Award Date	6/5/2023	6/5/2023
	A1010	Start Project	6/7/2023	6/7/2023
	A1020	Project Management	6/7/2023	6/30/2023
	A1030	Project Completion Date	6/30/2023	6/30/2023
	PIPE REPAIRS.1	Demolition Piping	6/7/2023	6/8/2023
	A1040	Drain Piping System	6/7/2023	6/7/2023
	A1050	Remove Damaged Piping	6/8/2023	6/8/2023
	PIPE REPAIRS.2	Installation Piping System	6/9/2023	6/30/2023
	PIPE REPAIRS.2.1	Piping	6/9/2023	6/23/2023
	A1060	Install Piping & Couplings	6/9/2023	6/13/2023
	A1070	Test Piping at Pressure	6/14/2023	6/14/2023
	A1080	Insulate Piping	6/20/2023	6/23/2023

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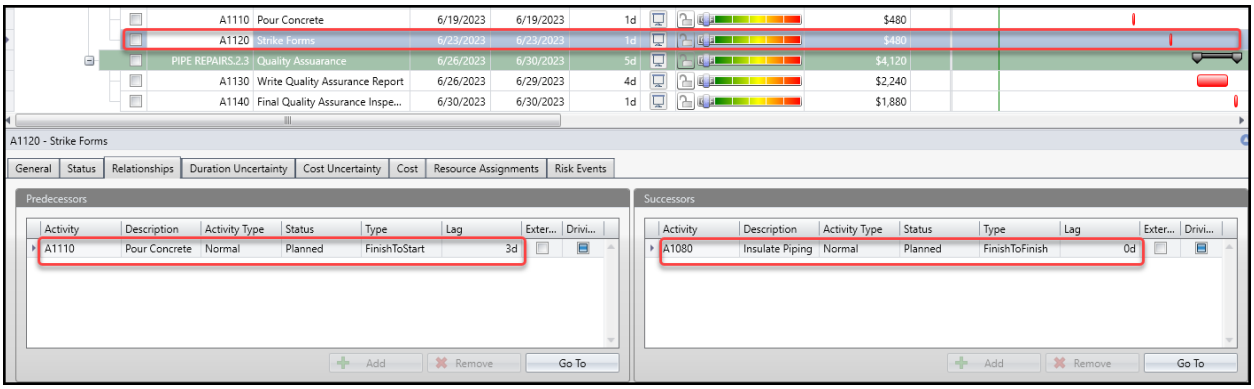
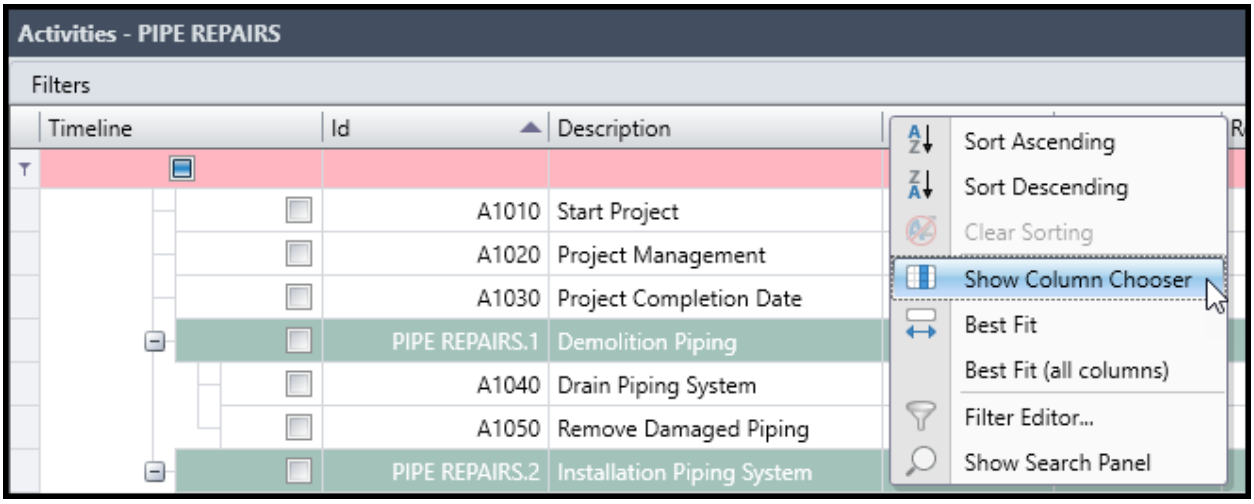
7. Select the A1120 Strike Forms activity and confirm its predecessor Pour Concrete has a 3-day lag and it connects to the successor Insulate Piping with a FF relationship.



3.2 Exercise – Grouping Schedule Data by Activity Code

Now group the schedule by in-house or subcontractor performing the work.

1. Right click on any activity table column header and choose Show Column Chooser from the popup menu.



2. In the Column Chooser click-drag-drop the Subcontractor activity code to place it in the activity table between Description and Start.

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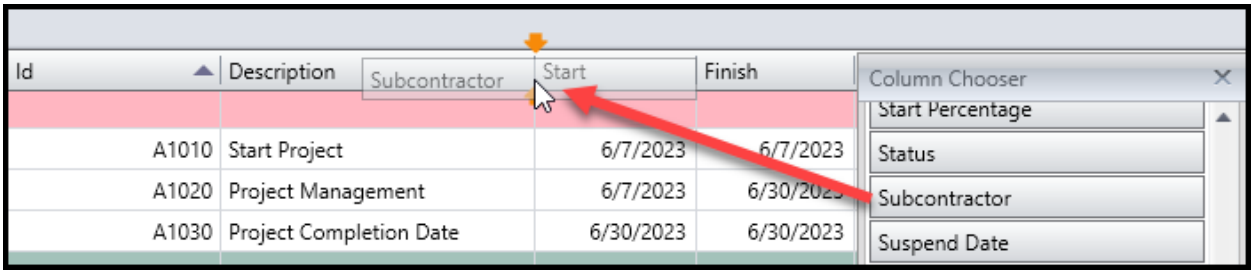
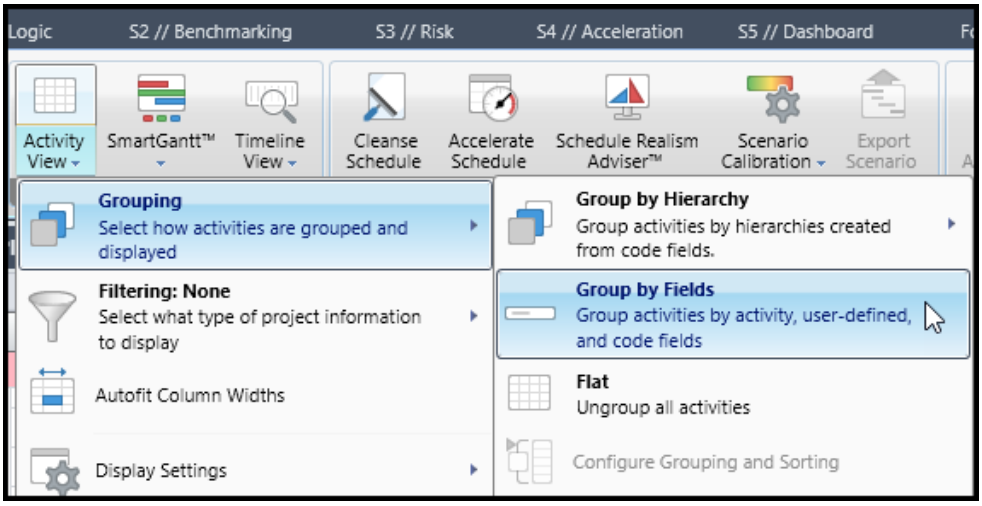
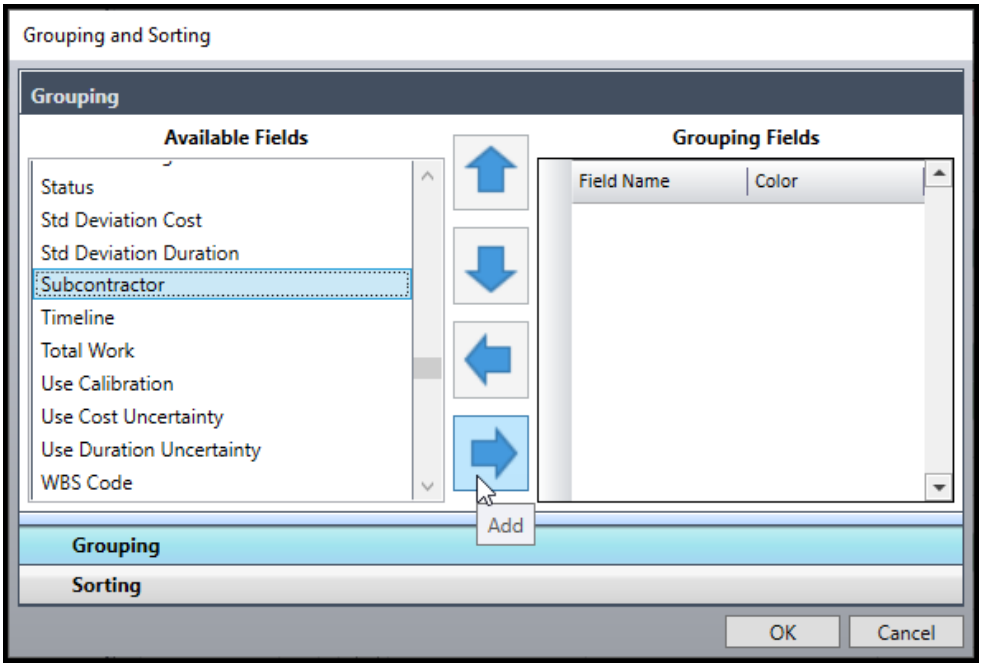


3. Choose Grouping | Group by Fields



4. In the Grouping and Sorting dialogue select Subcontractor and add to the Grouping Fields.



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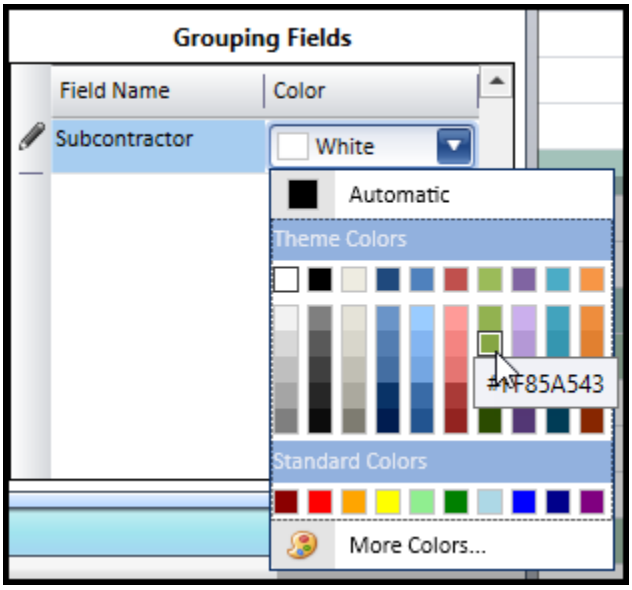
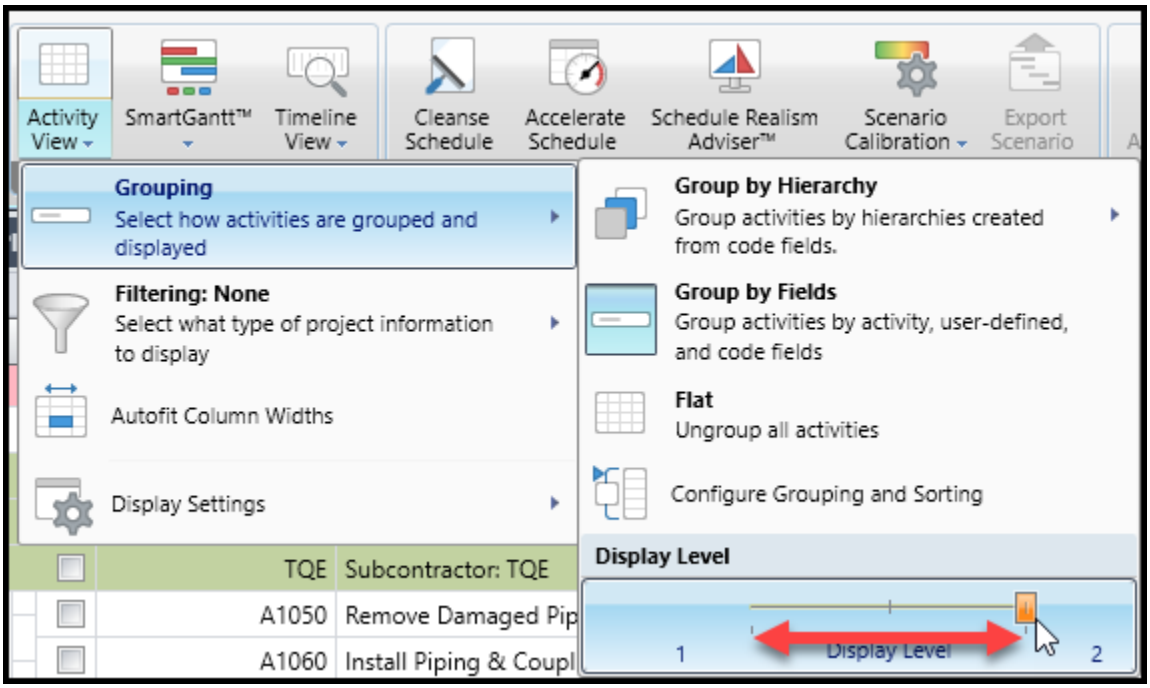
5. Choose a suitable color then click OK.



6. Choose Activity View | Grouping and scroll toggle from Display level 2 to Display level 1 release then scroll toggle back to level 2.



This will refresh the screen.

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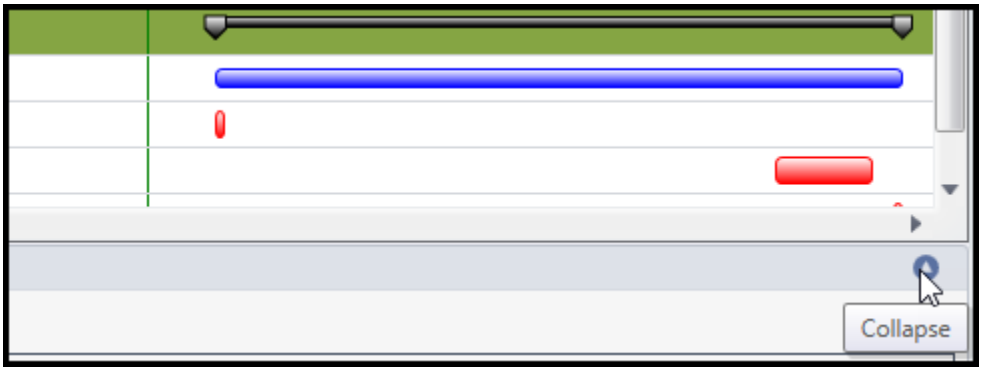
7. Collapse bottom details.



Confirm the resulting activity table and subcontractor column is like the below.

Activities - PIPE REPAIRS

Filters

Timeline	Id	Description	Subcontractor	Start	Finish
	PIPE REPAIRS	PIPE REPAIRS Project		6/5/2023	6/30/2023
	(Empty)	Subcontractor: (Empty)		6/5/2023	6/30/2023
	A1000	Contract Award Date		6/5/2023	6/5/2023
	A1010	Start Project		6/7/2023	6/7/2023
	A1030	Project Completion Date		6/30/2023	6/30/2023
	MPI	Subcontractor: MPI		6/20/2023	6/23/2023
	A1080	Insulate Piping	MPI	6/20/2023	6/23/2023
	TQE	Subcontractor: TQE		6/8/2023	6/23/2023
	A1050	Remove Damaged Piping	TQE	6/8/2023	6/8/2023
	A1060	Install Piping & Couplings	TQE	6/9/2023	6/13/2023
	A1070	Test Piping at Pressure	TQE	6/14/2023	6/14/2023
	A1090	Set Forms	TQE	6/15/2023	6/15/2023
	A1100	Lay Rebar	TQE	6/16/2023	6/16/2023
	A1110	Pour Concrete	TQE	6/19/2023	6/19/2023
	A1120	Strike Forms	TQE	6/23/2023	6/23/2023
	WR-I	Subcontractor: WR-I		6/7/2023	6/30/2023
	A1020	Project Management	WR-I	6/7/2023	6/30/2023
	A1040	Drain Piping System	WR-I	6/7/2023	6/7/2023
	A1130	Write Quality Assurance Report	WR-I	6/26/2023	6/29/2023
	A1140	Final Quality Assurance Inspe...	WR-I	6/30/2023	6/30/2023

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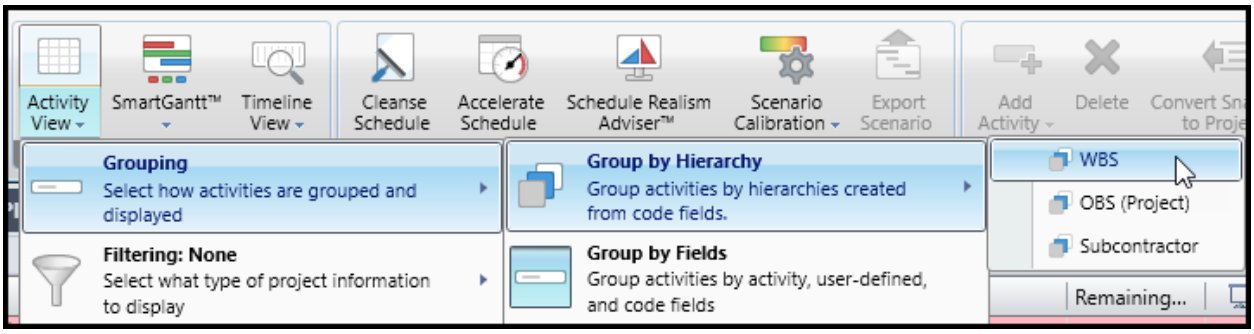
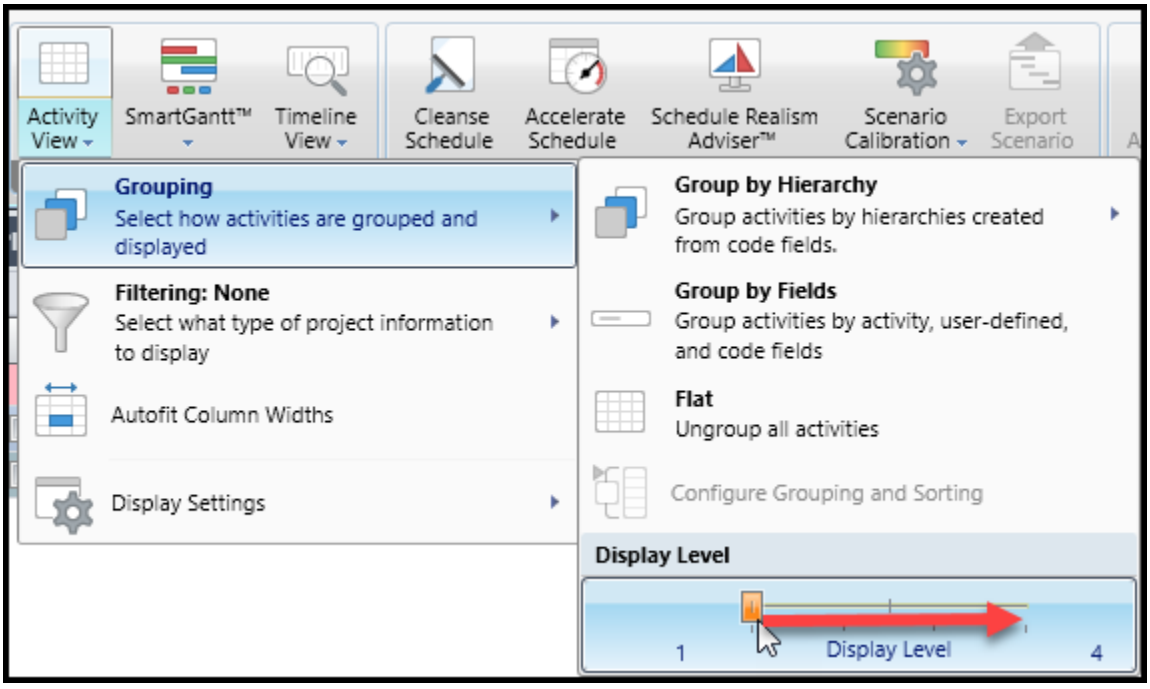
8. To return the activity table to view by WBS choose Activity View | Grouping | Group by Hierarchy | WBS.



9. Select Activity View | Grouping | Display Level 4.



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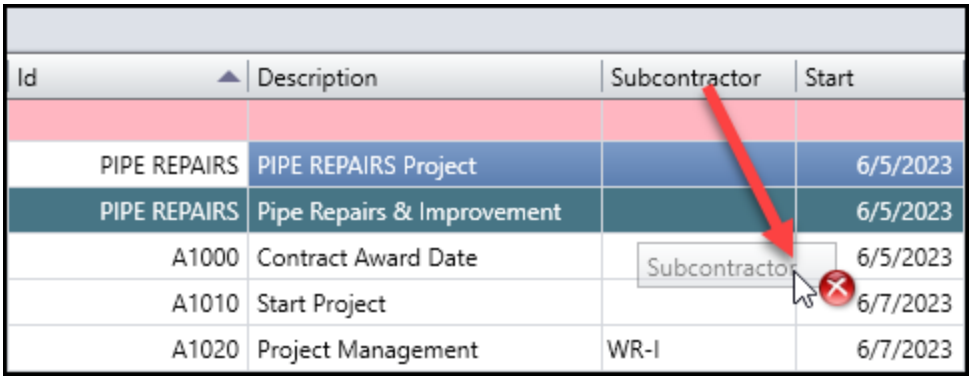
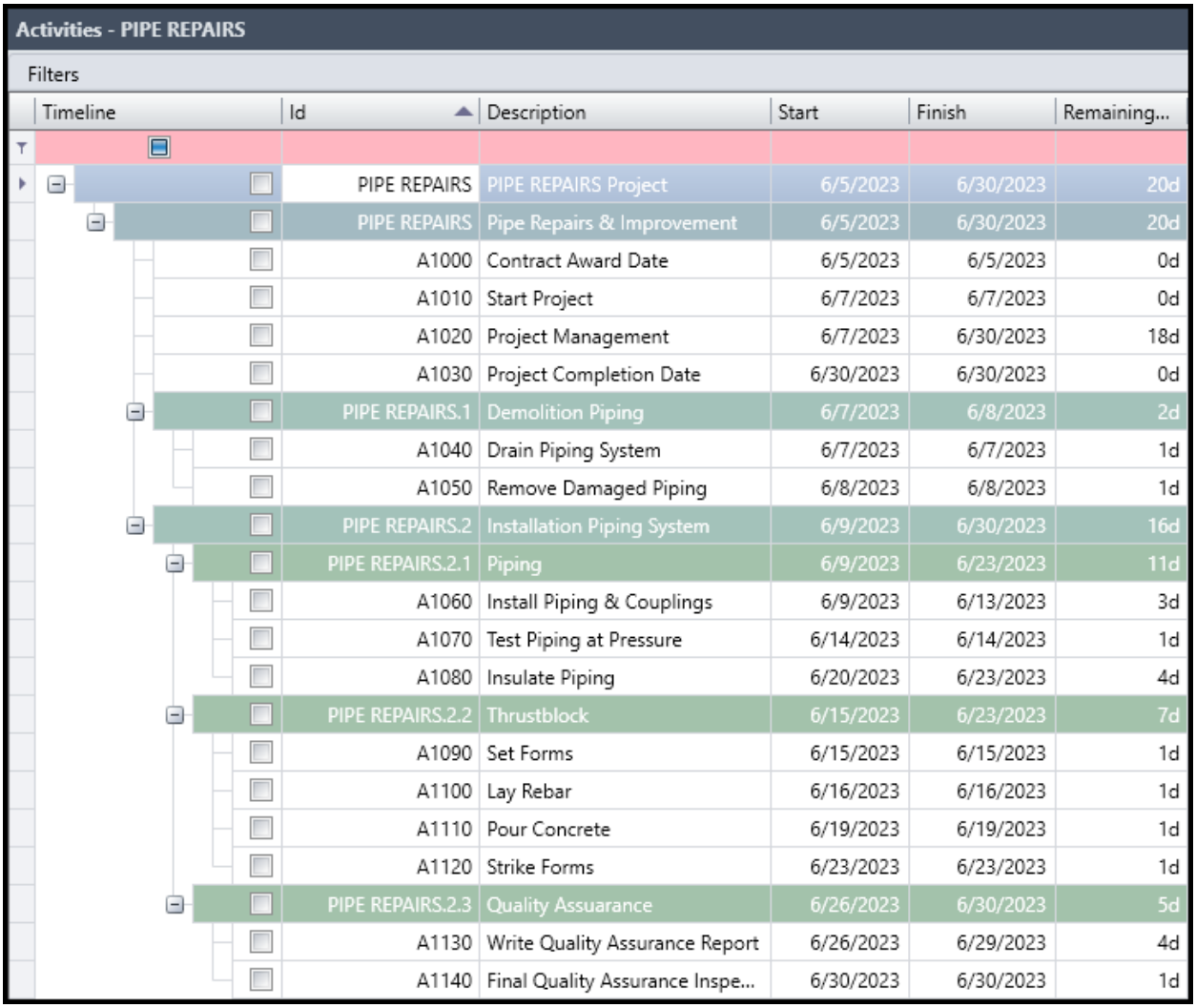
10. Click-drag-release the Subcontractor column header when the red X appears.



The activity table should not look like the below.



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4 Analyzing a Single Schedule

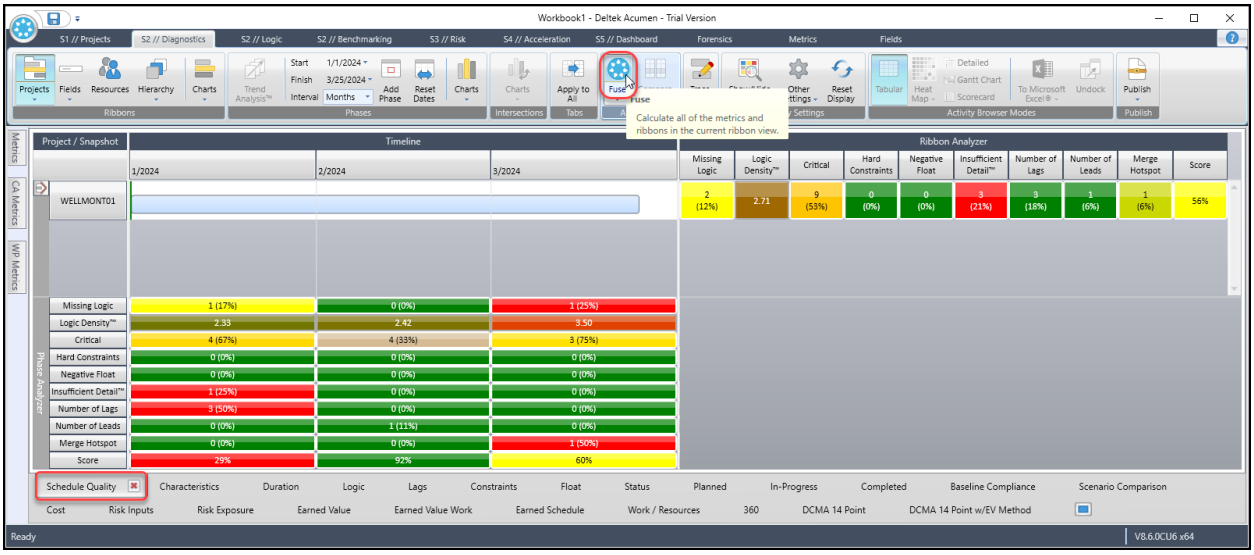
4.1 Exercise – Run a Schedule Quality Metric Group Analysis

Perform a ribbon analysis of a schedule to investigate whether removing positive lag from an activity can improve the schedule's metric group score to achieve a quality schedule.

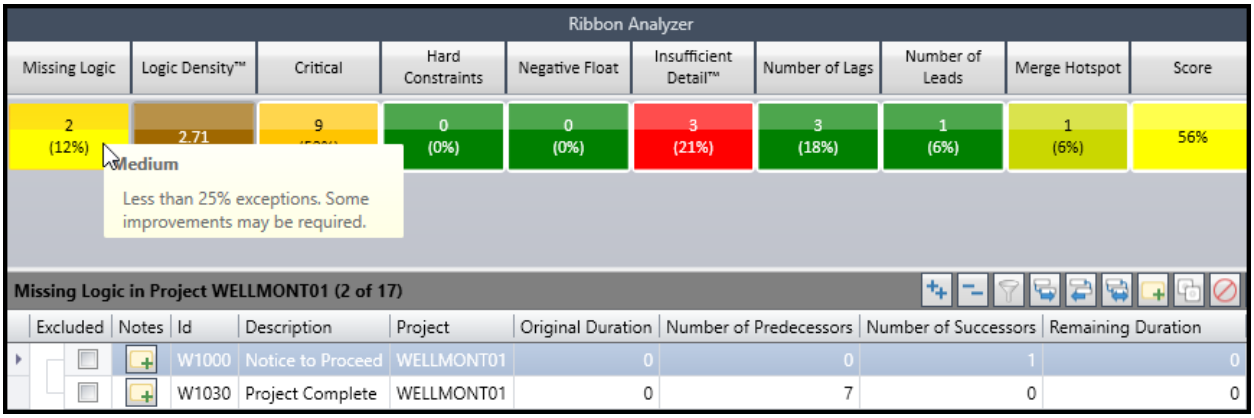
1. Find Wellmont01.xer in the training data folder and link it to workbook1 then import it.

2. Select S2 // Diagnostics tab.

3. Choose the Schedule Quality metric group in the bottom playlist and run Fuse.



4. Select the missing logic scorebox to display a list of captured missing logic tasks in the bottom activity browser.



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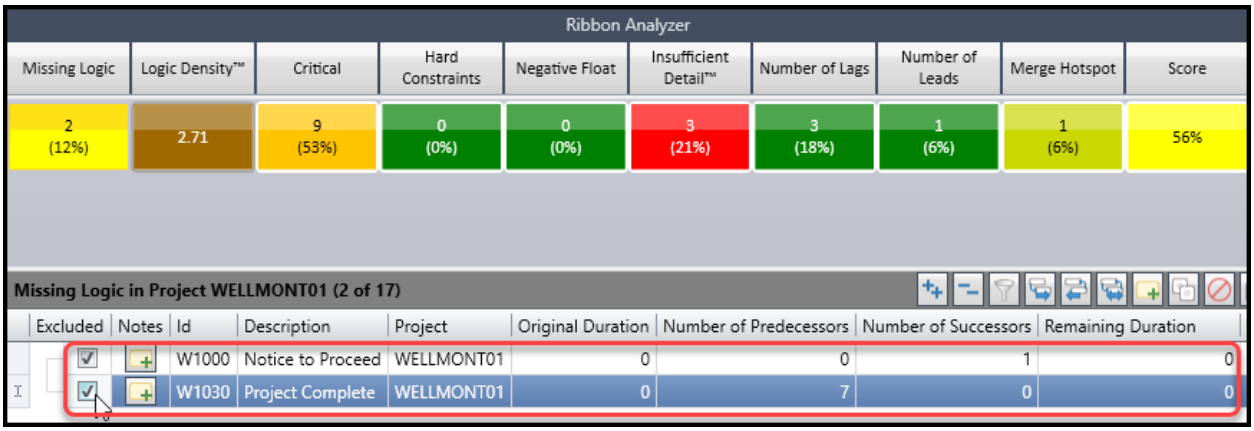
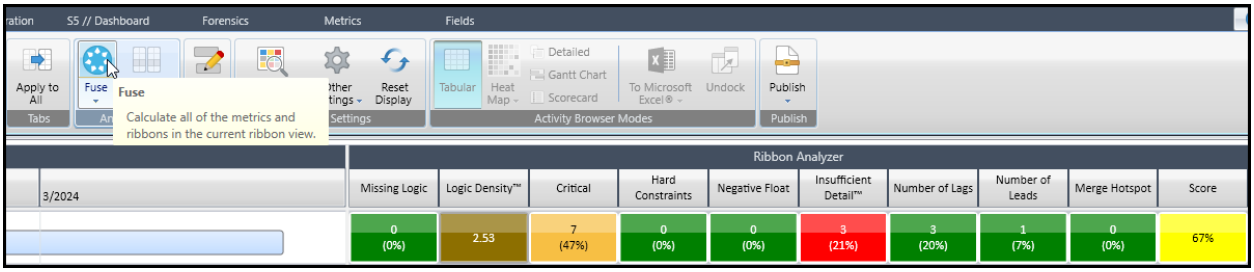
The filtered activities are the first and last tasks in the schedule. The first activity should not have predecessor and the last should not have a successor. They there should be excluded from the missing logic metric that requires all tasks to have both a predecessor and a successor.

5. In the bottom activity browser toggle to exclude W1000 and W1030 from the missing logic metric analysis.



6. Click Fuse to run the metric group analysis again.



Observe that the missing logic metric decreases to zero percent. The overall metric group score increased to 67%. We would like a score above 70%. The easiest way to achieve this is to convert positive lags to tasks.

7. Select the Number of Lags scorebox.

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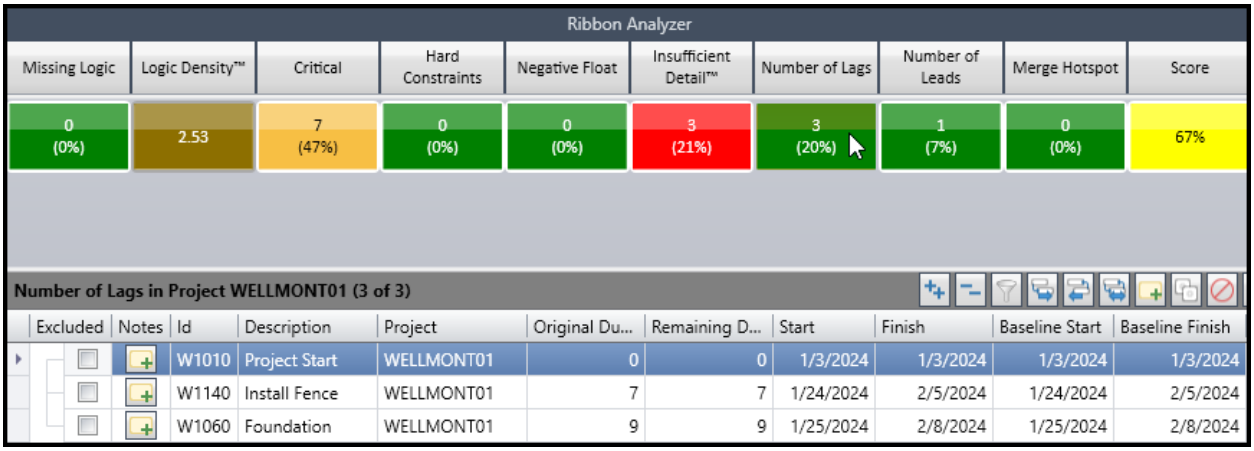
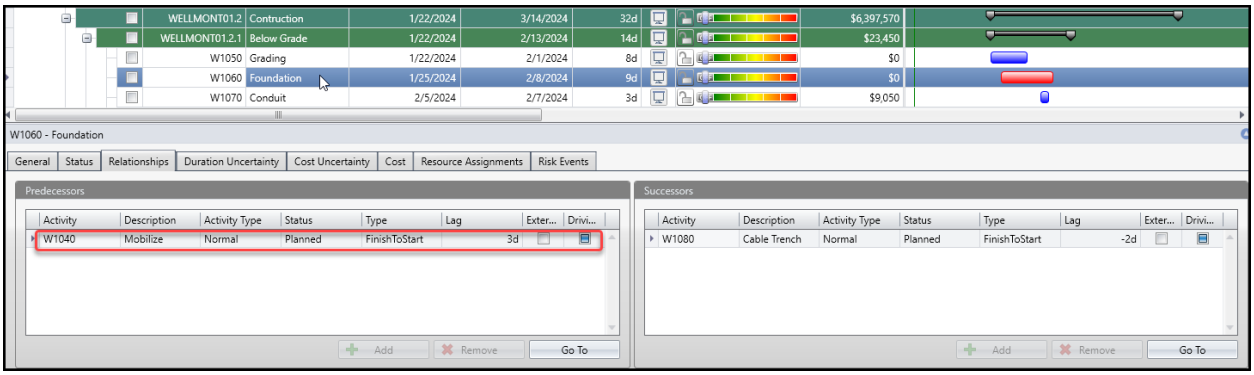


Let us investigate the magnitude of the FS lag between Mobilize and Foundation.

8. Return to S1 // Projects and select the Foundation tasks in the activity table then review relationships in the bottom details.



There is a three-day lag separating Mobilize and Foundation. If we convert this three-day lag to a task, it would make a short task in the schedule, but reasonable considering the overall short duration of the project. Let us see whether excluding the Foundation from the Number of Lags metric improves the overall schedule quality metric score.

9. Toggle to exclude the Foundation task from the Number of Lags metric analysis.

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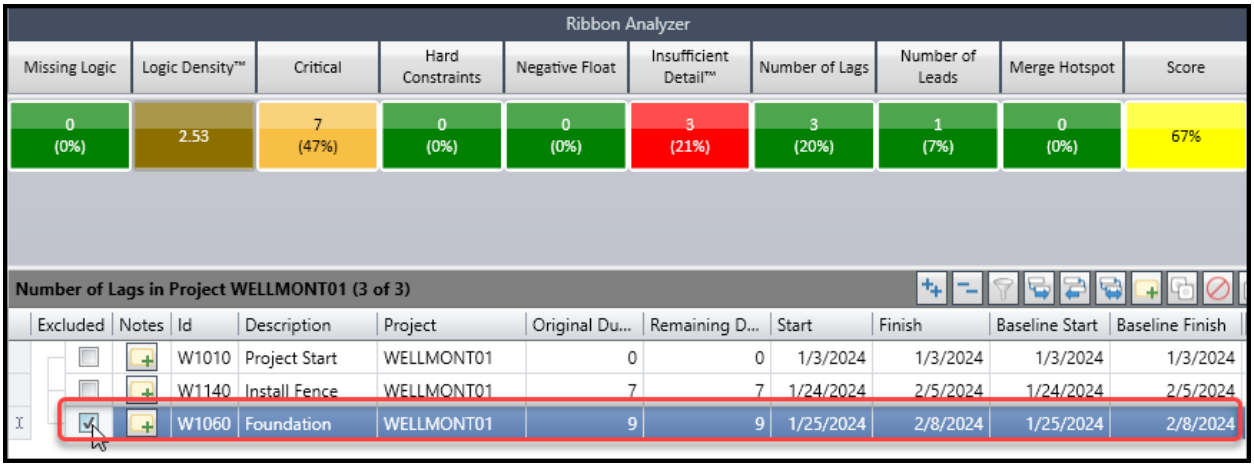
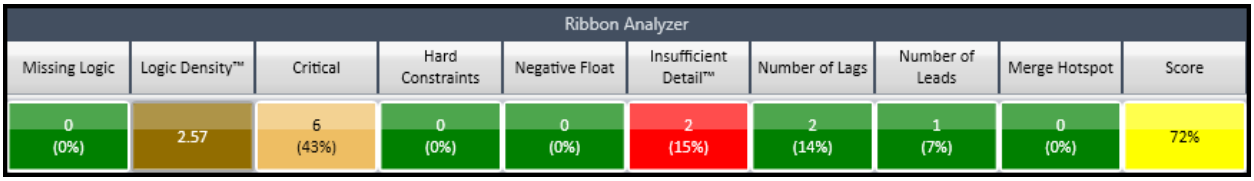


10. Click Fuse to run the Schedule Quality analysis then review the results.

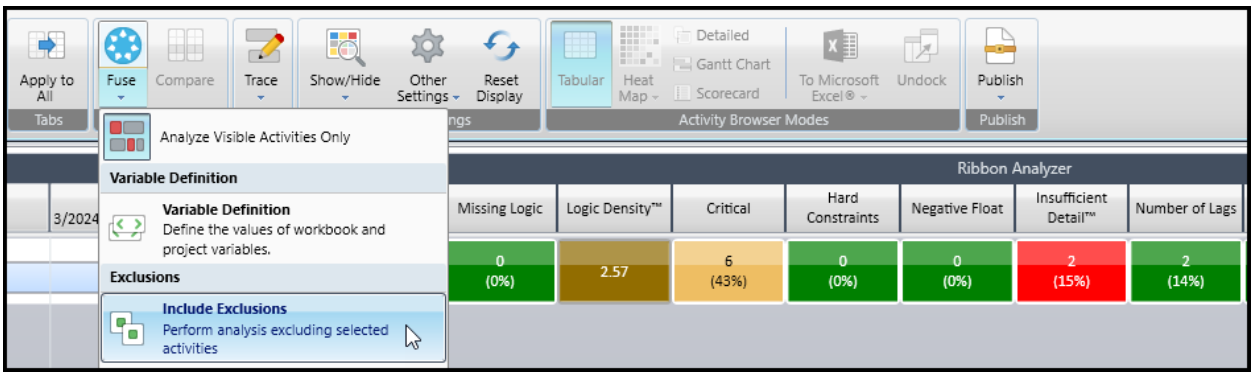


As intended, we achieved a Schedule Quality metric group score of 72%, just above our 70% target.

11. Compare the ribbon analyzer results before and after modifying the Foundation lag to a task.

When we exclude the Foundation task both the Number of Lags metric and Insufficient Detail metric decrease to two. Let us confirm that Foundation originally had Insufficient Detail.

12. Click the bottom of Fuse | Include Exclusions.



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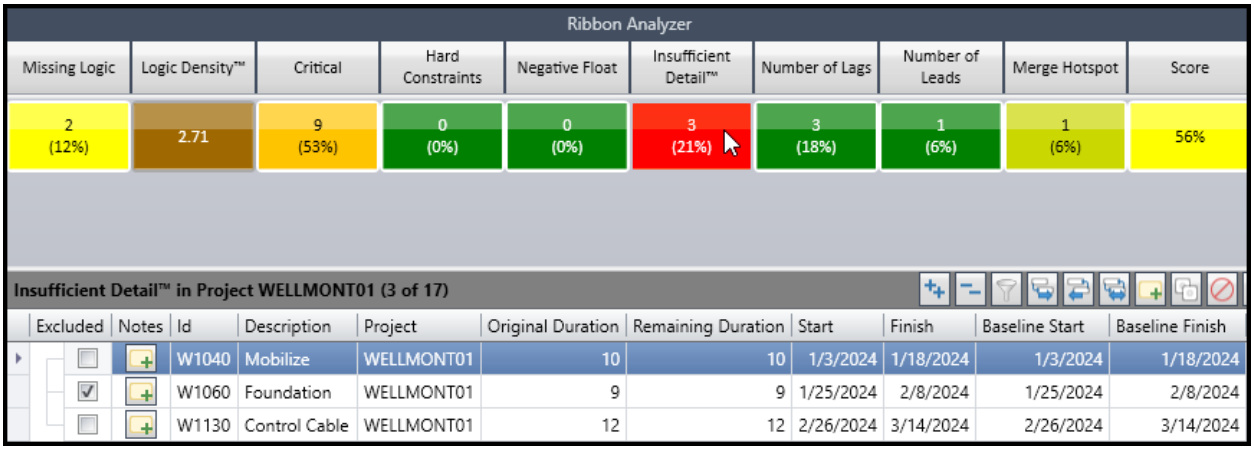
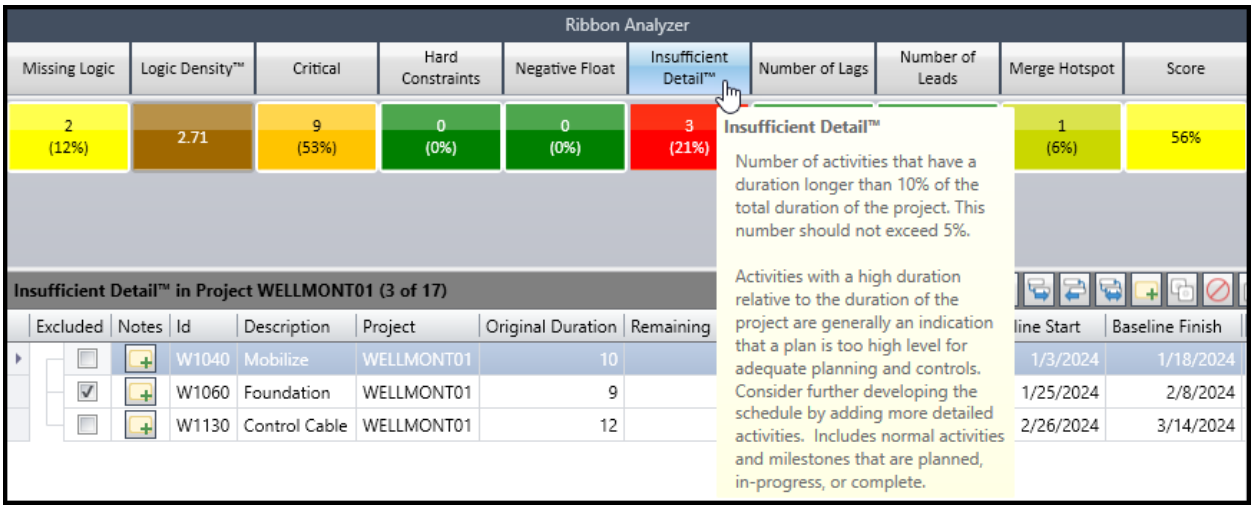
13. Run the Fuse analysis and click the score box for the Insufficient Detail metric.



Observe that Foundation is indeed captured by the Insufficient Detail metric. Let us review the criteria for the Insufficient Detail metric.

14. Hoover your mouse over the header for the Insufficient Detail metric and read the popup textbox.



The Insufficient Details metric is a measure of schedule clarity. Excessively long activities in the schedule make the schedule situation less apparent to stakeholders. A schedule that fails the Insufficient Details metric lacks proper task description details. Shorter duration activities are preferred for schedule transparency. Tasks or records longer than 10% of the total duration of the project are captured by this metric. The duration of the project being the elapsed time from start to finish, including nonworking days. The elapsed project time is found in S1 // Projects and the bottom details status tab.

15. In S1 // Projects select the top deliverable in the activity table.

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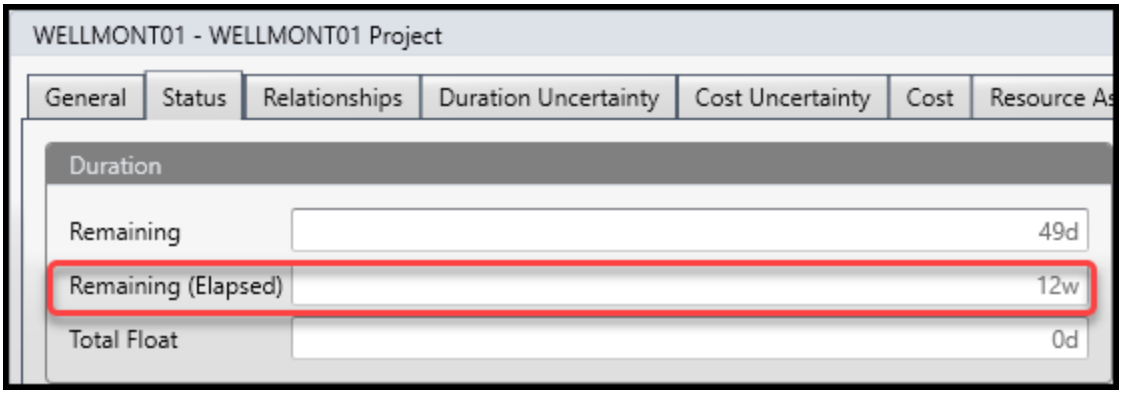
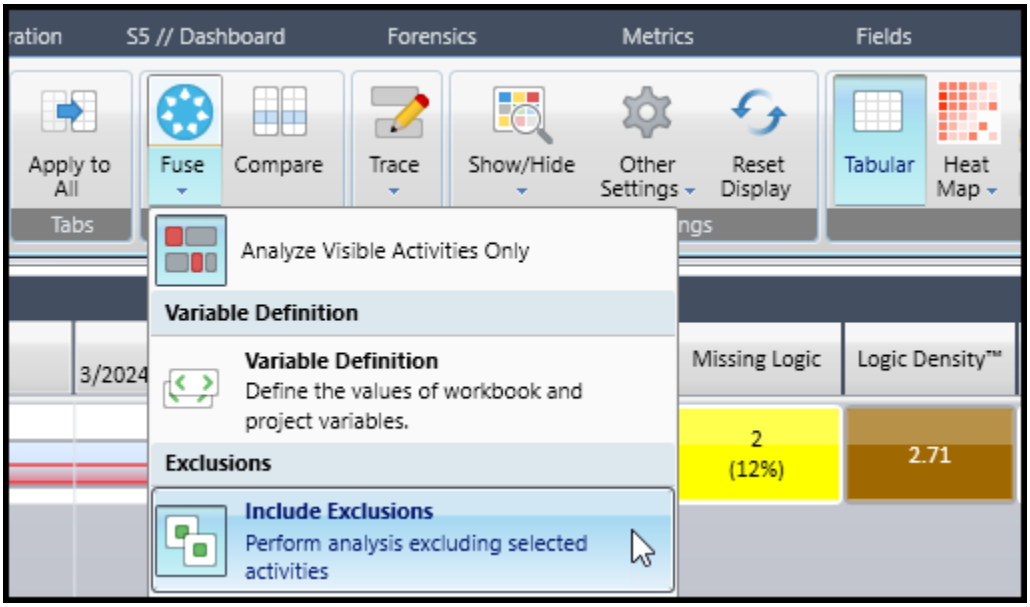
16. In the bottom dock click the Status tab.



The project elapsed time is 12-weeks or 84-days. The nine-day Foundation task computes to 10.71% the duration of the project. Set Foundation has the shortest duration of the three filtered activities. If one were to consider any of these Insufficient Detail tasks for exclusion in the Schedule Quality metric group analysis, Foundation would be first on the list. And an argument can also be made to exclude Foundation because it is only slightly above the 10% threshold.

What if instead of simply excluding the Foundation task from the Schedule Quality metric group analysis, we return to the source schedule and convert the Foundation lag to a task.? Well, as demonstrated this would have a material beneficial effect on the schedule quality; the schedule would become more transparent.

Let us run the Schedule Quality metric group analysis again and untoggle include exclusions.



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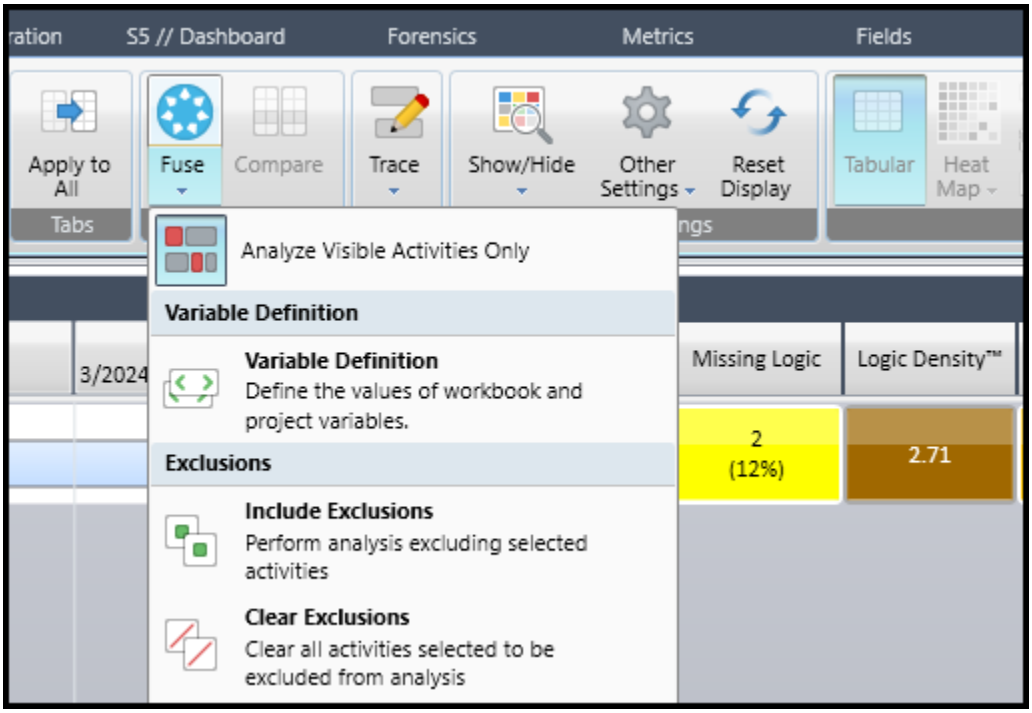
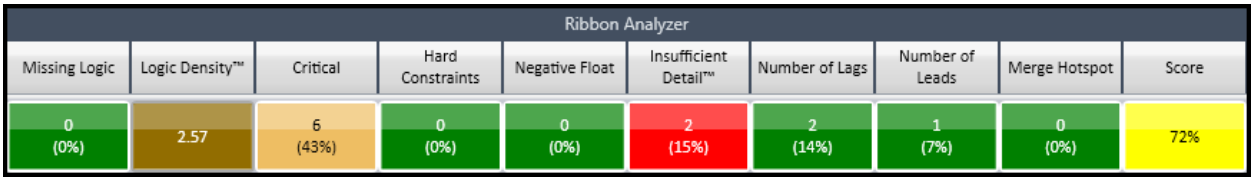
The Fuse dropdown menu exclusions settings appear as follows:



17. Run Fuse again and report results.



The overall score of 72% achieves our target Schedule Quality metric group score. One of the primary reasons to eliminate (positive) Lags is to make the schedule more transparent. Lag appears on the Gantt chart as a line and with no label identification. Converting the Lag to a task brings more clarity to the schedule situation.

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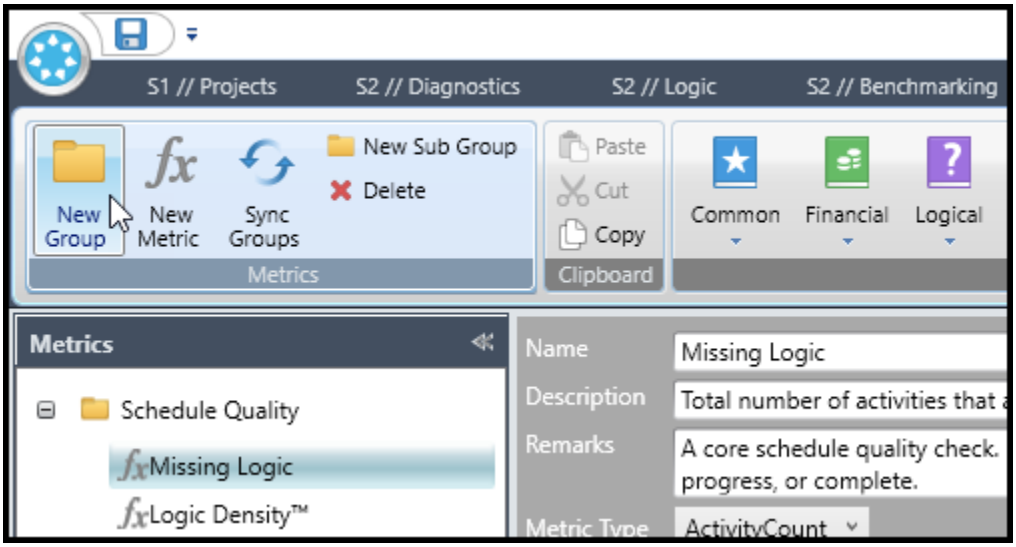
5 Metrics tab

5.1 Exercise – Create a Personal Metric Group

Create your own personalized metric group.

1. Find Wellmont01.xer in the training data folder and link it to workbook1 then import it.

2. In the Metric tab, click to add a New Group in the navigator pane.



3. Name it Risk Analysis Prep then click-drag-drop to place it at the top of the navigator pane.

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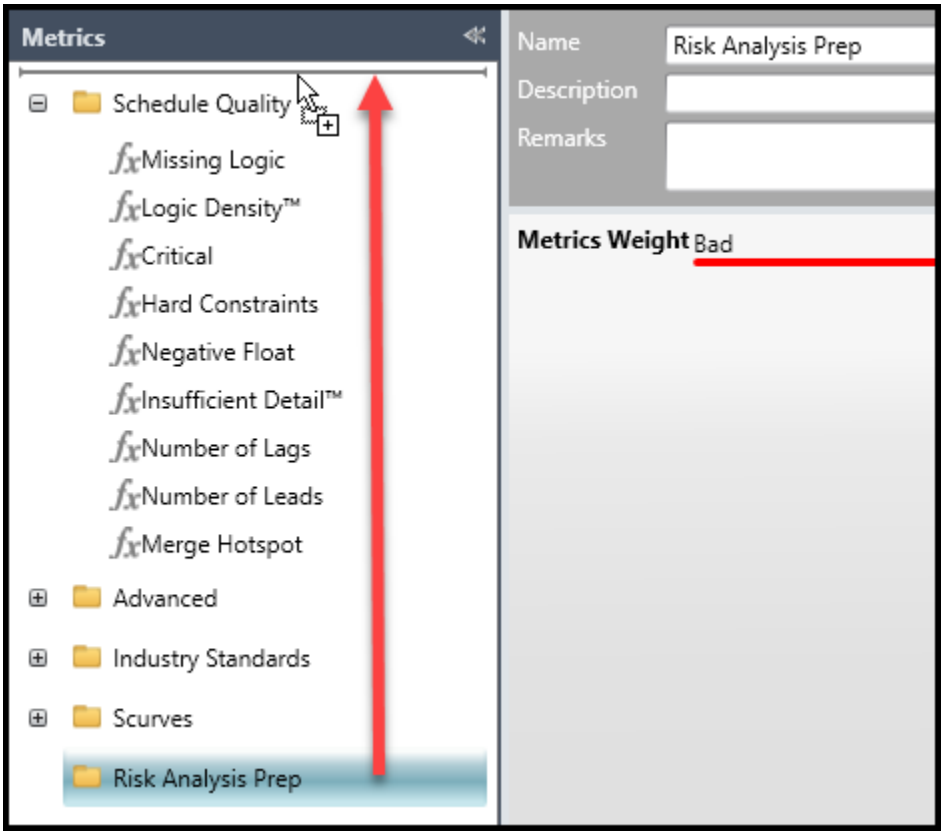

4. Expand the Advanced folder then the Constraints folder and right click on the Constraint metric and choose copy from the popup menu.

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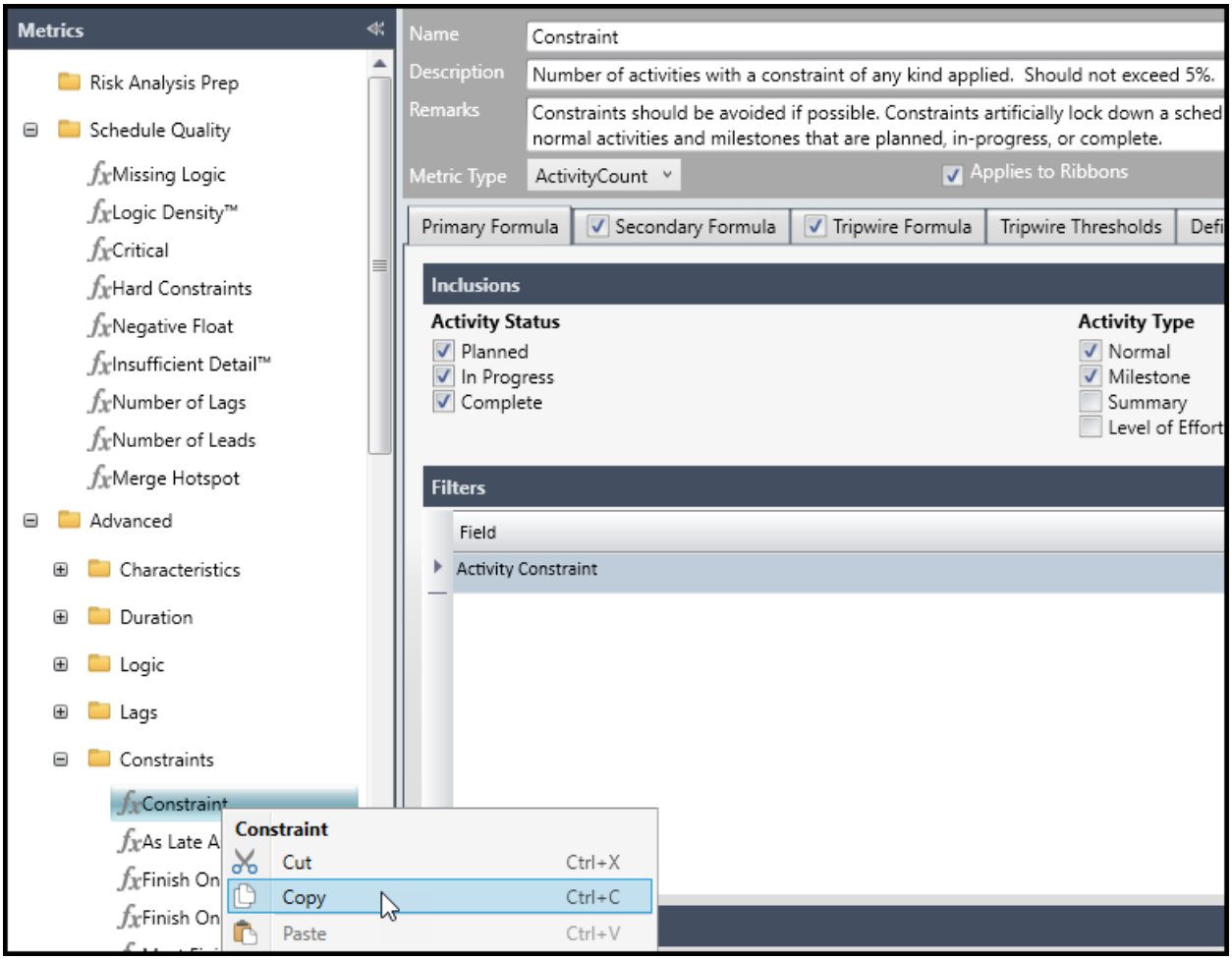
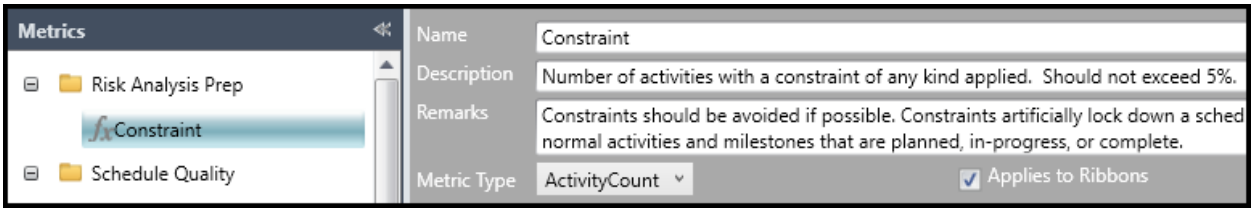


5. Paste the Constraint metric in the Risk Analysis Prep metric group.



6. Copy Missing Logic from the Schedule Quality metric group.

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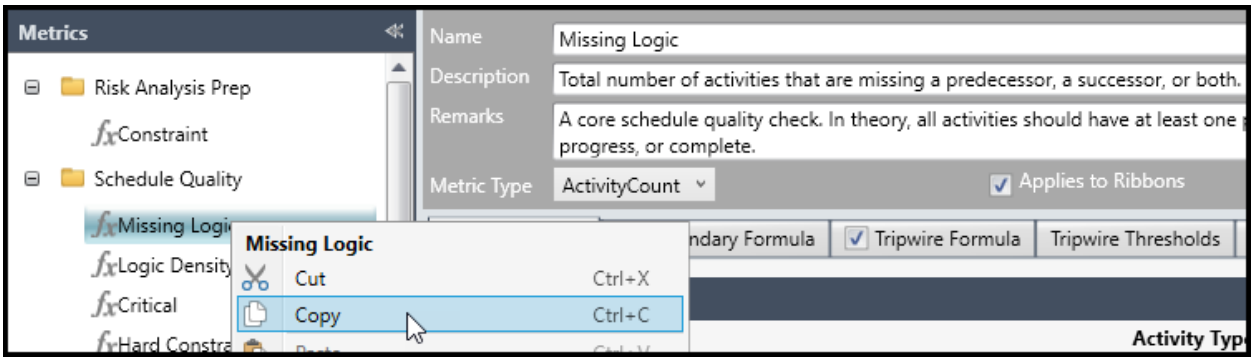
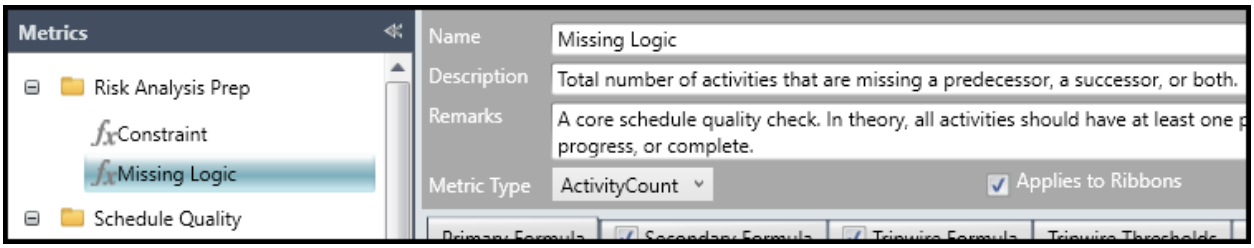


7. Paste into the Risk Analysis Prep metric group.



8. Repeat copy and paste for Open Ends metric in the Advanced | Logic folder.

9. Repeat copy and paste for the Open Start metric in the Advanced | Logic folder.

10. Repeat copy and paste for the Open Finish metric in the Advanced | Logic folder.

11. Repeat copy and paste for the Open Ends w/o Constraints metric in the Advanced | Logic folder.

12. Repeat copy and paste for the Lags metric in the Advanced | Lags folder.

13. Repeat copy and paste for the Leads metric in the Advanced | Lags folder.

The Risk Analysis Prep metric group displays in the navigator pane with the weightings to the right.

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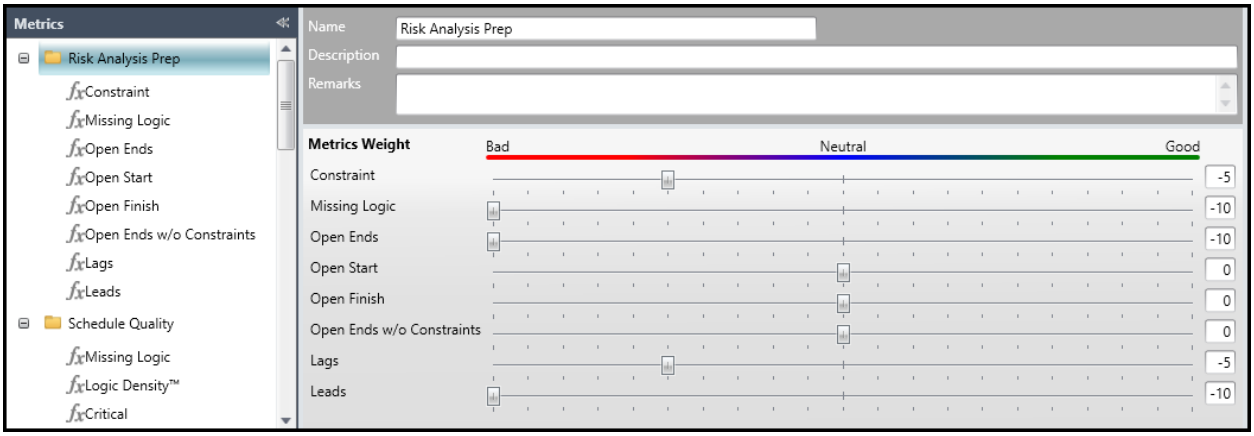
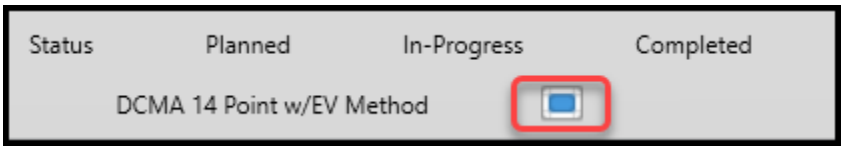


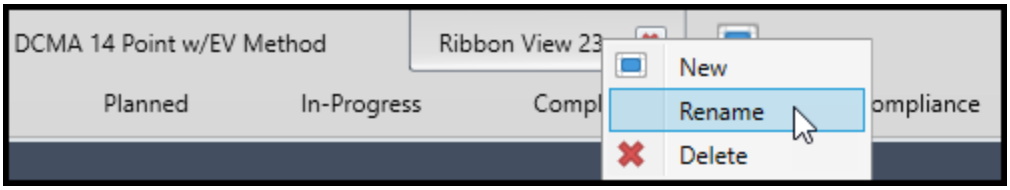
5.2 Exercise – Add Metric Group to the Playlist

Add you Risk Analysis Prep metric group to the S2 // Diagnostics playlist.

1. In the playlist click the blue rectangle button to instert a new Ribbon View.



2. Right click on the new Ribbon View and choose Rename from the popup menu.



3. Enter the name Risk Analysis Prep.

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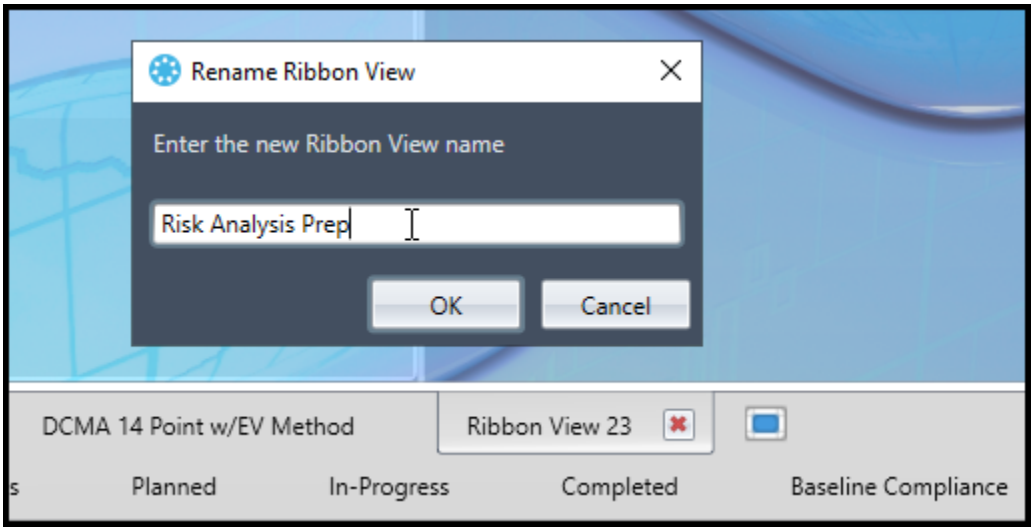
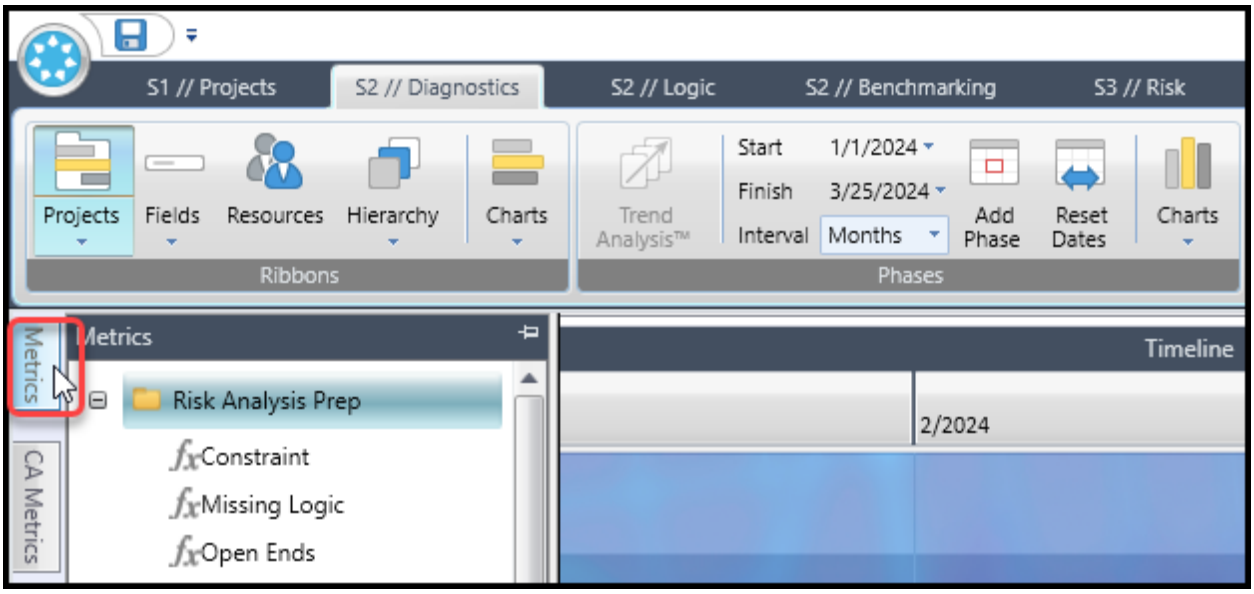


4. In the upper left hoover the mouse over the Metrics side tab.



5. Right click the Constraints metric and choose Add to All Analyzers from the popup menu.

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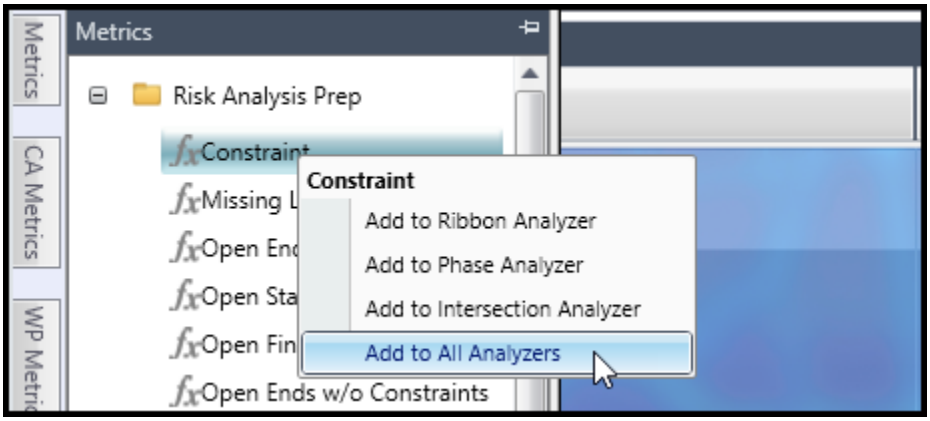
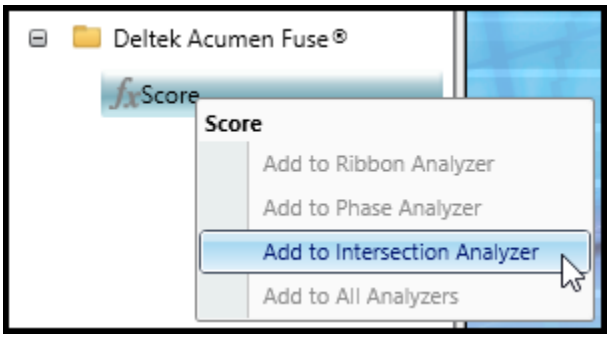


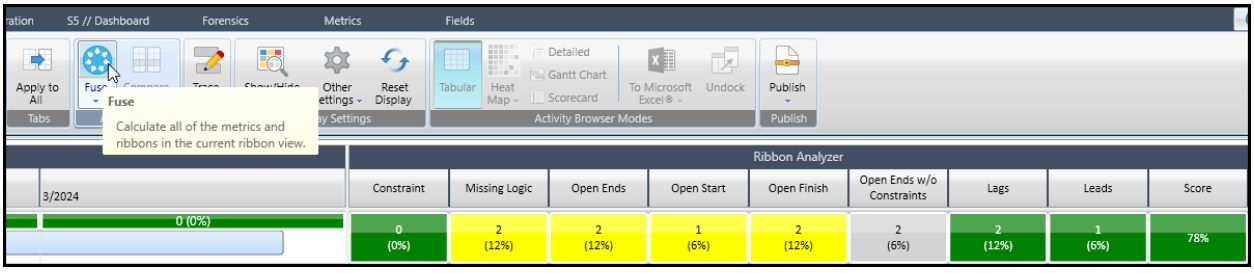
6. Repeat for the rest of the metrics in the Risk Analysis Prep metric group.

If Score is not currently displayed in the analyzers proceed as follows:

7. Expand the Deltek Acumen Fuse metrics folder then right click on Score and choose to either Add to All Analyzers (or Add to Intersection Analyzer if already in the Ribbon and Phase Analyzers).



8. Click the Fuse button to run the Risk Analysis Prep metric group analysis.



The Ribbon Analyzer, Phase Analyzer, and Intersection Analyzer results appear as below.

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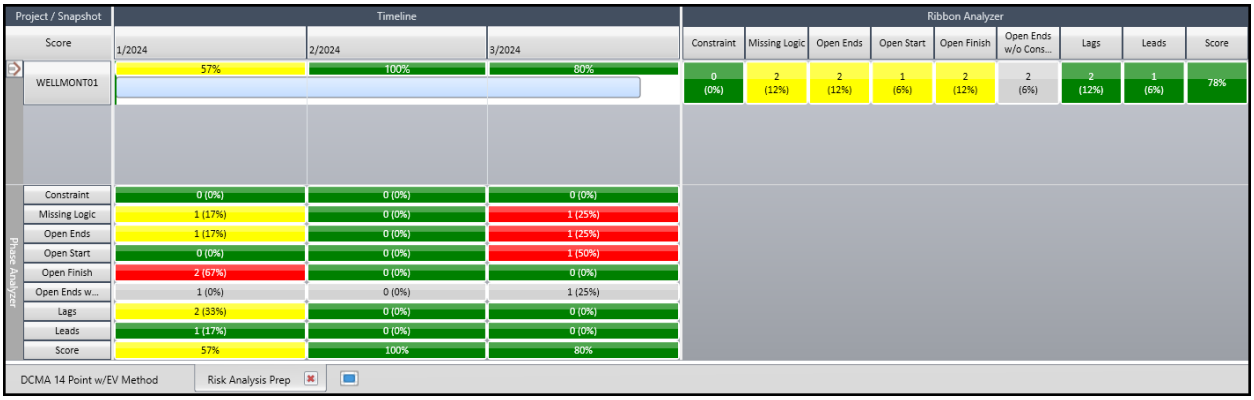
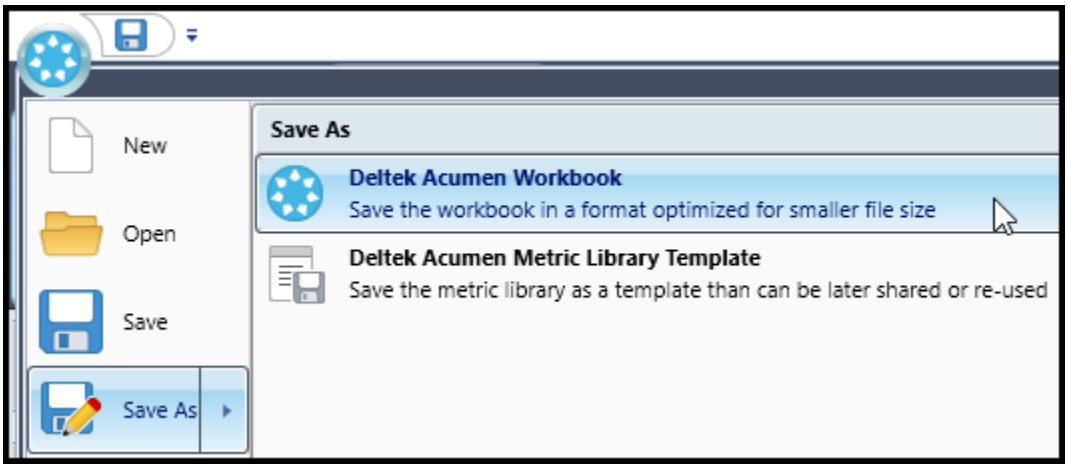


9. Click home button Deltek | Save As | Deltek Acumen Workbook and save in your training folder.



Now the Risk Analysis Prep metric group will be available every time we open the Workbook1 Risk Analysis Prep Group workbook. Note, however, it will not be available in new workbooks.

5.3 Exercise – Make Metric Group Available to New Workbooks

Do the following to make the metric group available to new workbooks.

1. Click the home button Deltek | Save As | Deltek Acumen Metric Library Template.

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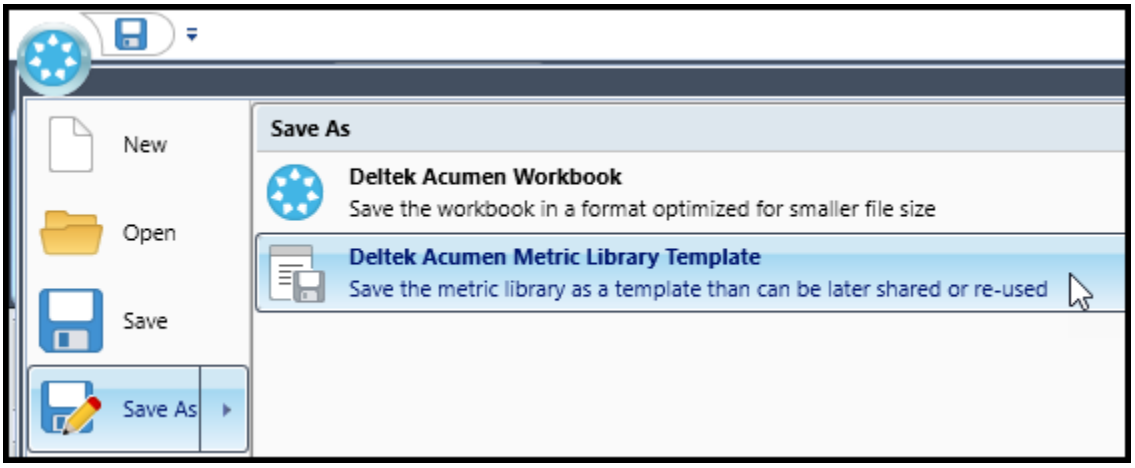
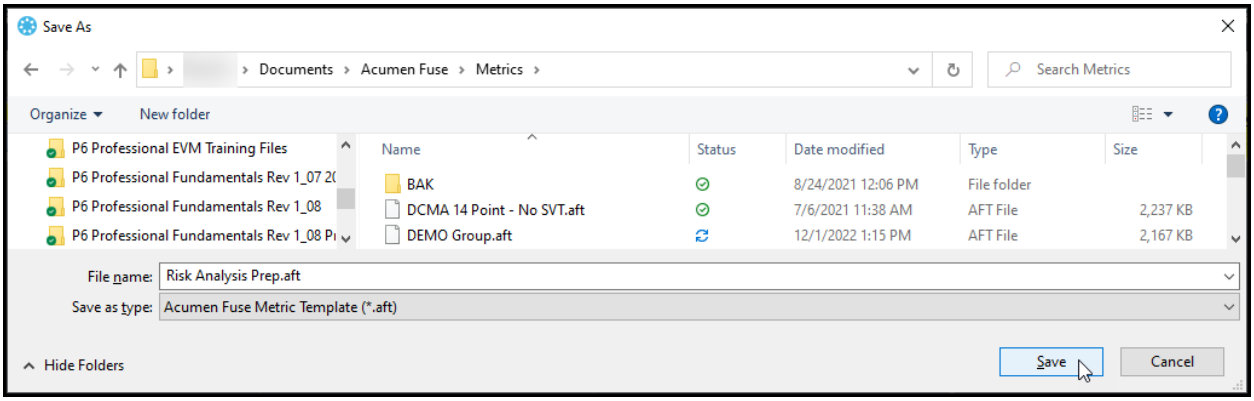


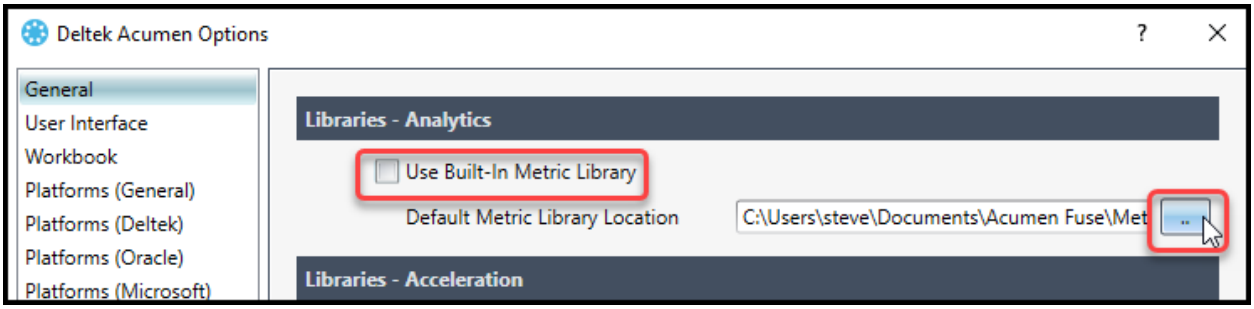
We want to save the metric template to a folder in our Windows documents.



We need to let Deltek Acumen to know where to look for the Risk Analysis Prep metric library template.

2. Click the home button Deltek | Deltek Acumen Options.

3. In General page untoggled Use Built-in Metric Library and click the ellipse to specify the Default Metric Library Location.



4. Find the Risk Analysis Prep.aft file and choose open.

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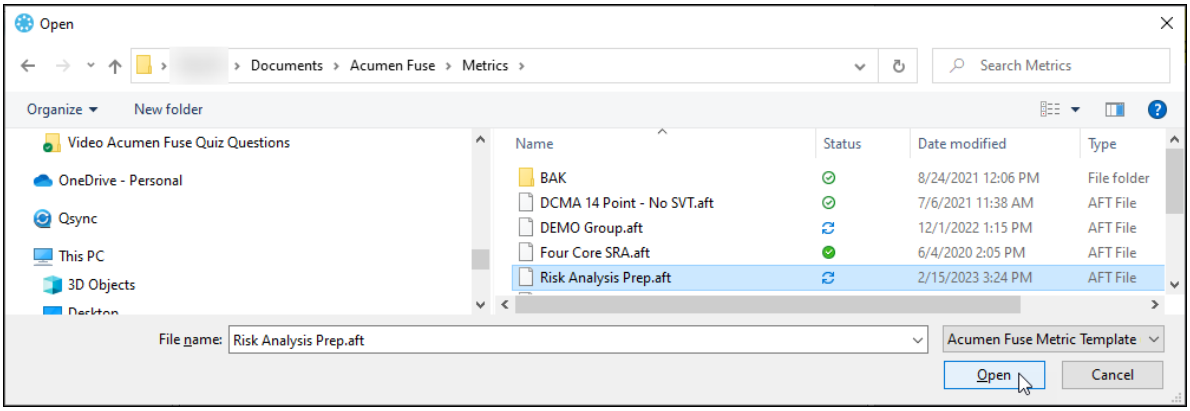
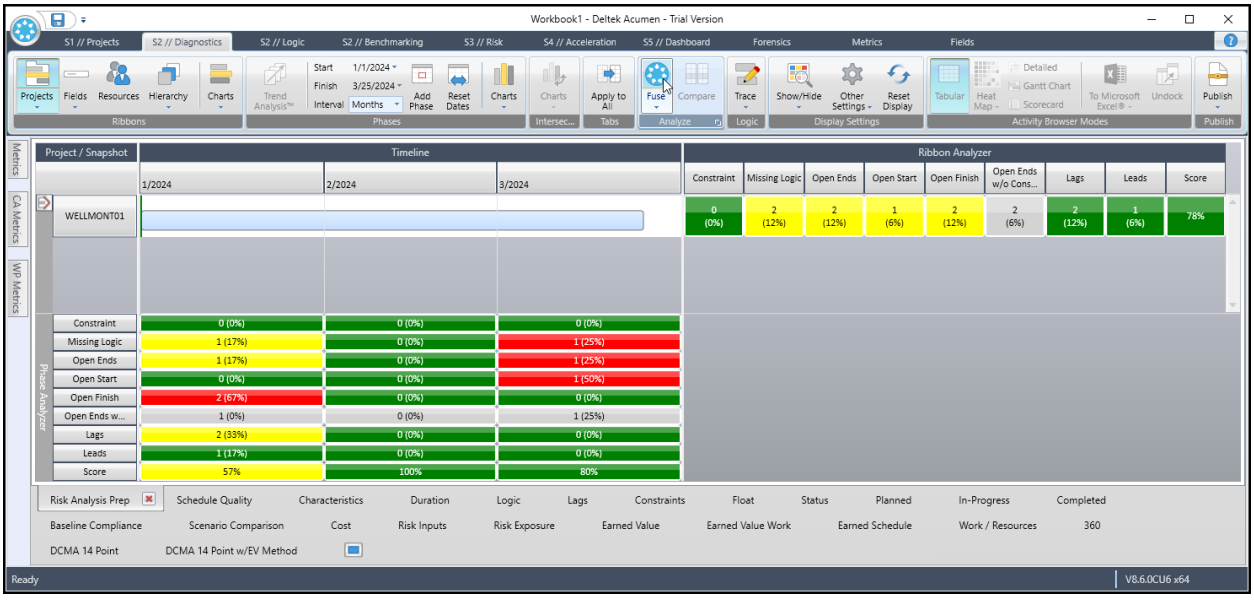


5. Click OK.

Now the Risk Analysis Prep metric is made available to new workbooks. To test we create a new workbook, import a schedule, e.g., Wellmont01.xer, and go to S2 // Diagnostics and confirm that Risk Analysis Prep metric group is in the playlist.

6. You should observe the Risk Analysis Prep metric group in the prime upper left spot on the playlist.

7. Click Fuse to run the Risk Analysis Prep analysis.



The Wellmont01.xer has a passing score of 78% but let's remove the start and finish milestones from the Missing Logic metric.

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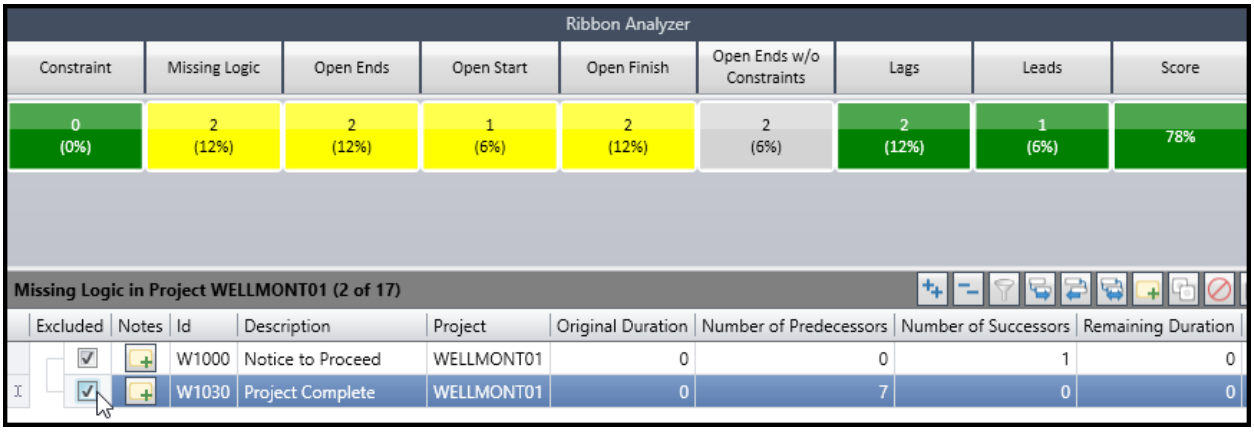
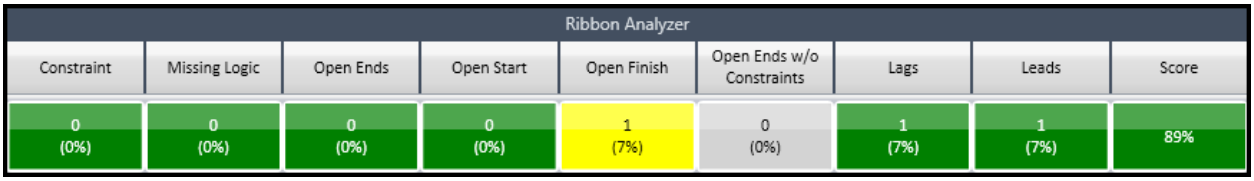


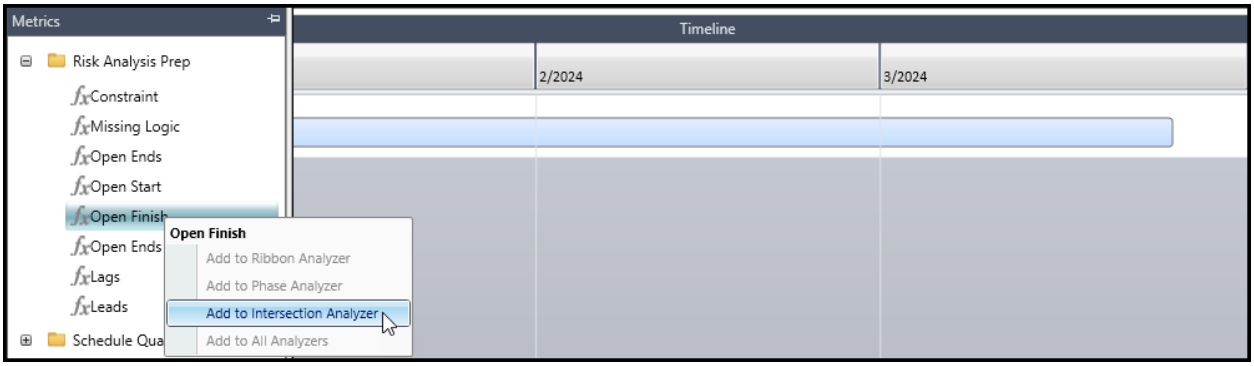
8. Click Fuse to run the Risk Analysis Prep analysis.



The score of 89% is promising. There is some room for improvement. We should address the Open Finish issue, perhaps, with a Finish On or Before activity constraint, to improve schedule quality and increase the accuracy of the risk analysis. The lead is also problematic.

Let us conclude by adding the Open Finish metric to the intersection analyzer.

9. In the upper left hoover the mouse over the Metrics side tab then right click on Open Finish and choose Add to Intersection Analyzer from the popup menu.



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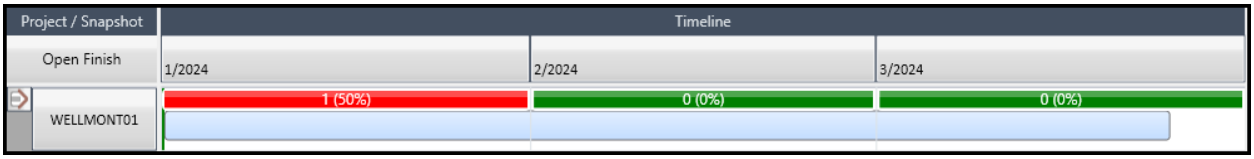
10. Click Fuse to run the analysis.



Our Open Finish issue is only a problem in the month of January.

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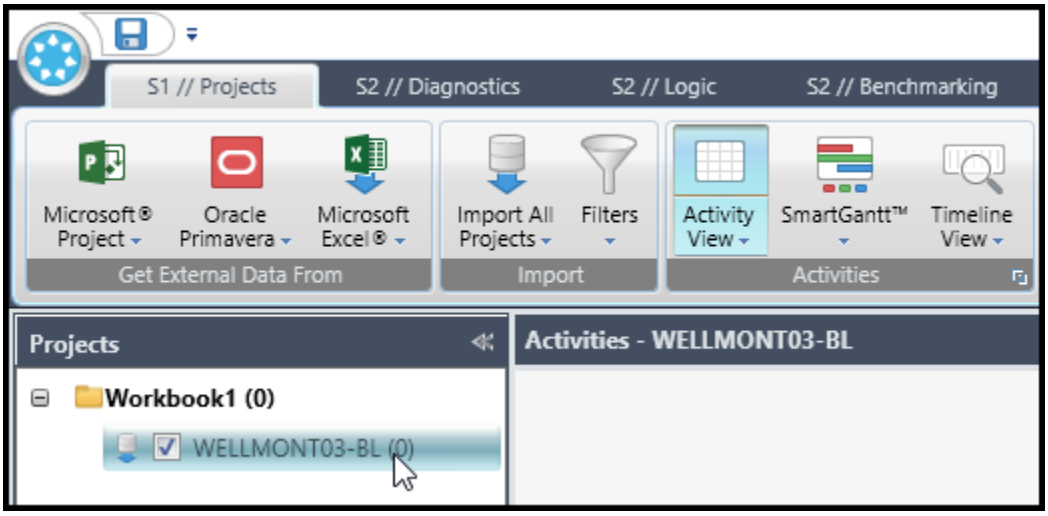
6 Snapshots and Scenarios

6.1 Exercise

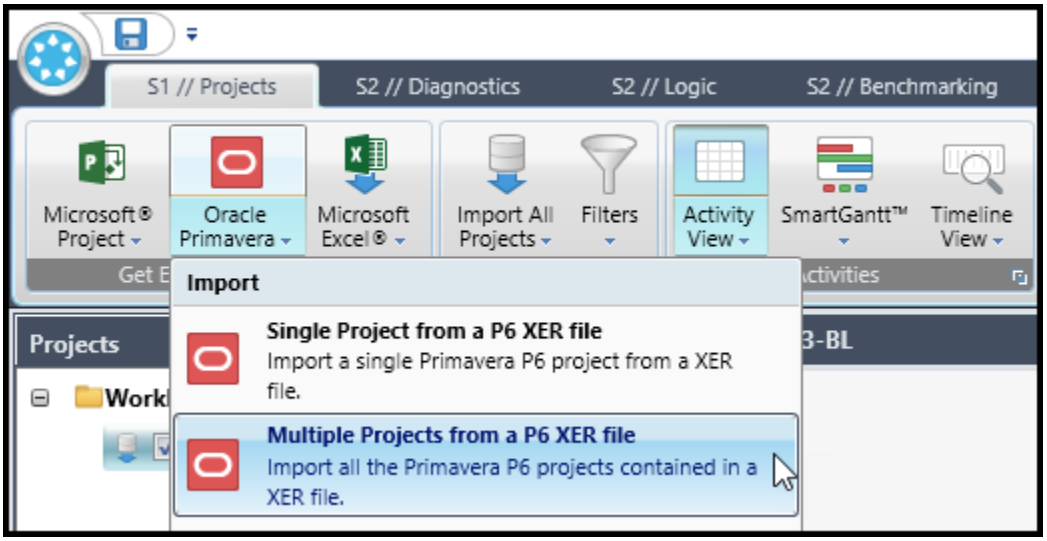
Read in a schedule baseline and associated snapshots.

1. Find Wellmont03-BL.xer in the training data folder and link it to workbook1 then import it.

2. Left click on Wellmont03-BL.xer to select it.



3. Choose Oracle Primavera | Multiple Project from a P6 XER file.



4. Select the three snapshots: Wellmont03-W1.xer, Wellmont03-W2.xer, and Wellmont03-W3.xer and click open.

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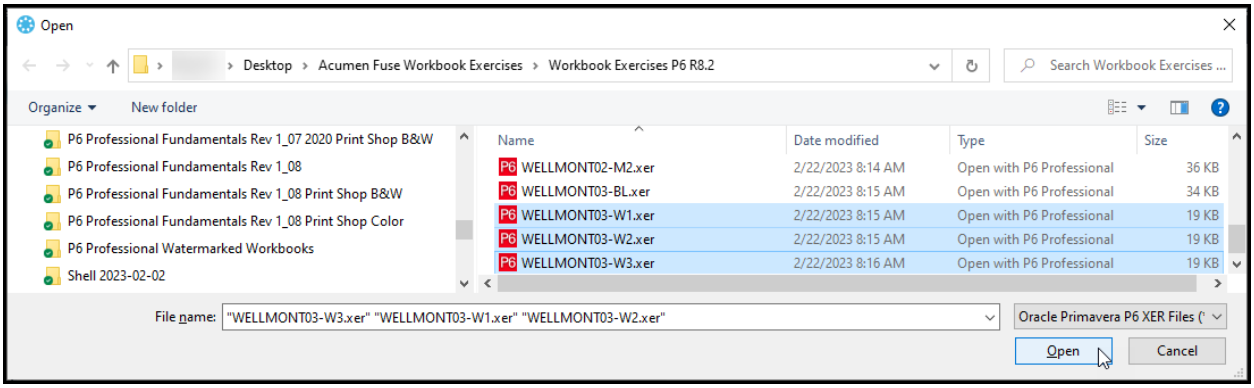
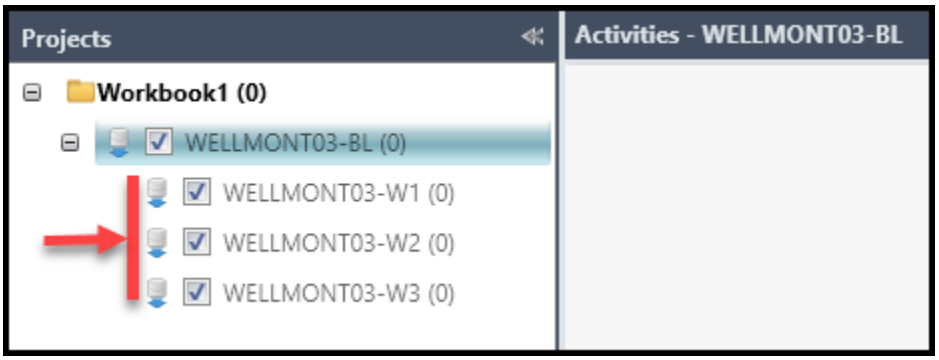
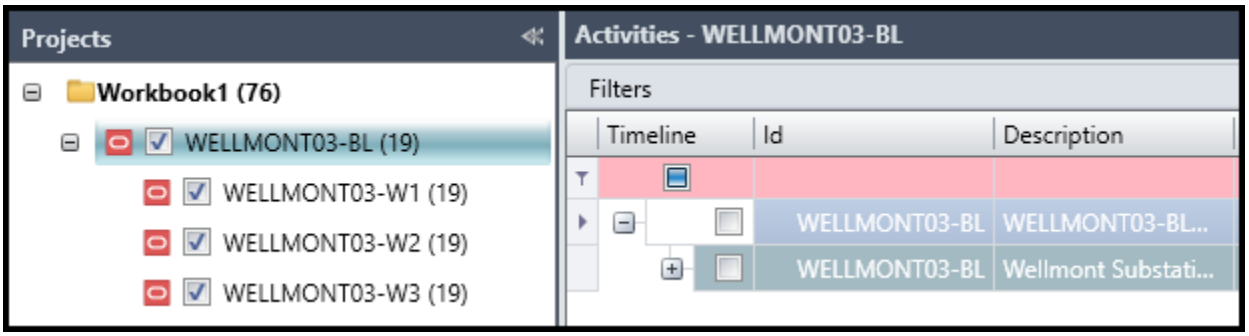


5. If you properly linked the snapshots to the baseline Wellmont03-BL, the snapshots all be indented from the baseline in the navigator pane.



6. Click to Import all projects.



7. Go to S2 // Diagnostics.

8. In the playlist select the Float metric group and click Fuse.

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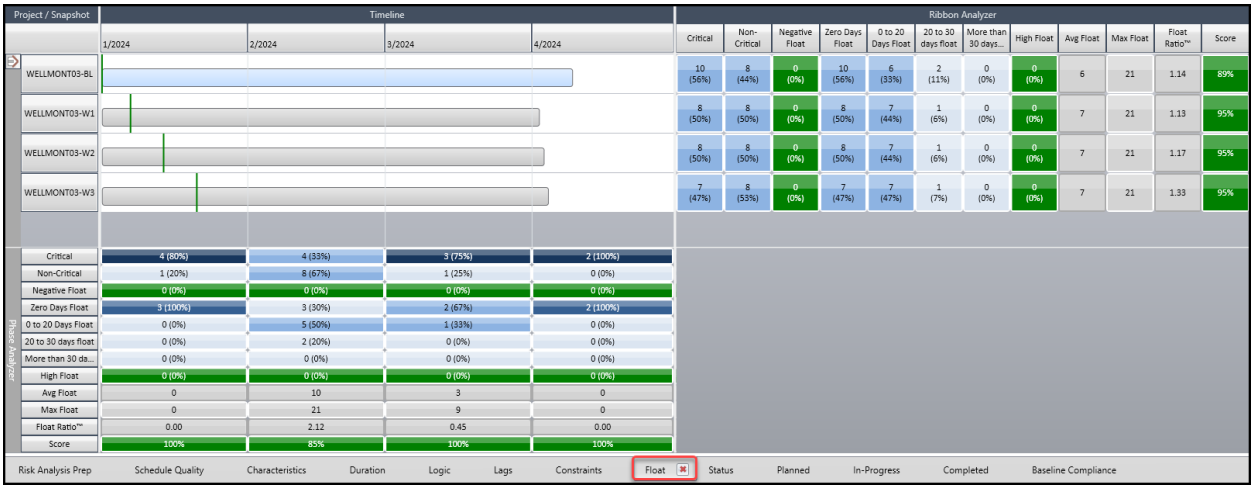
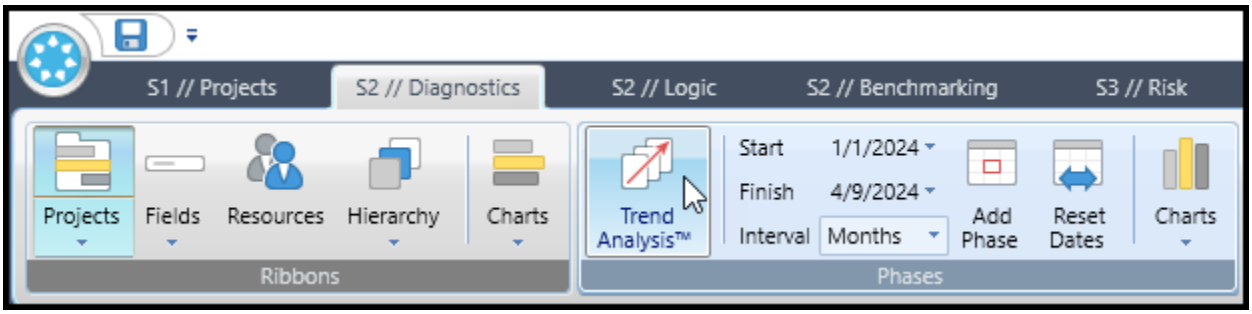
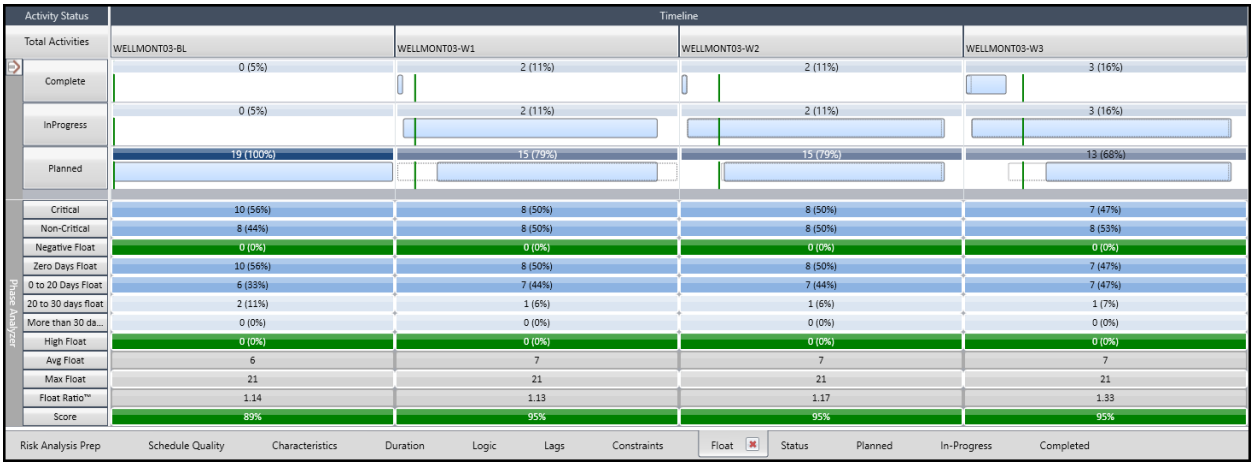


9. In the Phases ribbon group select the Trend Analysis button.



10. Click Fuse to run the Float metric group analysis.



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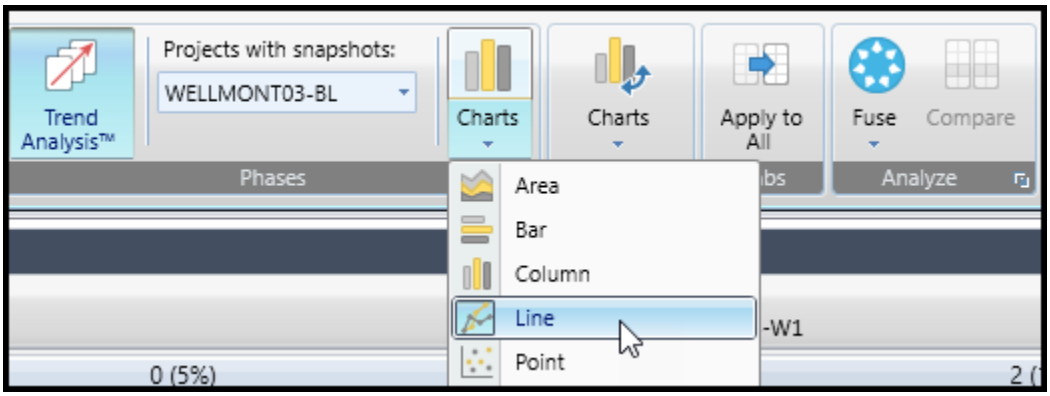
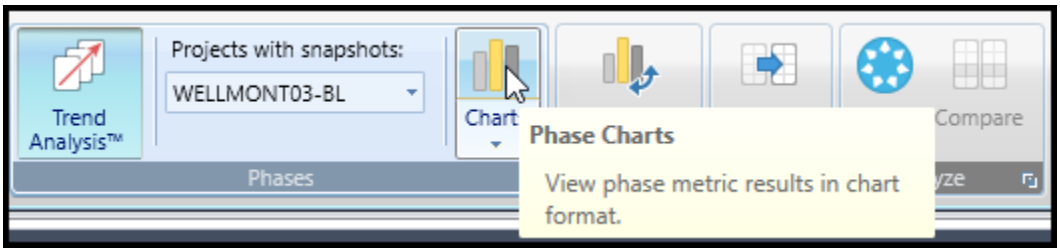
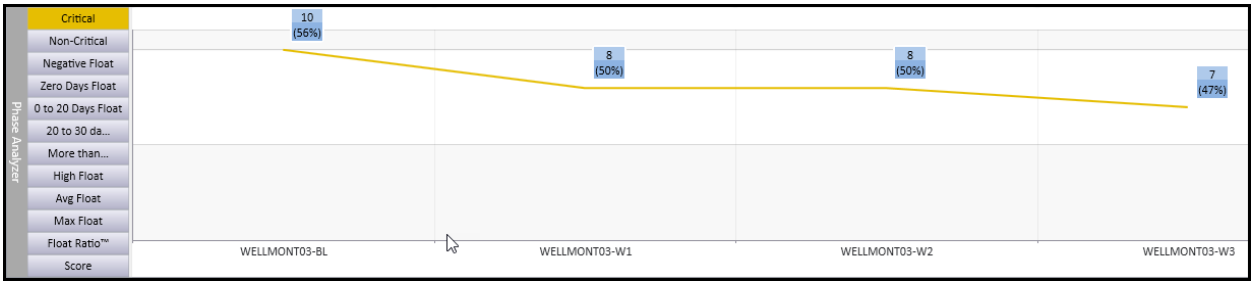
11. In the Phases ribbon group select the bottom portion of Charts and choose the line chart from the dropdown menu.



12. In the Phases ribbon group click the top portion of Charts to plot the line chart.



13. Click the Critical metric in the phase analyzer (if not already selected by default).



The trend is less critical activities as the schedule progresses week to week.

14. Click to add the '0 to 20 Days Float' metric.

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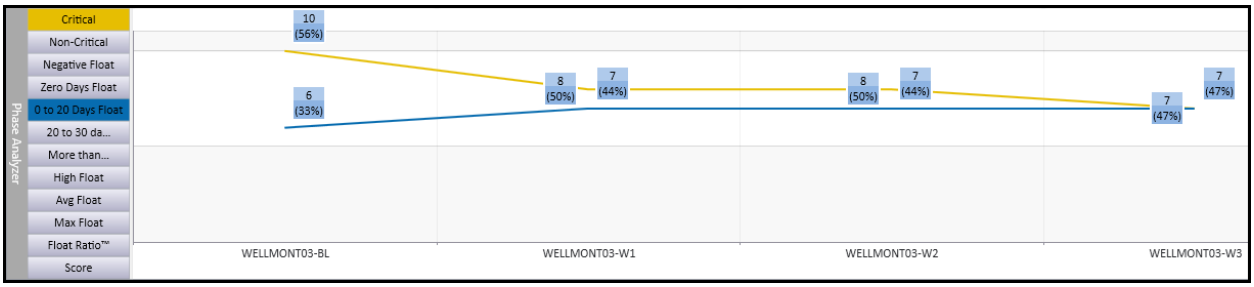
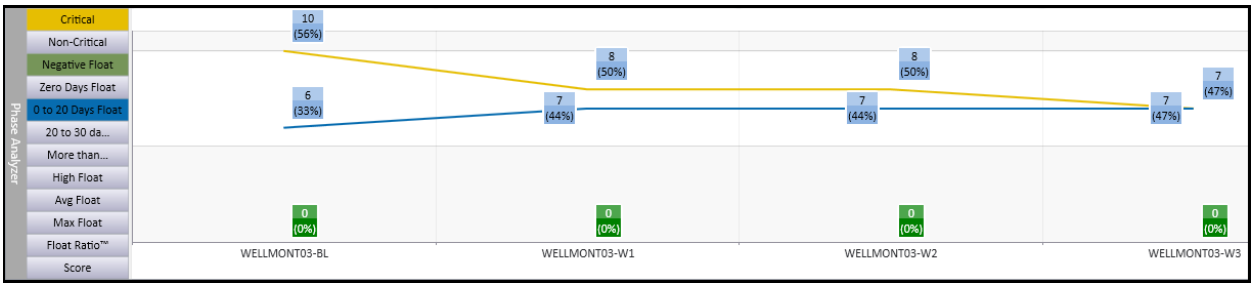


There is a slight increase in the number of near critical activities as the schedule progresses, which is something to monitor.

15. Click to add Negative Float.



The good news is that there is no negative float throughout the progressing project. The project is executing nicely.

16. To return to the original layout in the Phases ribbon group click Trend Analysis again.

6.2 Exercise – Creating a Scenario and Adding a Relationship

Manually create a scenario copy of the schedule and then add a relationship to the schedule.

1. Find Pipe Repairs.xer in the training data folder and link it to workbook1 then import it.

2. Right click on the Pipe Repairs schedule in the navigator pane and choose Create Scenario in the popup menu.

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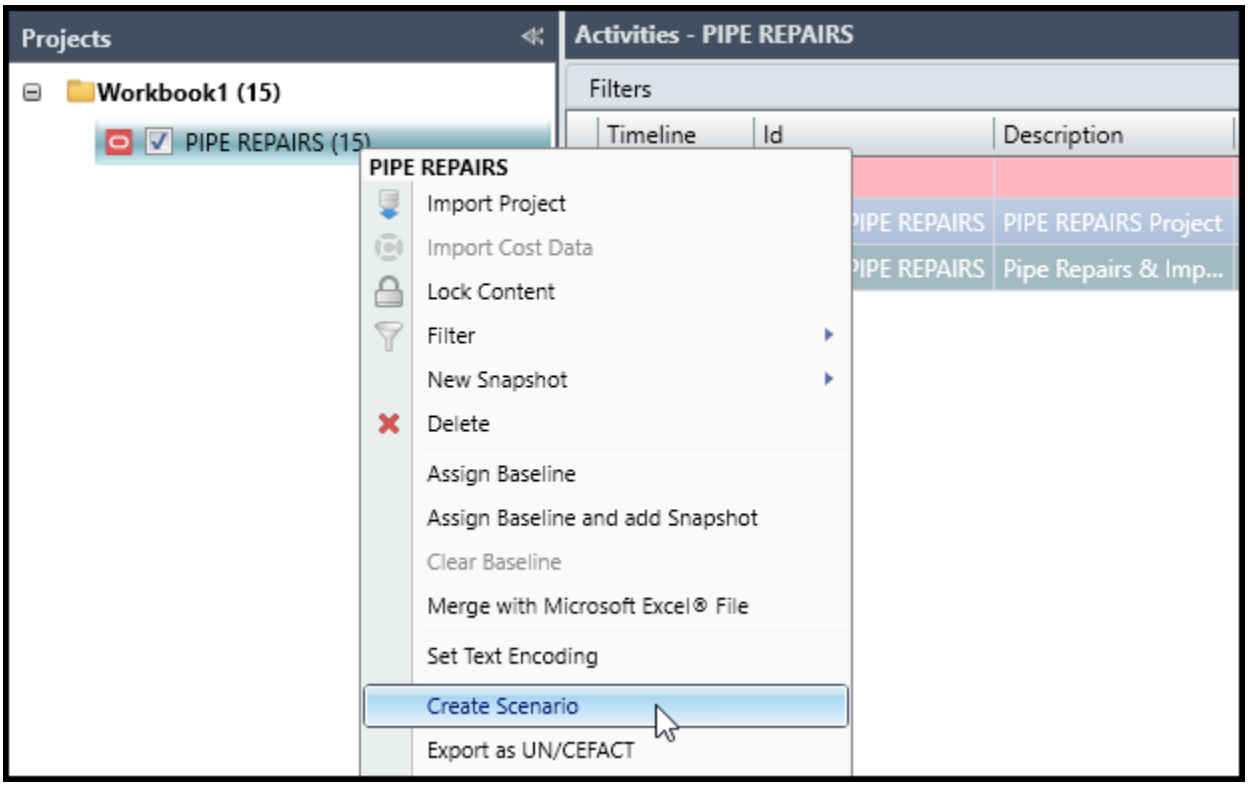
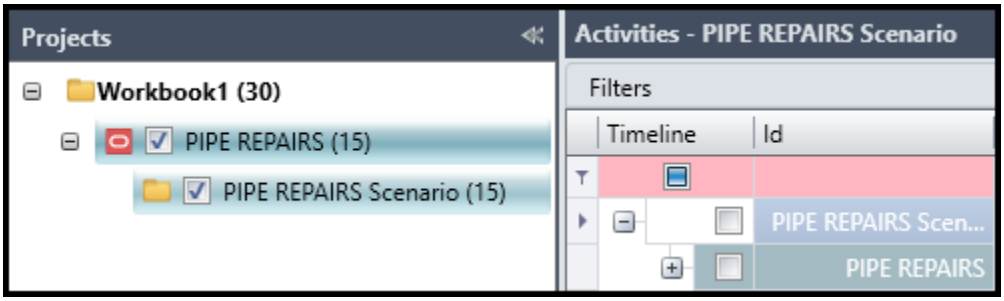
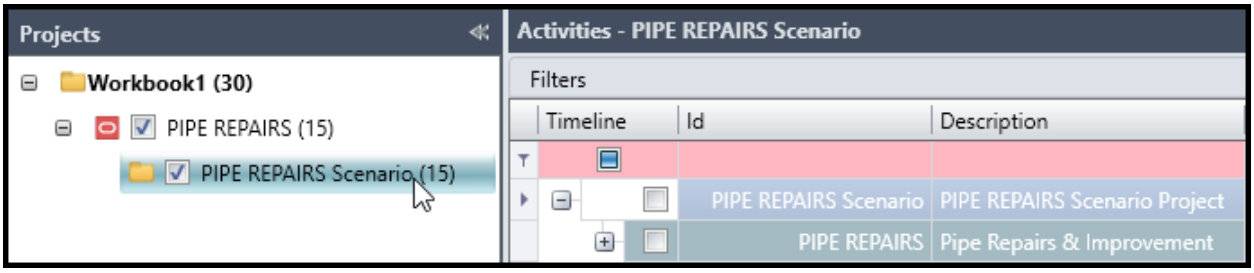


Acumen Fuse generates a scenario copy of the schedule.



3. Select the scenario in the navigator pane.



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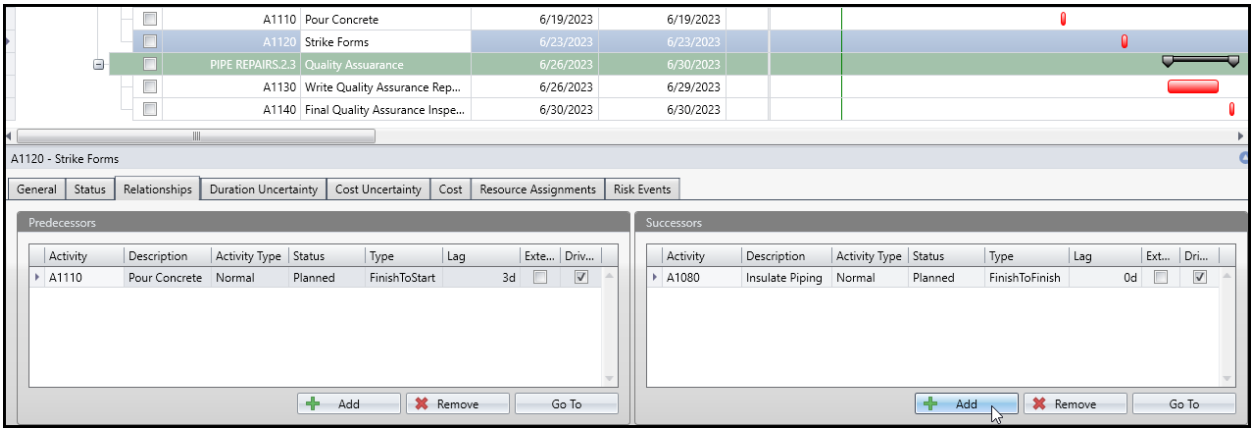
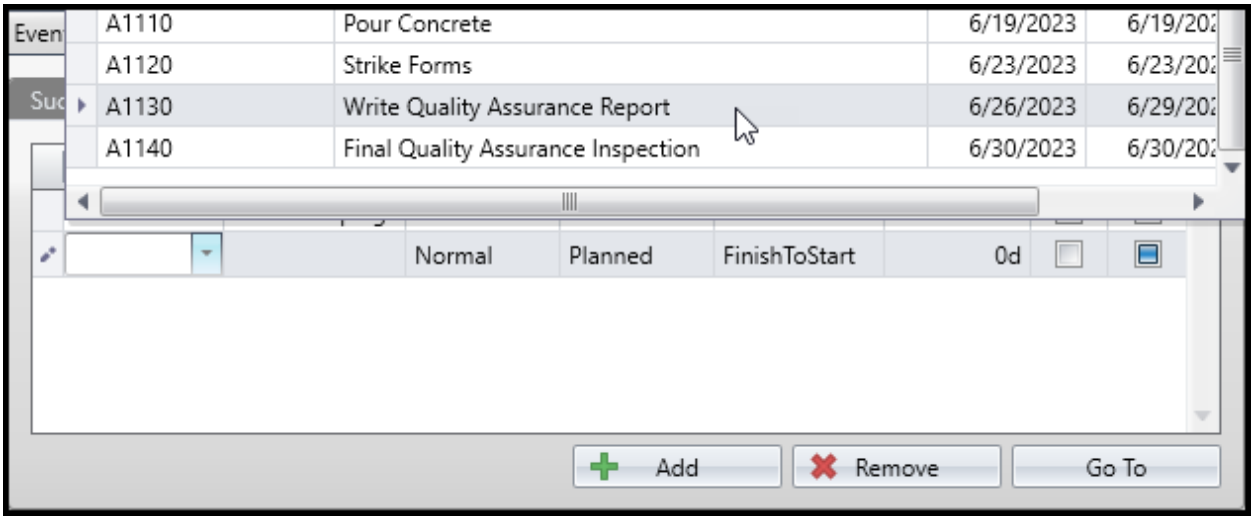
4. Choose Activity View | Grouping | Display Level 4.

5. Select the Strike Forms activity in the activity table and in the bottom details choose the relationships tab, and in the successor frame click Add to insert a new relationship.



6. Click the activity field and choose Write Quality Assurance Report in the drop up menu.



7. Confirm the relationship type is FS.

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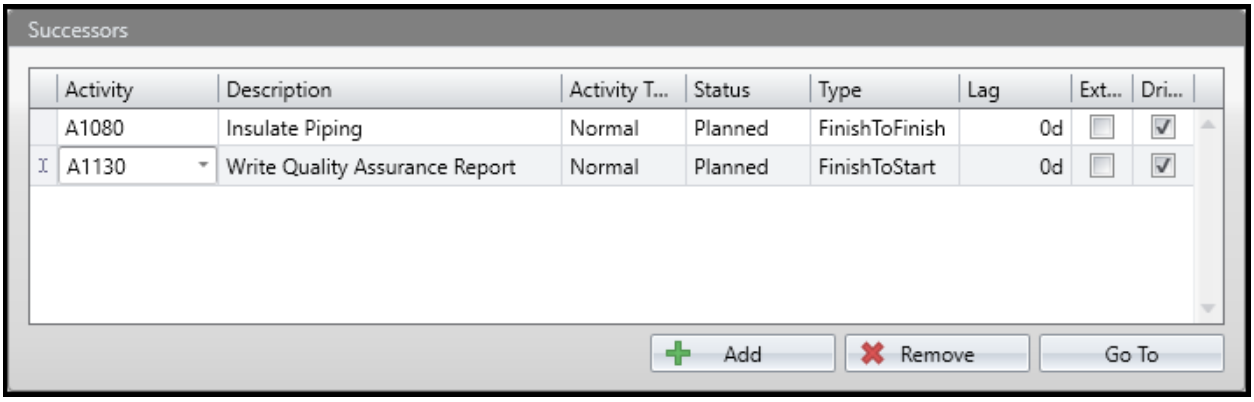
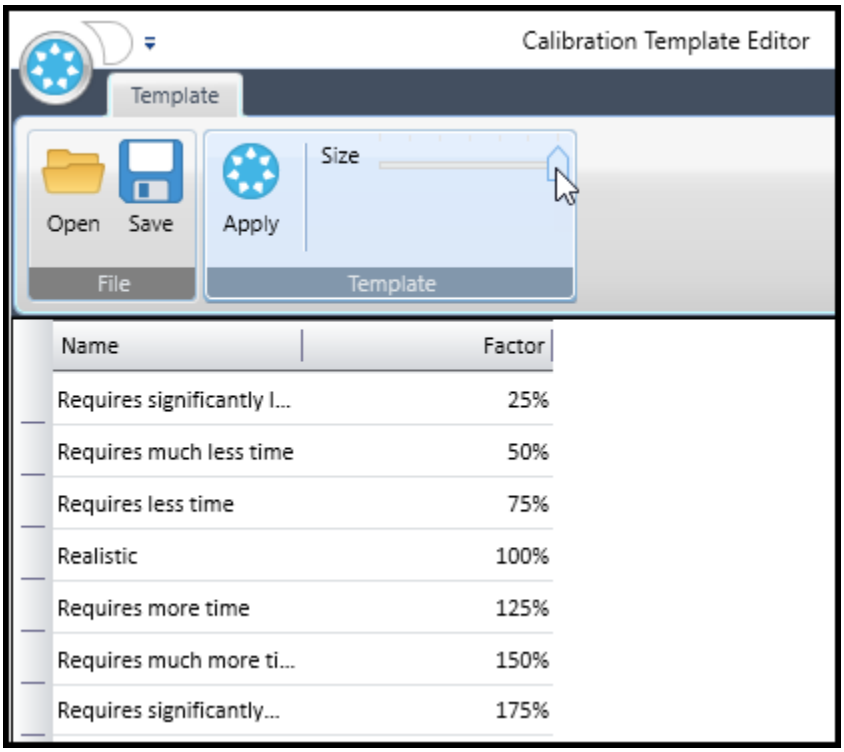


6.3 Exercise – Adjusting Calibration Slider

Adjust the levels on the calibration slider, duration estimate confidence levels.

1. In the Scenario Generation ribbon group choose Calibration Slider | Calibration Template.

2. Adjust the template to include seven levels on the Calibration Slider.



3. Adjust the Calibration Slider of the Piping deliverable to Requires more time.

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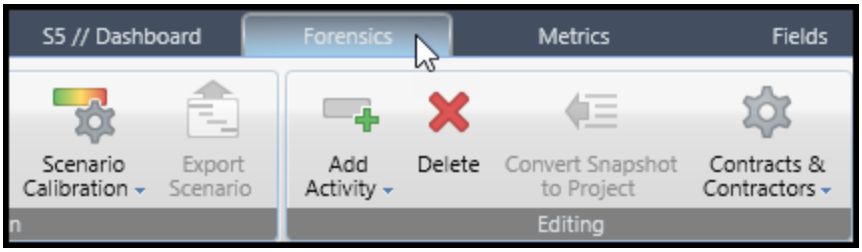
A1040	Drain Piping System	6/7/2023	6/7/2023	1d			$480
A1050	Remove Damaged Piping	6/8/2023	6/8/2023	1d			$1,120
PIPE REPAIRS.2	Installation Piping System	6/9/2023	7/3/2023	17d		Requires more time	$18,270
PIPE REPAIRS.2.1	Piping	6/9/2023	6/26/2023	12d			$12,230
A1060	Install Piping & Couplings	6/9/2023	6/14/2023	4d			$6,000
A1070	Test Piping at Pressure	6/14/2023	6/15/2023	1d			$2,250
A1080	Insulate Piping	6/20/2023	6/26/2023	5d			$3,980
PIPE REPAIRS.2.2	Thrustblock	6/16/2023	6/26/2023	7d			$1,920

4. Move the Calibration Slider of the Install Piping & Couplings activity to Requires significantly more time.

A1040	Drain Piping System	6/7/2023	6/7/2023	1d			$480
A1050	Remove Damaged Piping	6/8/2023	6/8/2023	1d			$1,120
PIPE REPAIRS.2	Installation Piping System	6/9/2023	7/3/2023	17d			$19,950
PIPE REPAIRS.2.1	Piping	6/9/2023	6/26/2023	12d		Requires significantly more time	13,910
A1060	Install Piping & Couplings	6/9/2023	6/16/2023	5d			$7,680
A1070	Test Piping at Pressure	6/16/2023	6/19/2023	1d			$2,250
A1080	Insulate Piping	6/20/2023	6/26/2023	5d			$3,980
PIPE REPAIRS.2.2	Thrustblock	6/19/2023	6/26/2023	6d			$1,920

Let us investigate the impact of these new Calibration Slider settings on the project finish date.

5. Click the Forensic tab.



6. Confirm Projects is selected in Forensics Checks and inspect the project finish date.

Observe the Finish date of the scenario has extended from the original June 30, 2023, completion date.

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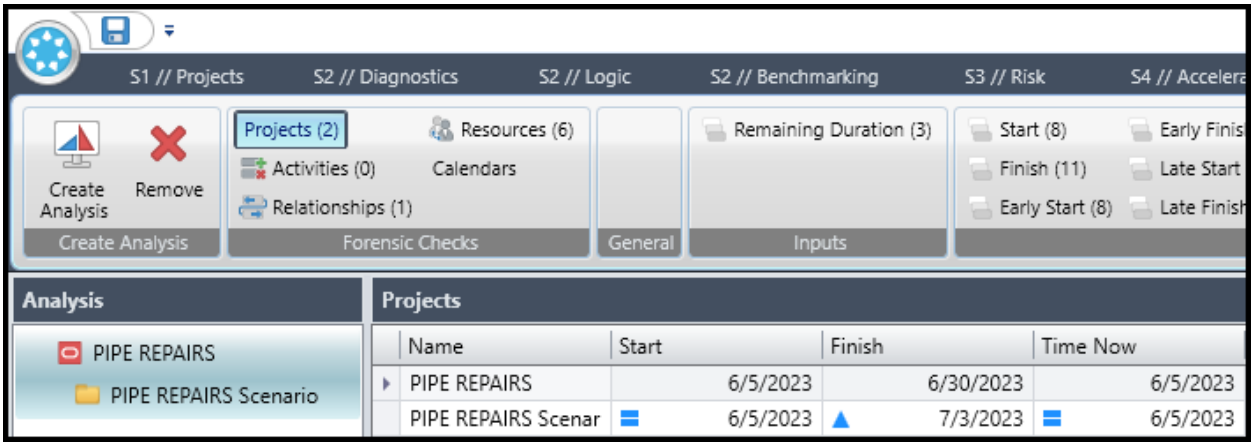
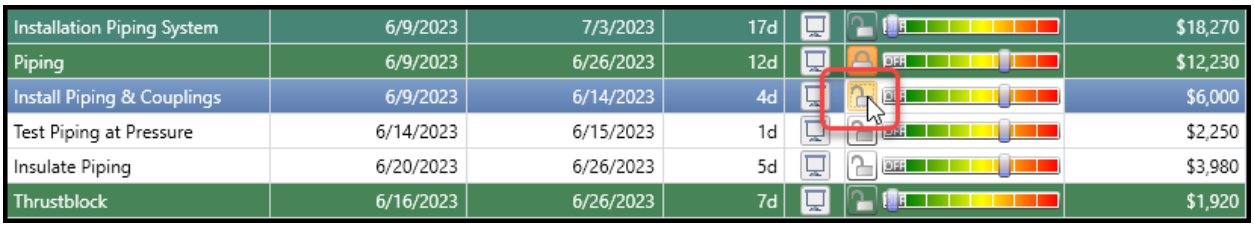


Return to S1 // Projects then reset the Calibration Slider back to its original setting.

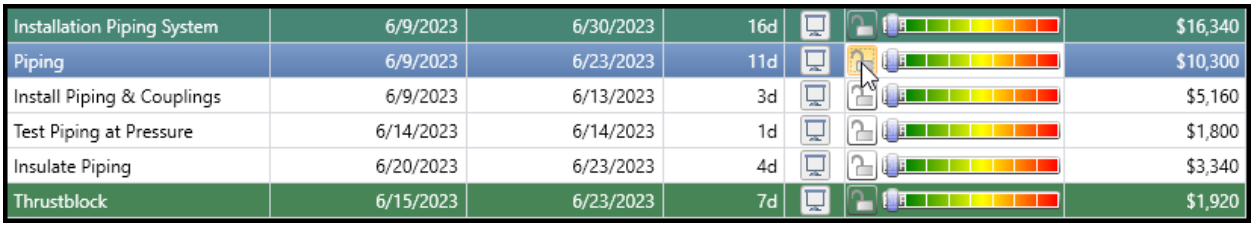
7. Move the Calibration Slider for Install Piping & Couplings to Requires more time to realign with all the other activities in the Piping deliverable.

8. Unlock the Calibration Slider for Install Piping & Couplings.



Installation Piping System	6/9/2023	7/3/2023	17d		$18,270
Piping	6/9/2023	6/26/2023	12d		$12,230
Install Piping & Couplings	6/9/2023	6/14/2023	4d		$6,000
Test Piping at Pressure	6/14/2023	6/15/2023	1d		$2,250
Insulate Piping	6/20/2023	6/26/2023	5d		$3,980
Thrustblock	6/16/2023	6/26/2023	7d		$1,920

9. Move the Calibration Slider for the Piping deliverable to off, then unlock the Calibration Slider for the Piping deliverable.



Installation Piping System	6/9/2023	6/30/2023	16d		$16,340
Piping	6/9/2023	6/23/2023	11d		$10,300
Install Piping & Couplings	6/9/2023	6/13/2023	3d		$5,160
Test Piping at Pressure	6/14/2023	6/14/2023	1d		$1,800
Insulate Piping	6/20/2023	6/23/2023	4d		$3,340
Thrustblock	6/15/2023	6/23/2023	7d		$1,920

This puts the Calibration Slider in the off position as it was at the beginning of the exercise.

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7 Key Metrics Groups

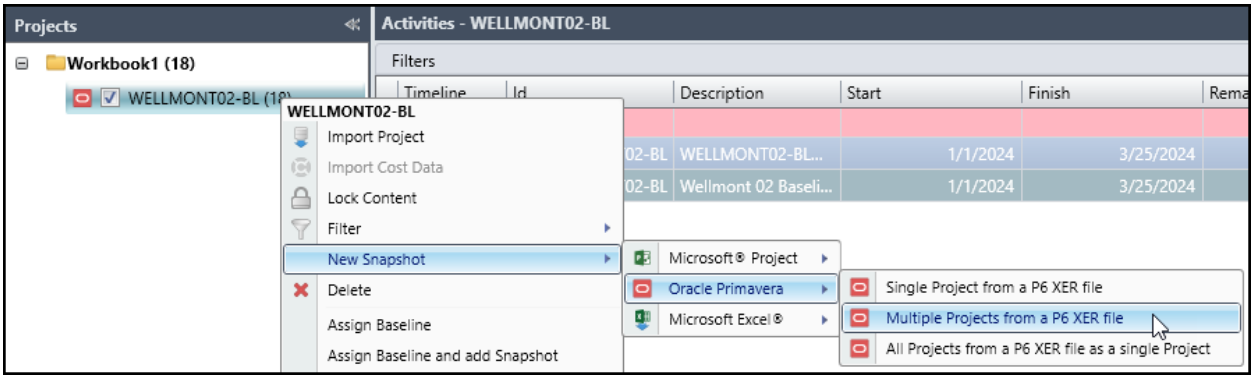
7.1 Exercise – Perform a DCMA 14-Point Metric Group Analysis

Import a schedule baseline and snapshots then perform a Fuse analysis on the DCMA 14 Point metric group.

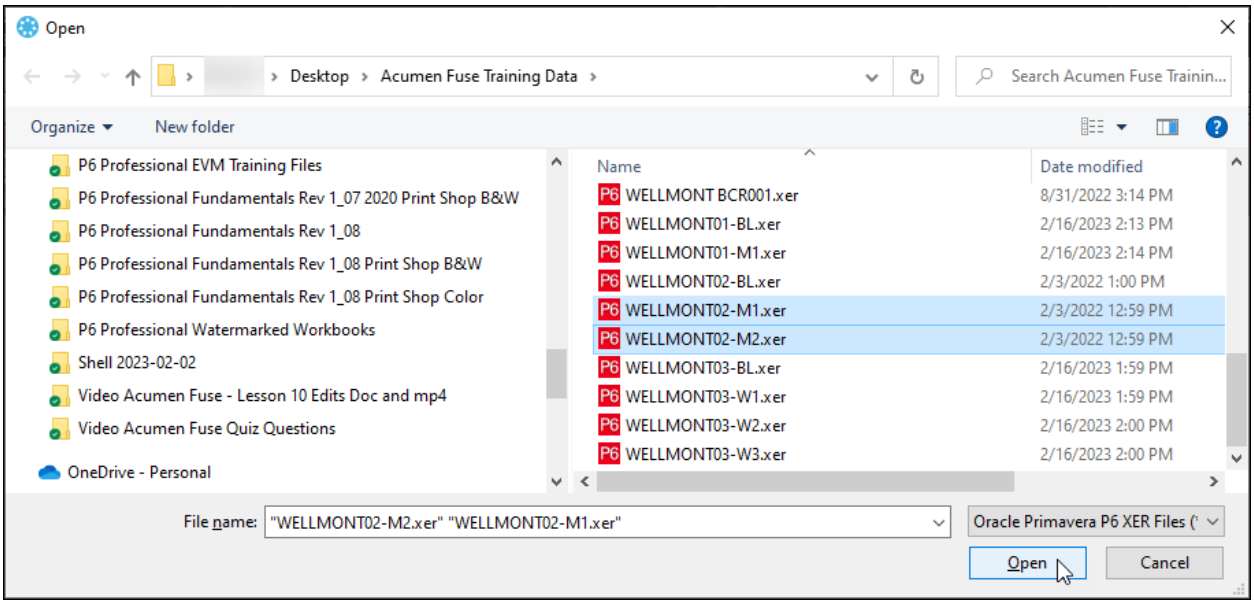
1. Find Wellmont02-BL.xer in the training data folder and link it to workbook1 then import it.

2. Left click on Wellmont02-BL.xer to select it.

3. Right click on Wellmont02-BL.xer then from the popup menus choose New Snapshot | Oracle Primavera | Multiple Projects from a P6 XER file.



4. Choose the snapshots Wellmont02-M1.xer and Wellmont02-M2.xer and open.



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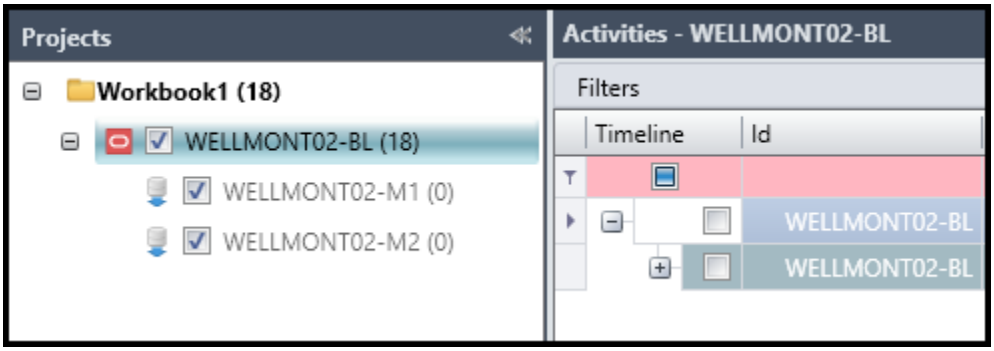
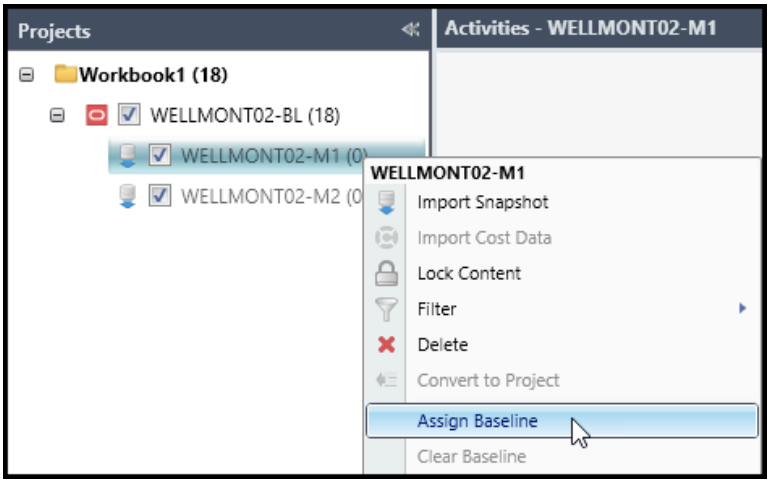
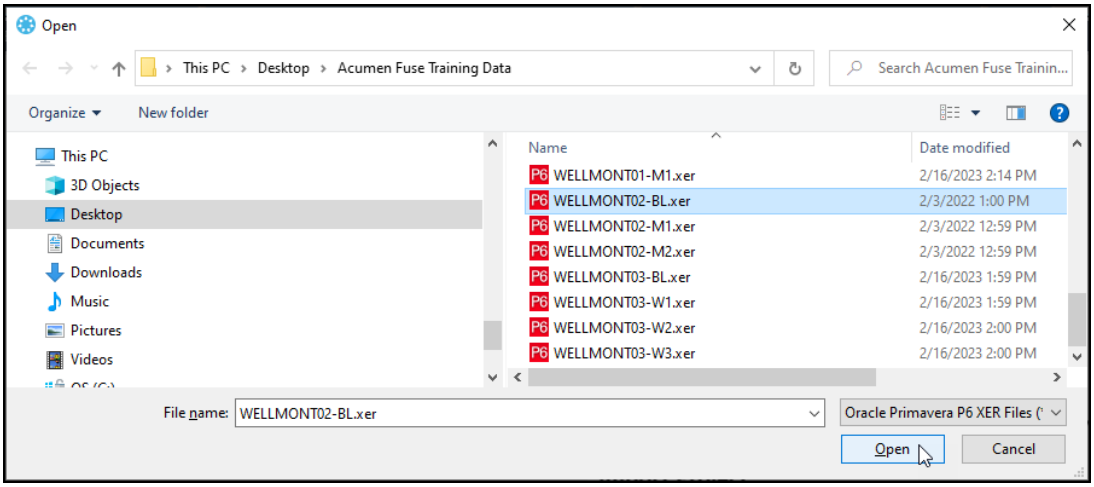
The navigator pane appears as follows:



5. Select the snapshot Wellmont02-M1 and right click on it and choose assign baseline the popup menu.



6. Choose the baseline Wellmont02-BL and open.



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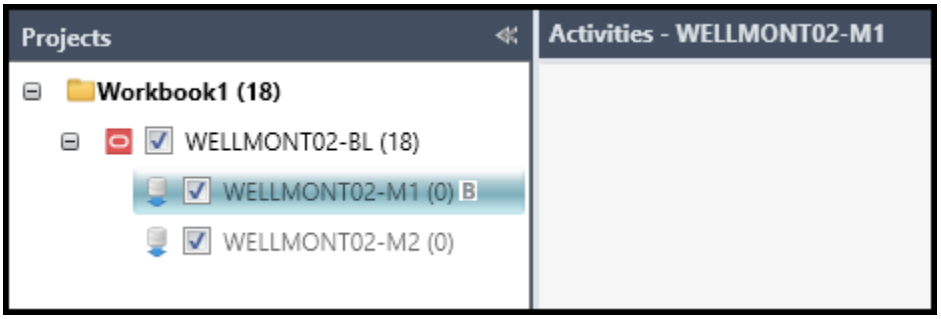
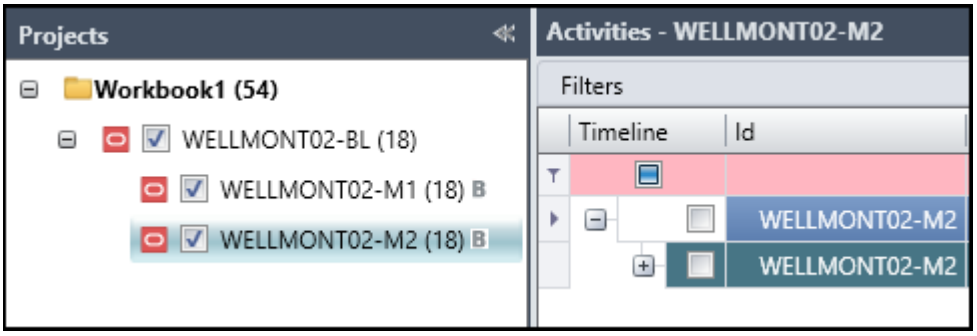
The navigator pane appears as follows.



7. Repeat for the Wellmont02-M2 snapshot.

8. Import all projects.

The navigator pane appears as follows.



9. Choose S2 // Diagnostics tab.

10. Select DCMA 14 Point metric group and run a Fuse analysis.

DCMA 14 Point metric group ribbon analyzer results appear as follows.

Ribbon Analyzer

1. Logic	2. Leads	3. Lags	4. SS/FF Relations	4. SF Relations	5. Hard Constr...	6. High Float	7. Negati...	8. High Duration	9. Invalid Foreca...	9. Invalid Actual...	10. Resour...	11. Missed...	12. Critical...	13. CPLI	14. BEI	Score
0 (0%)	1 (7%)	2 (13%)	1 (7%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	N/A (N/A)	2 (14%)	0 (N/A)	✓	1.00	N/A	78%
0 (0%)	1 (7%)	2 (14%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	5 (38%)	0 (0%)	0 (0%)	0 (0%)	2 (15%)	1 (100%)	✓	0.96	1.00	61%
0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	3 (38%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	10 (91%)	✓	0.85	0.55	33%

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7.2 Exercise – Investigate Missed Tasks Metric Results

Review the P6 schedule and Acumen Fuse DCMA 14 Point Missed Tasks metric group results. If you have a copy of Oracle P6 Professional software, you can import the Wellmont02-BL.xer baseline and snapshots Wellmont02-M1.xer and Wellmont02-M2.xer and investigate the current work compared to the baselines, which are yellow bars in the following P6 screen shots.

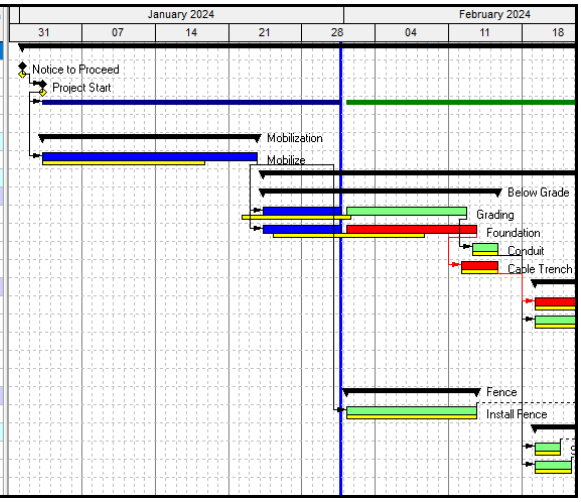
Below are the Acumen ribbon analyzer results for the Wellmont02 baseline and monthly snapshots. Note that one activity is captured by the DCMA 14 Point Assessment 11 Missed Task for Month 1 snapshot.

Ribbon Analyzer

7. Negati...	8. High Duration	9. Invalid Foreca...	9. Invalid Actual...	10. Resour...	11. Missed...	12. Critical...	13. CPLI	14. BEI	Score
0 (0%)	0 (0%)	0 (0%)	N/A (N/A)	2 (14%)	0 (N/A)	✓	1.00	N/A	78%
5 (38%)	0 (0%)	0 (0%)	0 (0%)	2 (15%)	1 (100%)	✓	0.96	1.00	61%
3 (38%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	10 (91%)	✓	0.85	0.55	33%

The P6 Gantt chart of the Wellmont02-M1 snapshot and baseline is below.

Activity ID	Activity Name	Planned Duration	Start	BL Project Start	Finish	BL Project Finish
Wellmont 02 Month Upd	te DD 2024-01-31	51.00d	01-Jan-2024 A	01-Jan-2024	27-Mar-2024	27-Mar-2024
W1000	Notice to Proceed	0.00d	01-Jan-2024 A	01-Jan-2024		
W1010	Project Start	0.00d	03-Jan-2024 A	03-Jan-2024		
W1020	Project Management	47.00d	03-Jan-2024 A	03-Jan-2024	27-Mar-2024	25-Mar-2024
W1030	Project Complete	0.00d			27-Mar-2024	27-Mar-2024
Mobilization		10.00d	03-Jan-2024 A	03-Jan-2024	23-Jan-2024 A	18-Jan-2024
W1040	Mobilize	10.00d	03-Jan-2024 A	03-Jan-2024	23-Jan-2024 A	18-Jan-2024
Contruction		34.00d	24-Jan-2024 A	22-Jan-2024	19-Mar-2024	19-Mar-2024
Below Grade		16.00d	24-Jan-2024 A	22-Jan-2024	15-Feb-2024	15-Feb-2024
W1050	Grading	8.00d	24-Jan-2024 A	22-Jan-2024	12-Feb-2024	01-Feb-2024
W1060	Foundation	9.00d	24-Jan-2024 A	25-Jan-2024	13-Feb-2024	08-Feb-2024
W1070	Conduit	3.00d	13-Feb-2024	13-Feb-2024	15-Feb-2024	15-Feb-2024
W1080	Cable Trench	4.00d	12-Feb-2024	12-Feb-2024	15-Feb-2024	15-Feb-2024
Above Grade		18.00d	19-Feb-2024	19-Feb-2024	19-Mar-2024	19-Mar-2024
W1100	Equipment	6.00d	19-Feb-2024	19-Feb-2024	27-Feb-2024	27-Feb-2024
W1090	Erect Steel Structures	8.00d	19-Feb-2024	19-Feb-2024	29-Feb-2024	29-Feb-2024
W1110	Grounding	2.00d	04-Mar-2024	04-Mar-2024	05-Mar-2024	05-Mar-2024
W1120	Bus and Jumpers	8.00d	04-Mar-2024	04-Mar-2024	14-Mar-2024	14-Mar-2024
W1130	Control Cable	12.00d	28-Feb-2024	28-Feb-2024	19-Mar-2024	19-Mar-2024
Fence		7.00d	01-Feb-2024	01-Feb-2024	13-Feb-2024	13-Feb-2024
W1140	Install Fence	7.00d	01-Feb-2024	01-Feb-2024	13-Feb-2024	13-Feb-2024
Site Restoration		23.00d	19-Feb-2024	19-Feb-2024	27-Mar-2024	27-Mar-2024
W1160	Stoning	3.00d	19-Feb-2024	19-Feb-2024	21-Feb-2024	21-Feb-2024
W1170	Roadway	4.00d	19-Feb-2024	19-Feb-2024	22-Feb-2024	22-Feb-2024
W1150	Equipment Removal	5.00d	20-Mar-2024	20-Mar-2024	27-Mar-2024	27-Mar-2024



To confirm the missed tasks metric results, count the number of tasks missing a baseline finish date on or before the data date (status date). Consider both normal and milestone activities in the count. Note in the above activity table columns that Start and Finish dates that have the letter 'A' appended to the date are Actuals (A) or completed work.

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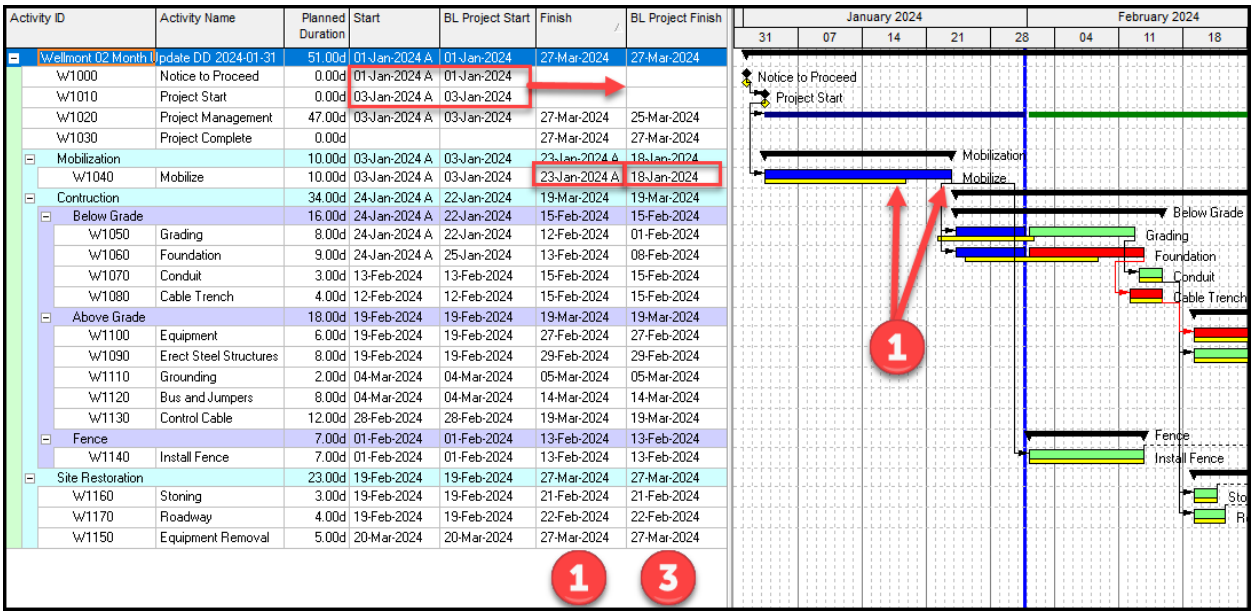
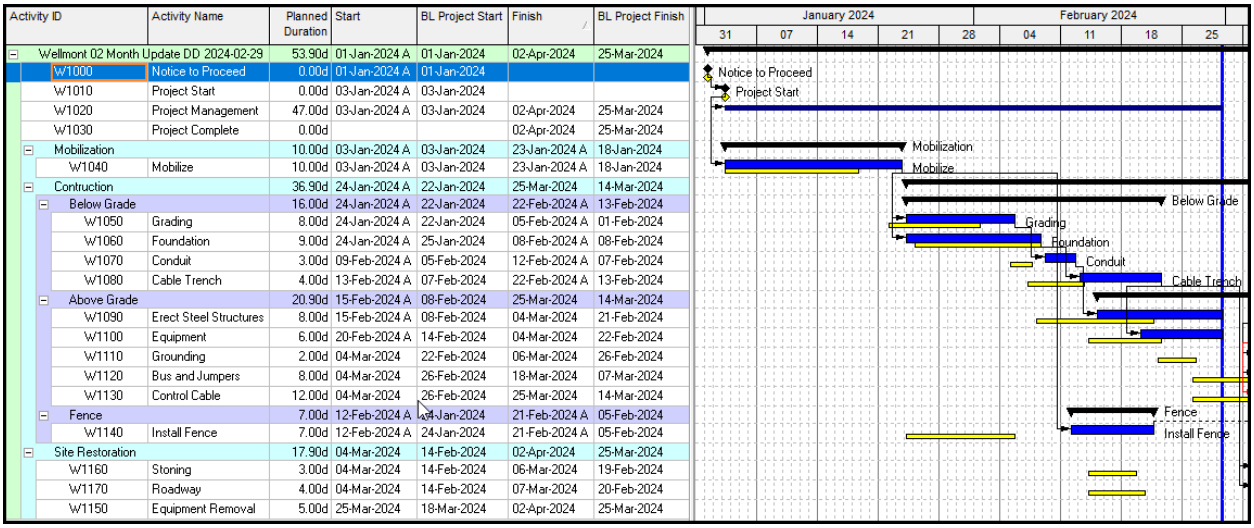
After you investigate the above P6 schedule you can confirm your analysis in the following P6 schedule screen shot.



Activity ID	Activity Name	Planned Duration	Start	BL Project Start	Finish	BL Project Finish
Wellmont 02 Month Update DD 2024-01-31		51.00d	01-Jan-2024 A	01-Jan-2024	27-Mar-2024	27-Mar-2024
W1000	Notice to Proceed	0.00d	01-Jan-2024 A	01-Jan-2024		
W1010	Project Start	0.00d	03-Jan-2024 A	03-Jan-2024		
W1020	Project Management	47.00d	03-Jan-2024 A	03-Jan-2024	27-Mar-2024	25-Mar-2024
W1030	Project Complete	0.00d			27-Mar-2024	27-Mar-2024
Mobilization		10.00d	03-Jan-2024 A	03-Jan-2024	23-Jan-2024 A	18-Jan-2024
W1040	Mobilize	10.00d	03-Jan-2024 A	03-Jan-2024	23-Jan-2024 A	18-Jan-2024
Contruction		34.00d	24-Jan-2024 A	22-Jan-2024	19-Mar-2024	19-Mar-2024
Below Grade		16.00d	24-Jan-2024 A	22-Jan-2024	15-Feb-2024	15-Feb-2024
W1050	Grading	8.00d	24-Jan-2024 A	22-Jan-2024	12-Feb-2024	01-Feb-2024
W1060	Foundation	9.00d	24-Jan-2024 A	25-Jan-2024	13-Feb-2024	08-Feb-2024
W1070	Conduit	3.00d	13-Feb-2024	13-Feb-2024	15-Feb-2024	15-Feb-2024
W1080	Cable Trench	4.00d	12-Feb-2024	12-Feb-2024	15-Feb-2024	15-Feb-2024
Above Grade		18.00d	19-Feb-2024	19-Feb-2024	19-Mar-2024	19-Mar-2024
W1100	Equipment	6.00d	19-Feb-2024	19-Feb-2024	27-Feb-2024	27-Feb-2024
W1090	Erect Steel Structures	8.00d	19-Feb-2024	19-Feb-2024	29-Feb-2024	29-Feb-2024
W1110	Grounding	2.00d	04-Mar-2024	04-Mar-2024	05-Mar-2024	05-Mar-2024
W1120	Bus and Jumpers	8.00d	04-Mar-2024	04-Mar-2024	14-Mar-2024	14-Mar-2024
W1130	Control Cable	12.00d	28-Feb-2024	28-Feb-2024	19-Mar-2024	19-Mar-2024
Fence		7.00d	01-Feb-2024	01-Feb-2024	13-Feb-2024	13-Feb-2024
W1140	Install Fence	7.00d	01-Feb-2024	01-Feb-2024	13-Feb-2024	13-Feb-2024
Site Restoration		23.00d	19-Feb-2024	19-Feb-2024	27-Mar-2024	27-Mar-2024
W1160	Stoning	3.00d	19-Feb-2024	19-Feb-2024	21-Feb-2024	21-Feb-2024
W1170	Roadway	4.00d	19-Feb-2024	19-Feb-2024	22-Feb-2024	22-Feb-2024
W1150	Equipment Removal	5.00d	20-Mar-2024	20-Mar-2024	27-Mar-2024	27-Mar-2024

Observe that Mobilize (Finish column and Gantt chart) is the only activity in the M1 snapshot that is missing its baseline finish (BL Project Finish column and Gantt chart). So, of the three tasks (including milestones), scheduled to complete before the status date, only one missed its baseline finish date. The schedule nevertheless fails the missed task metric. This pass/failure missed task criteria appears overly strict.

The Gantt chart of the Wellmont02-M2 snapshot at the end of February is below.



Activity ID	Activity Name	Planned Duration	Start	BL Project Start	Finish	BL Project Finish
Wellmont 02 Month Update DD 2024-02-29		53.90d	01-Jan-2024 A	01-Jan-2024	02-Apr-2024	25-Mar-2024
W1000	Notice to Proceed	0.00d	01-Jan-2024 A	01-Jan-2024		
W1010	Project Start	0.00d	03-Jan-2024 A	03-Jan-2024		
W1020	Project Management	47.00d	03-Jan-2024 A	03-Jan-2024	02-Apr-2024	25-Mar-2024
W1030	Project Complete	0.00d			02-Apr-2024	25-Mar-2024
Mobilization		10.00d	03-Jan-2024 A	03-Jan-2024	23-Jan-2024 A	18-Jan-2024
W1040	Mobilize	10.00d	03-Jan-2024 A	03-Jan-2024	23-Jan-2024 A	18-Jan-2024
Contruction		36.90d	24-Jan-2024 A	22-Jan-2024	25-Mar-2024	14-Mar-2024
Below Grade		16.00d	24-Jan-2024 A	22-Jan-2024	22-Feb-2024 A	13-Feb-2024
W1050	Grading	8.00d	24-Jan-2024 A	22-Jan-2024	05-Feb-2024 A	01-Feb-2024
W1060	Foundation	9.00d	24-Jan-2024 A	25-Jan-2024	08-Feb-2024 A	08-Feb-2024
W1070	Conduit	3.00d	09-Feb-2024 A	05-Feb-2024	12-Feb-2024 A	07-Feb-2024
W1080	Cable Trench	4.00d	13-Feb-2024 A	07-Feb-2024	22-Feb-2024 A	13-Feb-2024
Above Grade		20.90d	15-Feb-2024 A	08-Feb-2024	25-Mar-2024	14-Mar-2024
W1090	Erect Steel Structures	8.00d	15-Feb-2024 A	08-Feb-2024	04-Mar-2024	21-Feb-2024
W1100	Equipment	6.00d	20-Feb-2024 A	14-Feb-2024	04-Mar-2024	22-Feb-2024
W1110	Grounding	2.00d	04-Mar-2024	22-Feb-2024	06-Mar-2024	26-Feb-2024
W1120	Bus and Jumpers	8.00d	04-Mar-2024	26-Feb-2024	18-Mar-2024	07-Mar-2024
W1130	Control Cable	12.00d	04-Mar-2024	26-Feb-2024	25-Mar-2024	14-Mar-2024
Fence		7.00d	12-Feb-2024 A	24-Jan-2024	21-Feb-2024 A	05-Feb-2024
W1140	Install Fence	7.00d	12-Feb-2024 A	24-Jan-2024	21-Feb-2024 A	05-Feb-2024
Site Restoration		17.90d	04-Mar-2024	14-Feb-2024	02-Apr-2024	25-Mar-2024
W1160	Stoning	3.00d	04-Mar-2024	14-Feb-2024	06-Mar-2024	19-Feb-2024
W1170	Roadway	4.00d	04-Mar-2024	14-Feb-2024	07-Mar-2024	20-Feb-2024
W1150	Equipment Removal	5.00d	25-Mar-2024	18-Mar-2024	02-Apr-2024	25-Mar-2024

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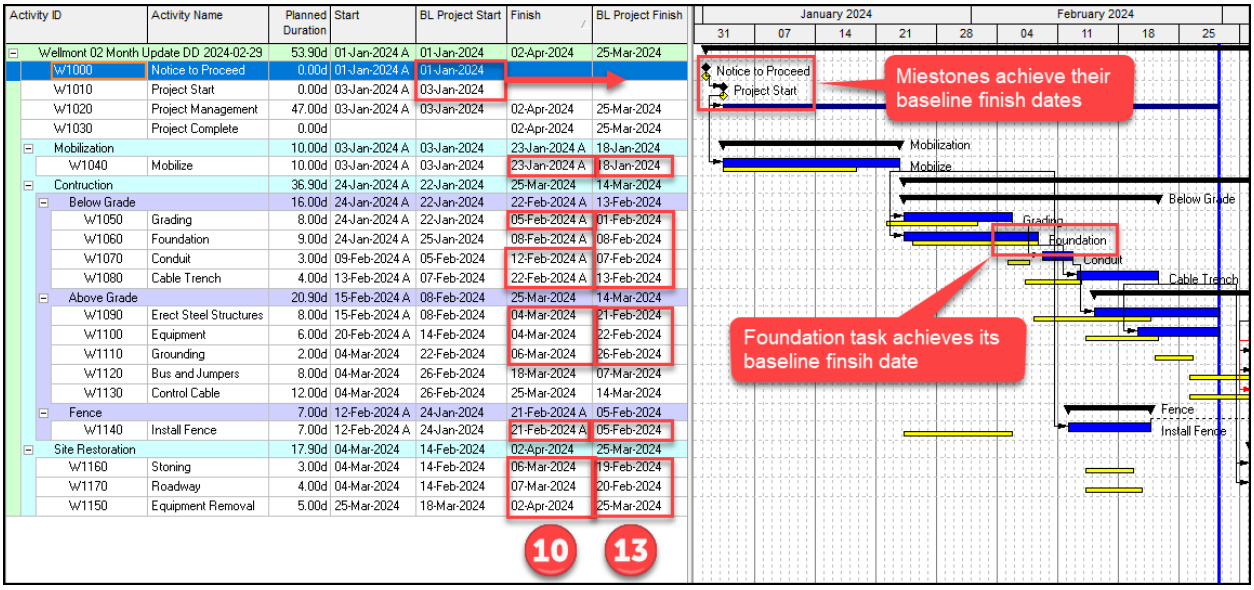
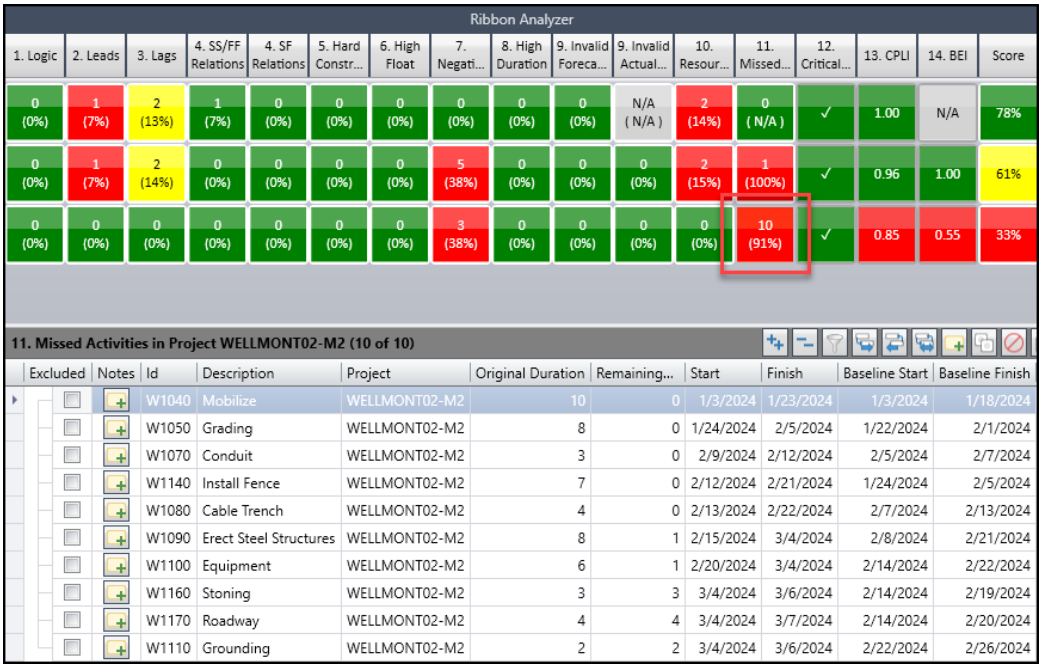
All normal tasks are missing their baseline finish, except for one. On the Gantt chart we highlight and callout the sole normal task that meets its baseline finish along with the milestones below.



Of the thirteen tasks scheduled to complete (including milestones), as per the data date, ten missed their baseline finish date. The schedule continues to fail the missed task metric but this time by a wide margin. Now something is clearly going wrong with the schedule execution.

Activities captured by the missed task metric for wellmont02-M2 are below in Acumen Fuse bottom activity browser list. Note that Foundation is not in this list.



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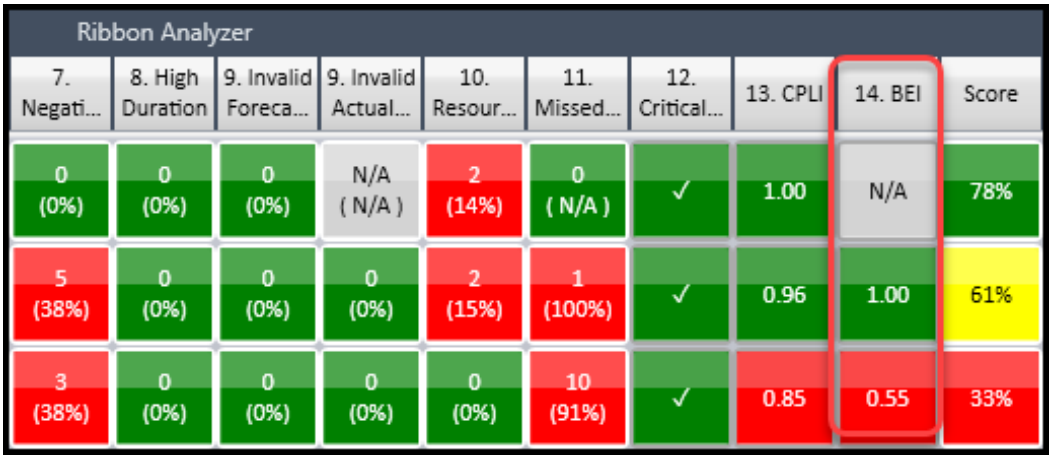
7.3 Exercise – Investigate BEI Metric Results

Compare the P6 schedule and Acumen Fuse DCMA 14 Point Baseline Execution Index (BEI) metric group results. Again, provided you have P6, import the baseline and snapshots into P6 and review.

Below are the ribbon analyzer results for the Wellmont02 baseline and monthly snapshots. Note the BEI score of one for the end of January status date and 0.55 for the end of February data date.



The BEI equation follows:

$$BEI = \frac{Total\ \#\ of\ Tasks\ Complete}{Baseline\ Count}$$

Where the numerator is the total number of tasks completed, as per the status date, and the denominator is the total number of tasks that should have competed by the status date. This does not include milestones and level of effort activities.

1. Observe that only one normal task, Mobilize, was scheduled to complete by the end of January data date and this activity completes by that date.

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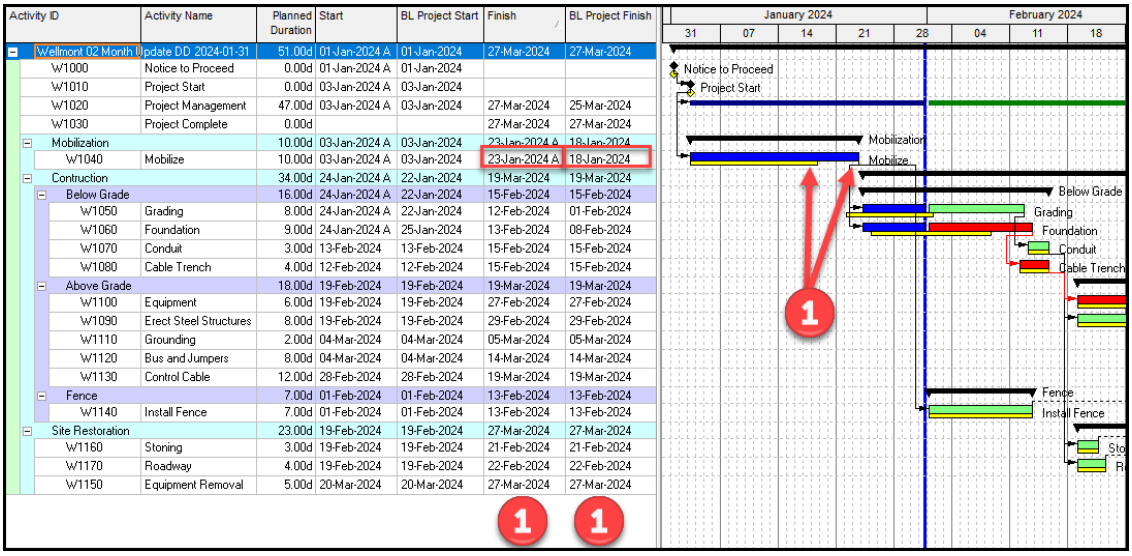


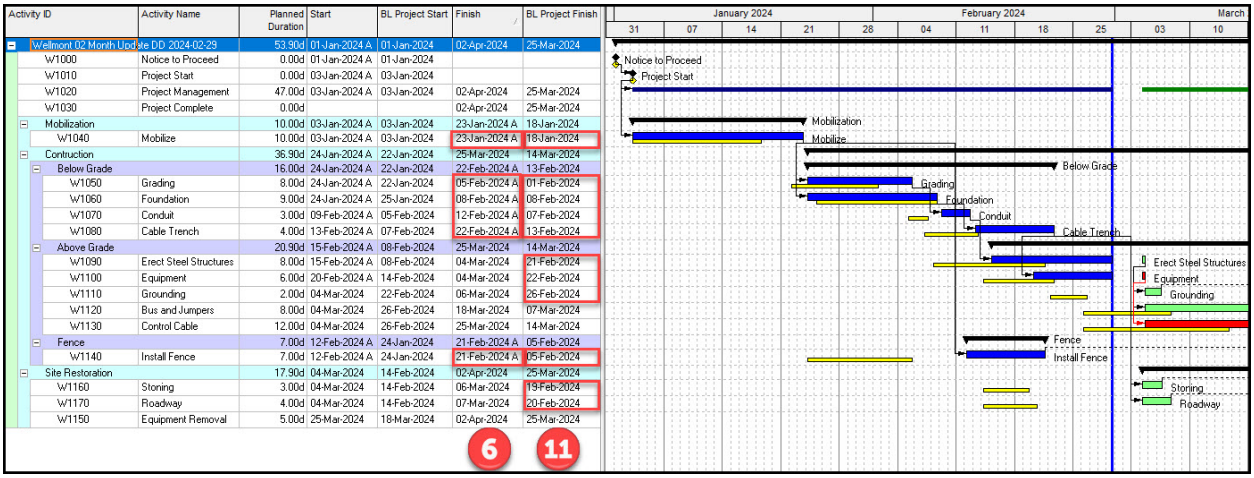
Activity ID	Activity Name	Planned Duration	Start	BL Project Start	Finish	BL Project Finish
Wellmont 02 Month Update DD 2024-01-31		51.00d	01-Jan-2024 A	01-Jan-2024	27-Mar-2024	27-Mar-2024
W1000	Notice to Proceed	0.00d	01-Jan-2024 A	01-Jan-2024		
W1010	Project Start	0.00d	03-Jan-2024 A	03-Jan-2024		
W1020	Project Management	47.00d	03-Jan-2024 A	03-Jan-2024	27-Mar-2024	25-Mar-2024
W1030	Project Complete	0.00d			27-Mar-2024	27-Mar-2024
Mobilization		10.00d	03-Jan-2024 A	03-Jan-2024	23-Jan-2024 A	18-Jan-2024
W1040	Mobilize	10.00d	03-Jan-2024 A	03-Jan-2024	23-Jan-2024 A	18-Jan-2024
Contruction		34.00d	24-Jan-2024 A	22-Jan-2024	19-Mar-2024	19-Mar-2024
Below Grade		16.00d	24-Jan-2024 A	22-Jan-2024	15-Feb-2024	15-Feb-2024
W1050	Grading	8.00d	24-Jan-2024 A	22-Jan-2024	12-Feb-2024	01-Feb-2024
W1060	Foundation	9.00d	24-Jan-2024 A	25-Jan-2024	13-Feb-2024	08-Feb-2024
W1070	Conduit	3.00d	13-Feb-2024	13-Feb-2024	15-Feb-2024	15-Feb-2024
W1080	Cable Trench	4.00d	12-Feb-2024	12-Feb-2024	15-Feb-2024	15-Feb-2024
Above Grade		18.00d	19-Feb-2024	19-Feb-2024	19-Mar-2024	19-Mar-2024
W1100	Equipment	6.00d	19-Feb-2024	19-Feb-2024	27-Feb-2024	27-Feb-2024
W1090	Erect Steel Structures	8.00d	19-Feb-2024	19-Feb-2024	29-Feb-2024	29-Feb-2024
W1110	Grounding	2.00d	04-Mar-2024	04-Mar-2024	05-Mar-2024	05-Mar-2024
W1120	Bus and Jumpers	8.00d	04-Mar-2024	04-Mar-2024	14-Mar-2024	14-Mar-2024
W1130	Control Cable	12.00d	28-Feb-2024	28-Feb-2024	19-Mar-2024	19-Mar-2024
Fence		7.00d	01-Feb-2024	01-Feb-2024	13-Feb-2024	13-Feb-2024
W1140	Install Fence	7.00d	01-Feb-2024	01-Feb-2024	13-Feb-2024	13-Feb-2024
Site Restoration		23.00d	19-Feb-2024	19-Feb-2024	27-Mar-2024	27-Mar-2024
W1160	Stoning	3.00d	19-Feb-2024	19-Feb-2024	21-Feb-2024	21-Feb-2024
W1170	Roadway	4.00d	19-Feb-2024	19-Feb-2024	22-Feb-2024	22-Feb-2024
W1150	Equipment Removal	5.00d	20-Mar-2024	20-Mar-2024	27-Mar-2024	27-Mar-2024

The BEI equation computes as follows:

$$BEI = \frac{1}{1} = 1.0$$

This matches the Acumen DCMA 14 Point result. The BEI of one indicates the project is on schedule, whereas the Missed Task metric flags the schedule for falling behind. This demonstrates that the missed task metric is more sensitive minutiae than the BEI. If the task completes by the status date, does it really matter that it came in a few days late? The missed task metric warns of a problem prematurely.

2. Observe that eleven activities were scheduled to complete by February 28th (BL Project Finish column) but only six tasks completed in this time frame (Finish column).



Activity ID	Activity Name	Planned Duration	Start	BL Project Start	Finish	BL Project Finish
Wellmont 02 Month Update DD 2024-02-29		53.90d	01-Jan-2024 A	01-Jan-2024	02-Apr-2024	25-Mar-2024
W1000	Notice to Proceed	0.00d	01-Jan-2024 A	01-Jan-2024		
W1010	Project Start	0.00d	03-Jan-2024 A	03-Jan-2024		
W1020	Project Management	47.00d	03-Jan-2024 A	03-Jan-2024	02-Apr-2024	25-Mar-2024
W1030	Project Complete	0.00d			02-Apr-2024	25-Mar-2024
Mobilization		10.00d	03-Jan-2024 A	03-Jan-2024	23-Jan-2024 A	18-Jan-2024
W1040	Mobilize	10.00d	03-Jan-2024 A	03-Jan-2024	23-Jan-2024 A	18-Jan-2024
Contruction		36.90d	24-Jan-2024 A	22-Jan-2024	25-Mar-2024	14-Mar-2024
Below Grade		16.00d	24-Jan-2024 A	22-Jan-2024	22-Feb-2024 A	13-Feb-2024
W1050	Grading	8.00d	24-Jan-2024 A	22-Jan-2024	05-Feb-2024 A	01-Feb-2024
W1060	Foundation	9.00d	24-Jan-2024 A	25-Jan-2024	08-Feb-2024 A	08-Feb-2024
W1070	Conduit	3.00d	09-Feb-2024 A	05-Feb-2024	12-Feb-2024 A	07-Feb-2024
W1080	Cable Trench	4.00d	13-Feb-2024 A	07-Feb-2024	22-Feb-2024 A	13-Feb-2024
Above Grade		20.90d	15-Feb-2024 A	08-Feb-2024	25-Mar-2024	14-Mar-2024
W1090	Erect Steel Structures	8.00d	15-Feb-2024 A	08-Feb-2024	04-Mar-2024	21-Feb-2024
W1100	Equipment	6.00d	20-Feb-2024 A	14-Feb-2024	04-Mar-2024	22-Feb-2024
W1110	Grounding	2.00d	04-Mar-2024	22-Feb-2024	06-Mar-2024	26-Feb-2024
W1120	Bus and Jumpers	8.00d	04-Mar-2024	26-Feb-2024	18-Mar-2024	07-Mar-2024
W1130	Control Cable	12.00d	04-Mar-2024	26-Feb-2024	25-Mar-2024	14-Mar-2024
Fence		7.00d	12-Feb-2024 A	24-Jan-2024	21-Feb-2024 A	05-Feb-2024
W1140	Install Fence	7.00d	12-Feb-2024 A	24-Jan-2024	21-Feb-2024 A	05-Feb-2024
Site Restoration		17.90d	04-Mar-2024	14-Feb-2024	02-Apr-2024	25-Mar-2024
W1160	Stoning	3.00d	04-Mar-2024	14-Feb-2024	06-Mar-2024	19-Feb-2024
W1170	Roadway	4.00d	04-Mar-2024	14-Feb-2024	07-Mar-2024	20-Feb-2024
W1150	Equipment Removal	5.00d	25-Mar-2024	18-Mar-2024	02-Apr-2024	25-Mar-2024

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The BEI equation computes as follows:

$$BEI = \frac{6}{11} = 0.55$$

This matches the Acumen DCMA 14 Point result. The BEI below one indicates the project is underperforming. And now we have two warning flags (missed tasks metric and BEI metric) that the project is behind schedule and in danger of not meeting the completion date. The DCMA 14 Point assessments missed task and BEI together warn the project is in serious trouble at the end of February reporting status date.

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8 Logic tab

8.1 Exercise – Perform a Logic Sensitivity Analysis

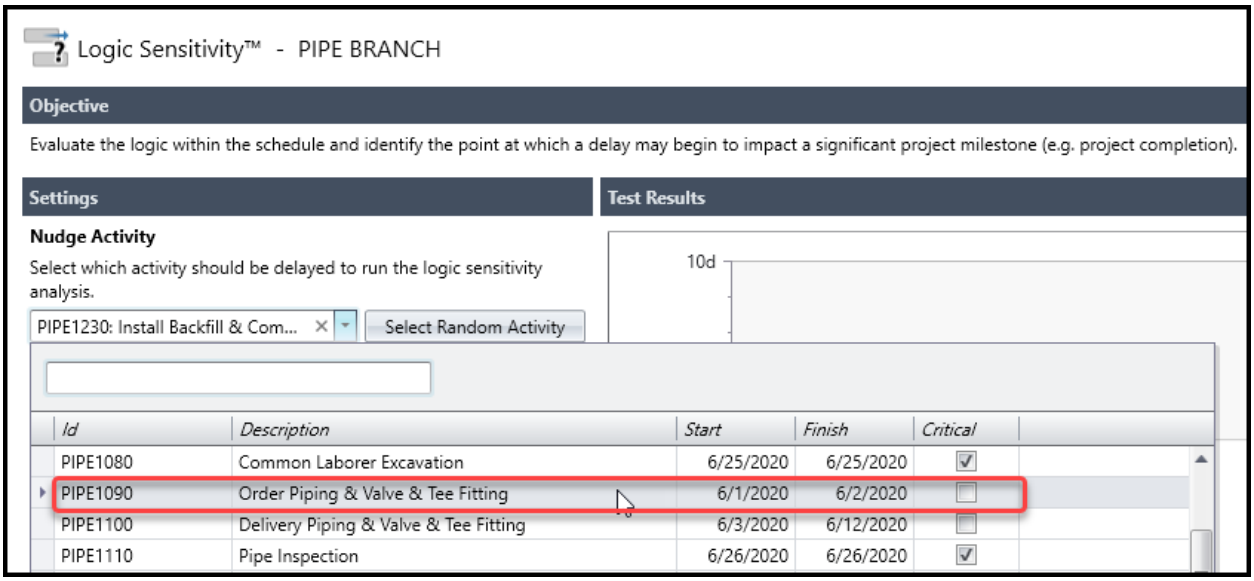
Probe the schedule for continuity and investigate how sensitive the commencement of the pipe installation construction is to procurement delays.

1. Find Pipe Branch.xer in the training data folder and link it to workbook1 then import it.

2. Select the S2 // Logic tab.

3. In the Logic Analysis ribbon group choose Logic Sensitivity.

4. In the drop-down menu for Nudge Activity select 'Order Piping & Valve & Tee Fitting' as the activity to nudge.



5. Set the Nudge duration to 200-days which is a significant timespan considering the short duration of the schedule.

6. In the drop-down menu for Nudge Activity select 'Drain Piping System' as the activity to nudge target.

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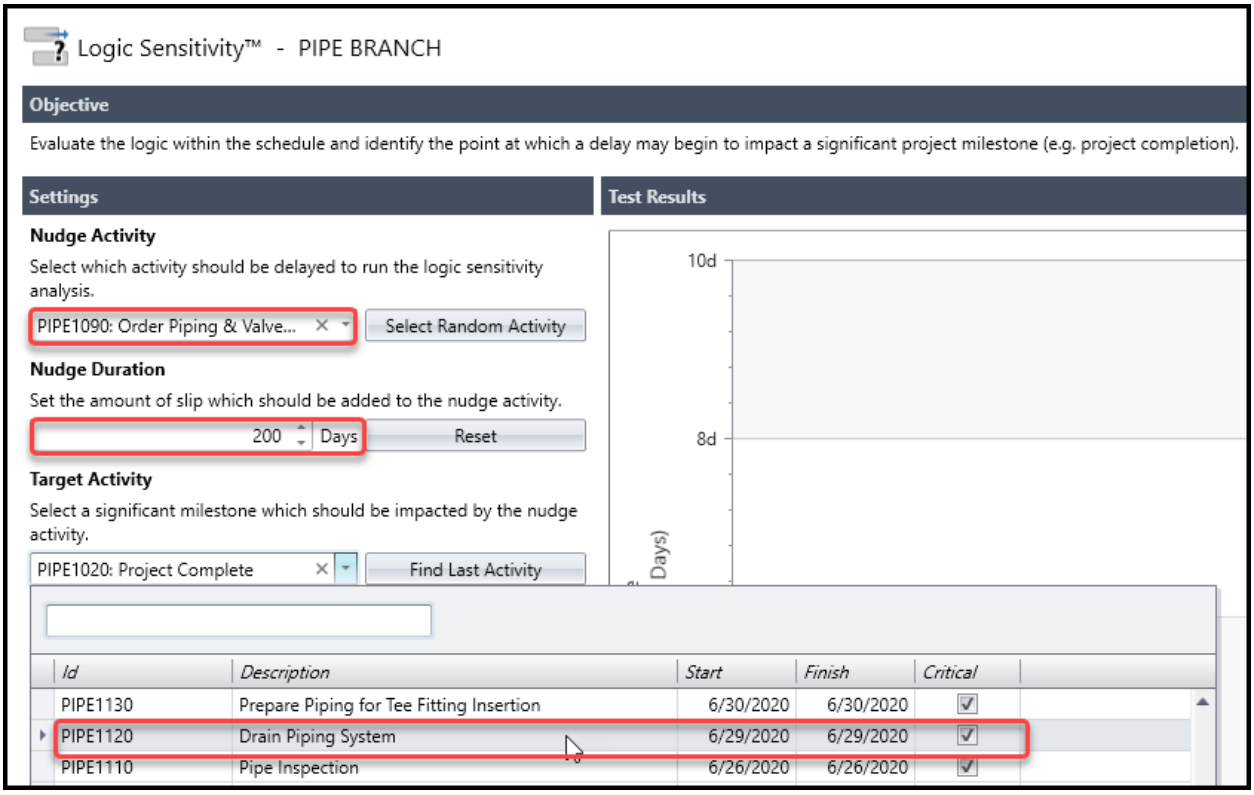
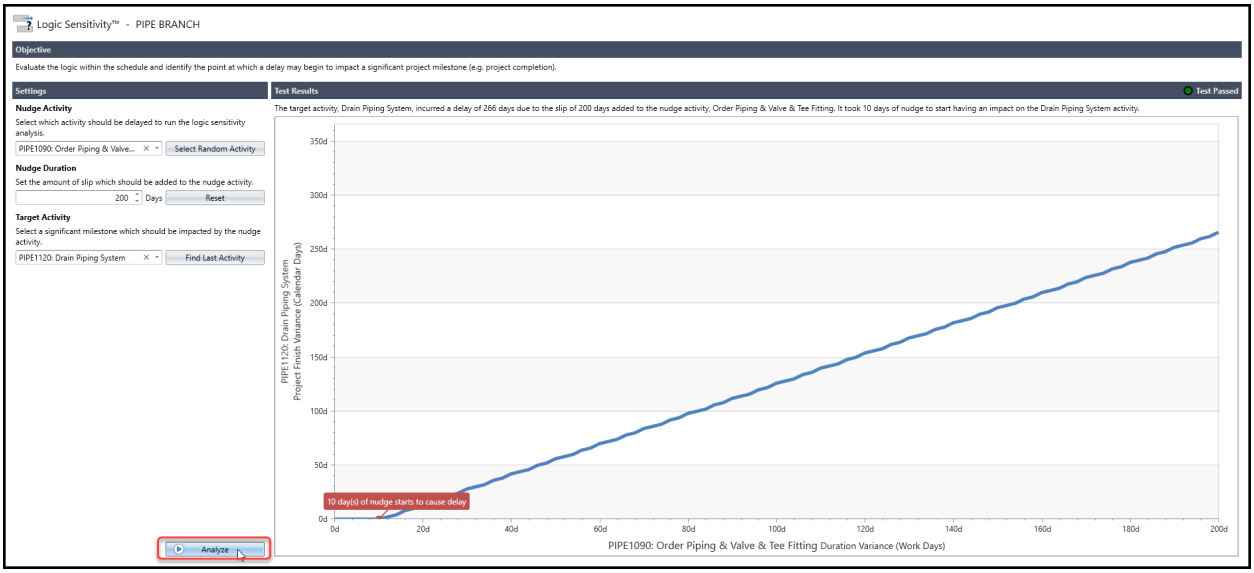


7. Click the Analyze button at the bottom of the screen.



The plot indicates that Order Piping & Valve & Tee Fitting delays the construction pipe installation, i.e., drain piping, after 10-days.

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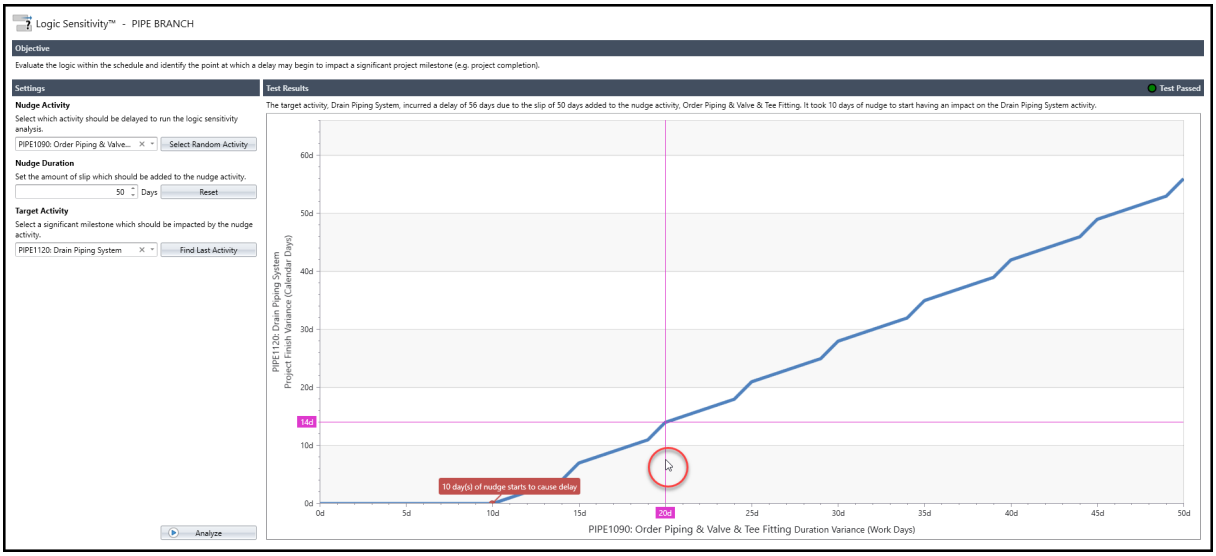
8. Adjust the Nudge Duration to 50-days to make the plot details more visible.

9. Click Analyze.

10. Hoover the mouse cross hairs at a 20-day (Workdays) delay.

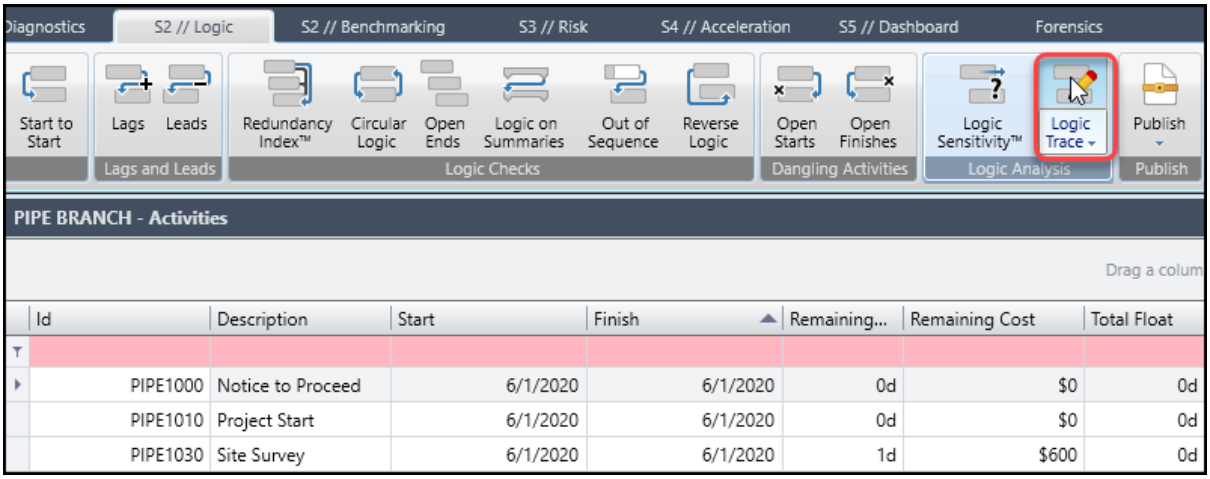


Observe that the horizontal is working days and the vertical calendar days. A twenty-workday delay on the Order Piping & Valve & Tee Fitting will postpone the Drain Piping System effort by two weeks.

8.2 Exercise – Perform a Logic Trace Analysis

Probe the schedule for continuity and examine driving activities in the project schedule.

1. In the Logic Analysis ribbon group click the top portion of the Logic Trace button.



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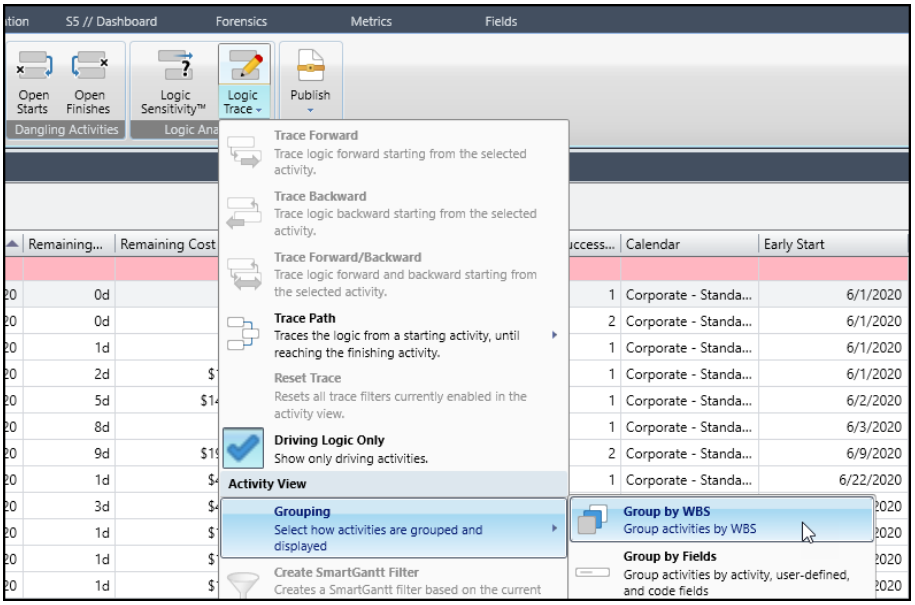
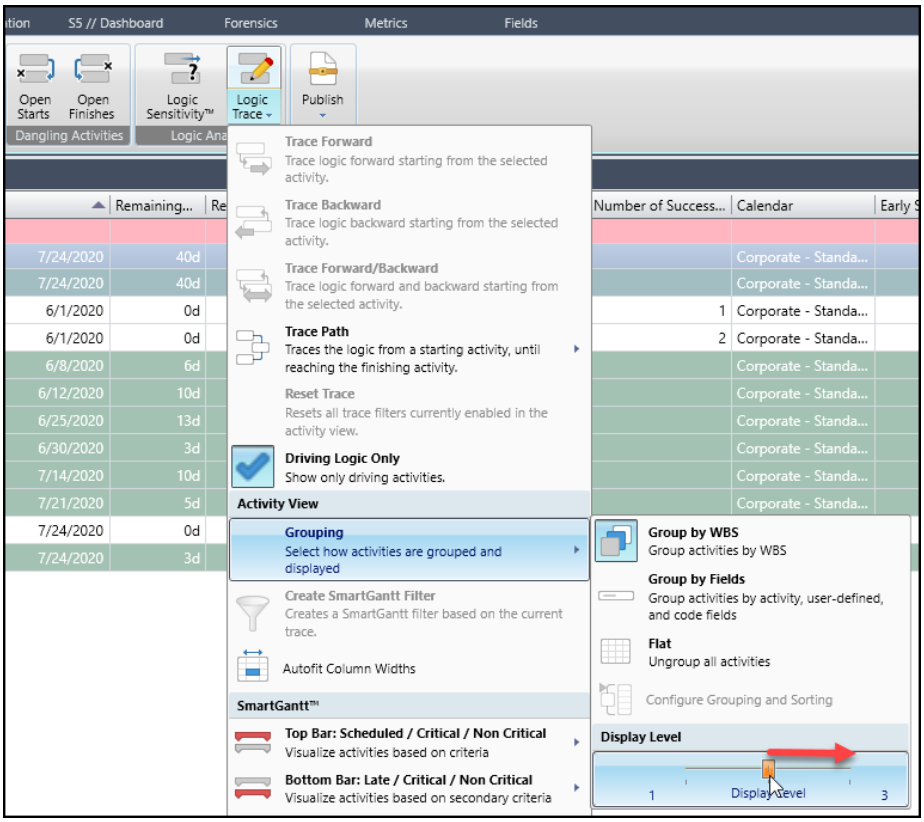
2. Choose Logic Trace | Grouping | Group by WBS.



3. Choose Logic Trace | Grouping | Display Level 3.



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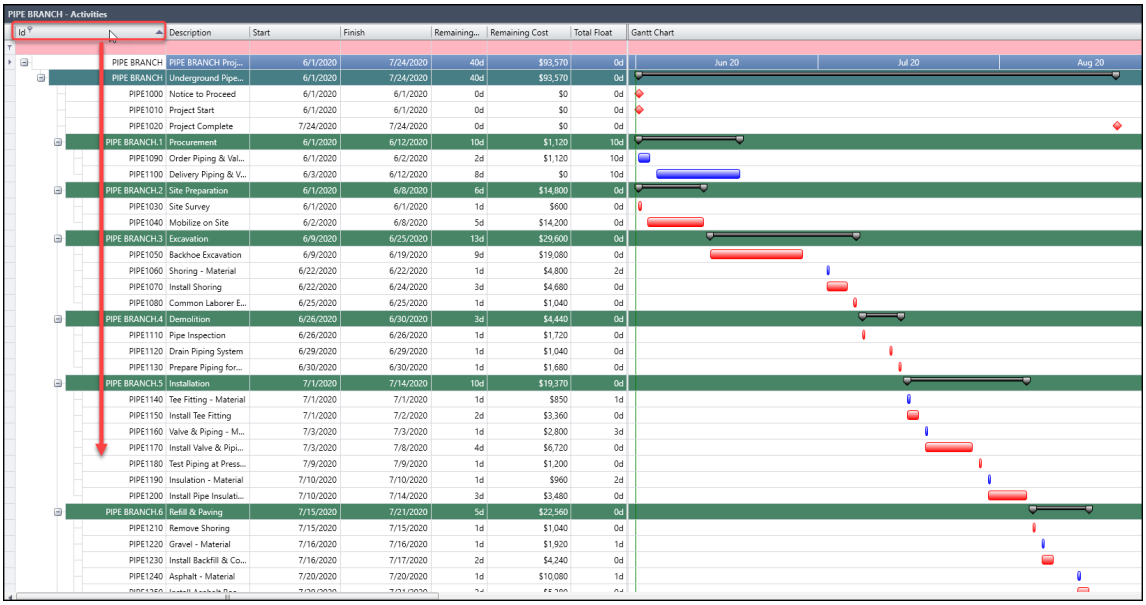
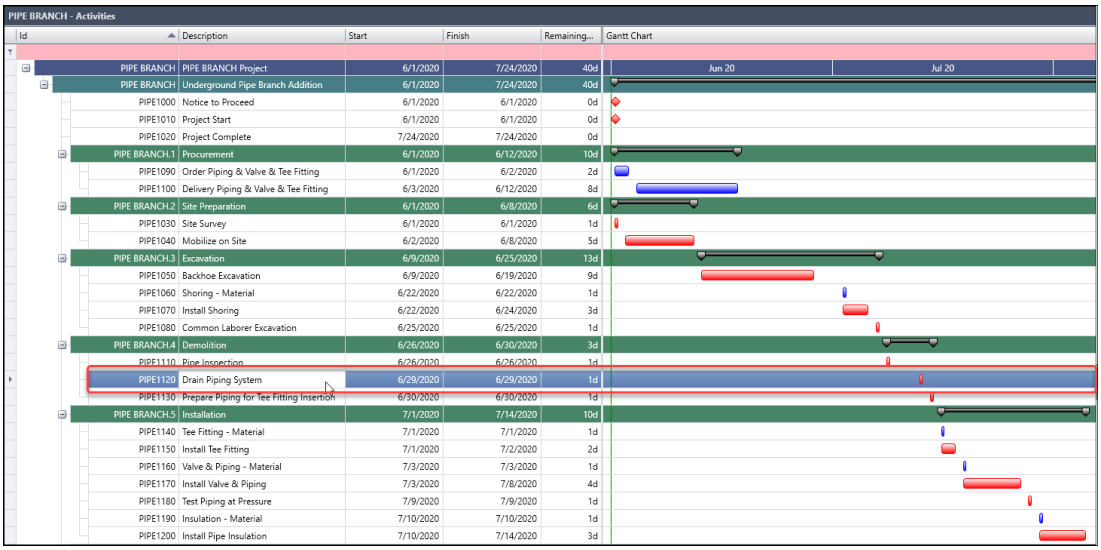
4. Click the Id column header to make sure all tasks are ascending.



5. Choose Logic Trace and untoggle Driving Logic to turn it off. Note that a check mark next to Driving Login Only is the indicator that Driving Logic is on.

6. Confirm there is no check mark next to Driving Logic Only.

7. In the activity table choose Drain Piping System.



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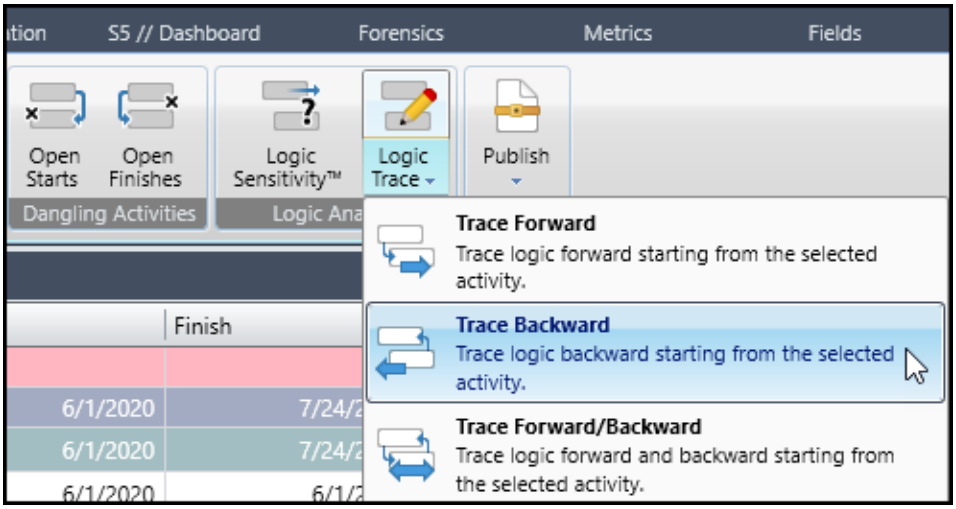
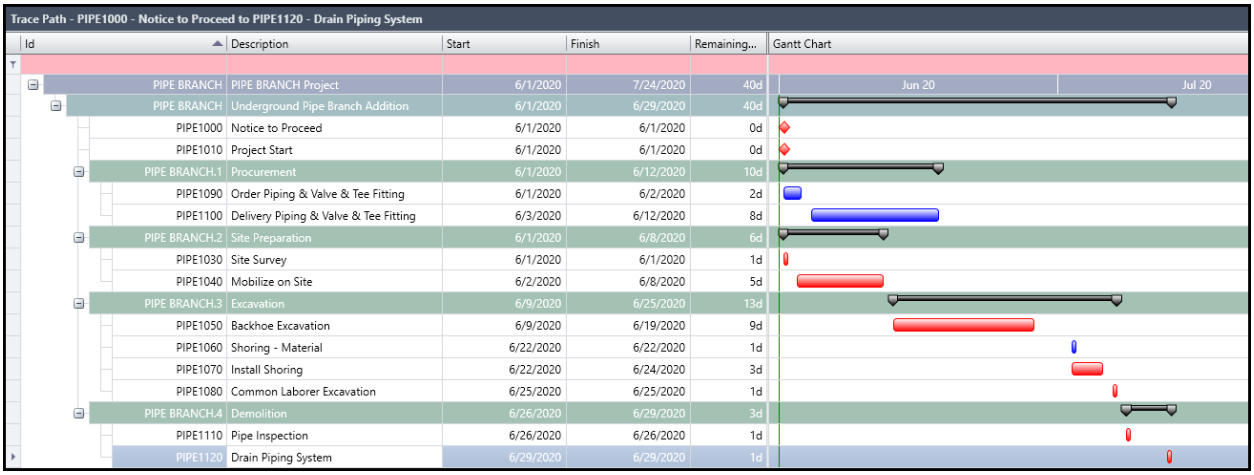
8. Choose Logic Trace | Trace Backward.



The schedule backward trace, including nondriving logic, from Drain Piping System to Notice to Proceed displays as follows.



The Gantt chart displays all the predecessors of 'Drain Piping System', regardless of whether they are driving or not. Observe that nondriving activities 'Order Piping & Valve & Tee Fitting' and 'Delivery Piping Valve & Tee Fitting' are included in the output.

9. In the activity table choose Notice to Proceed.

10. Choose Logic Trace and toggle on Driving Logic.

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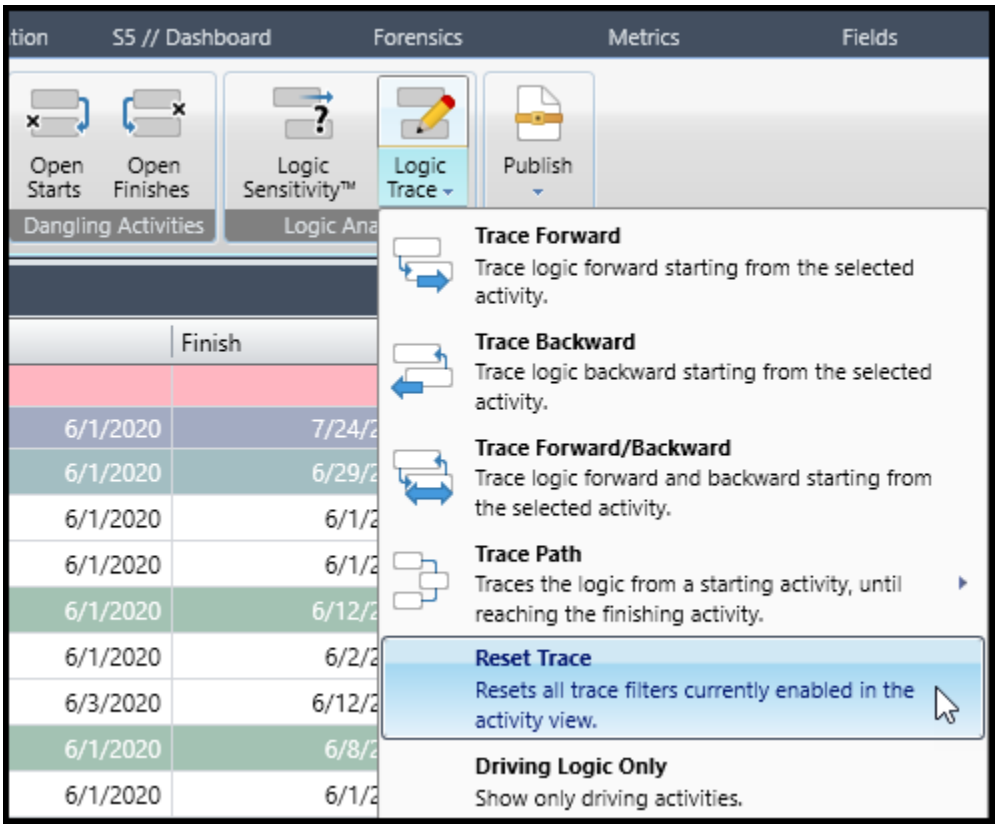
11. Confirm there is a checkmark next to Driving Logic Only.

12. Choose Logic Trace | Reset Trace.



13. In the activity table choose Drain Piping System.

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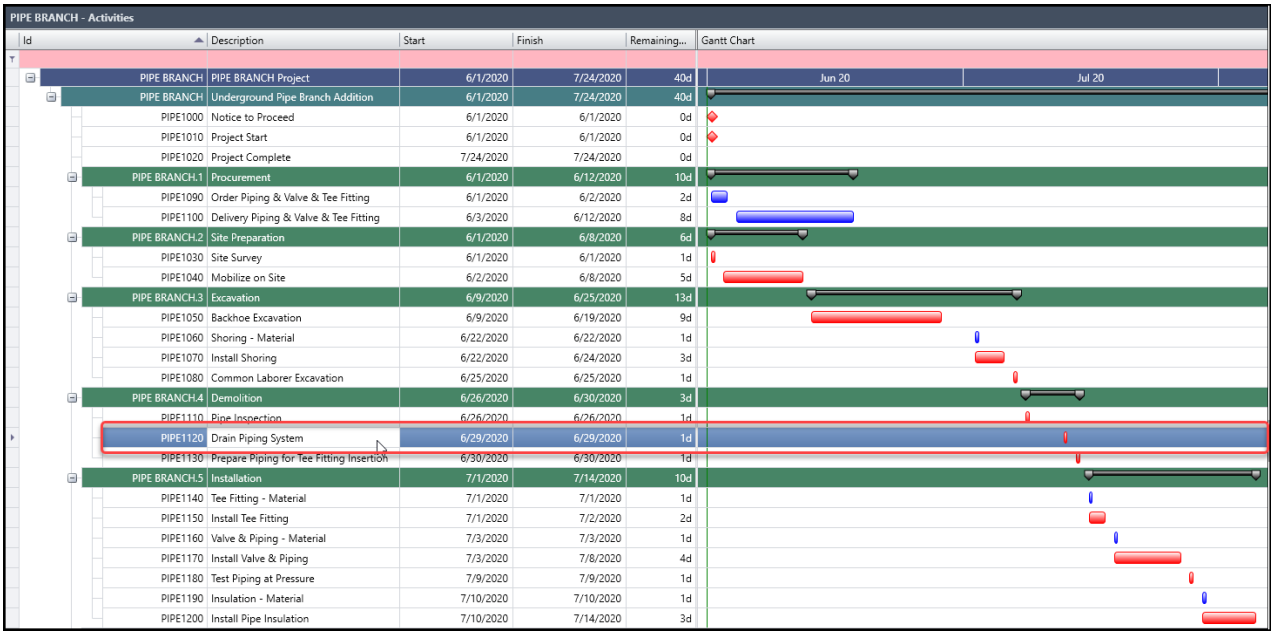
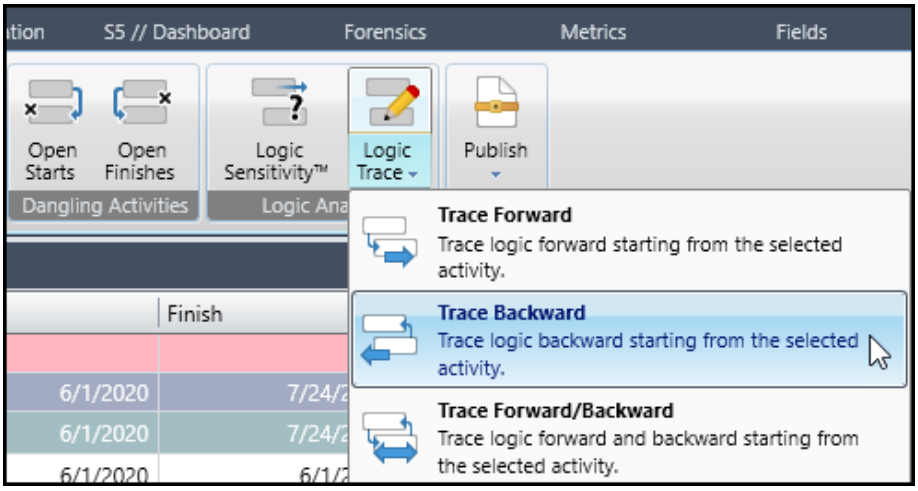


14. Choose Logic Trace | Trace Backward.



The schedule backward trace with driving logic only from 'Drain Piping System' to Notice to Proceed displays as follows.

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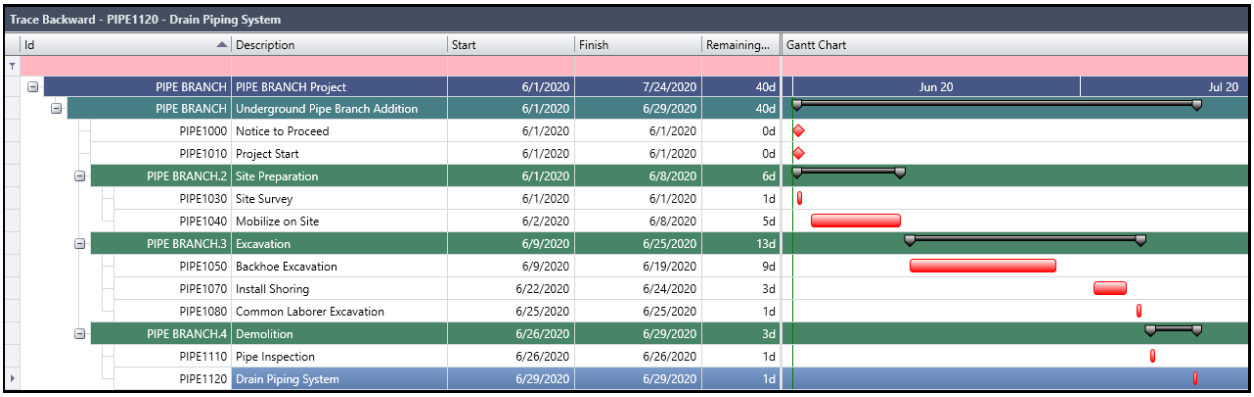

The backward trace with driving logic only displays all the predecessors of 'Drain Piping System' that are driving its start date. This time 'Order Piping & Valve & Tee Fitting' and 'Delivery Piping Valve & Tee Fitting' are not included in the output. They have total float so they can delay and not affect the commencement of 'Drain Piping System'; they are nondriving tasks.

15. Choose Logic Trace | Reset Trace.

The plot resets to display the whole schedule.

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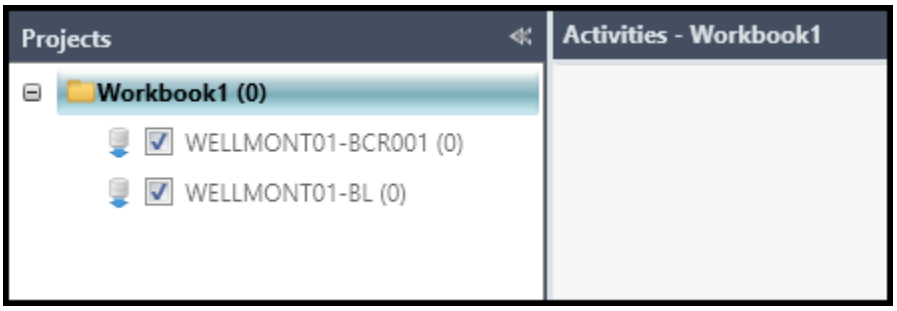
9 Forensics tab

9.1 Exercise –Forensics Analysis on a Baseline and its Snapshot

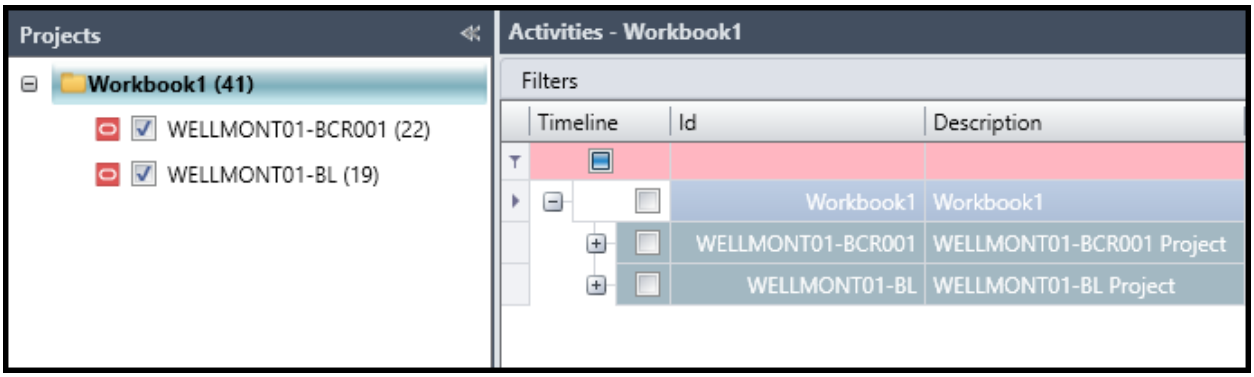
Create a forensics analysis and select to include free float in the analysis. Compare the free float and total float between the two schedules.

1. Choose Oracle Primavera | Multiple Projects from a P6 XER file.

2. Locate Wellmont01-BCR001.xer and Wellmont01-BL.xer files and select to open and link to Workbook1.



3. Import all projects.



4. Choose the Forensic tab.

5. Click Create Analysis.

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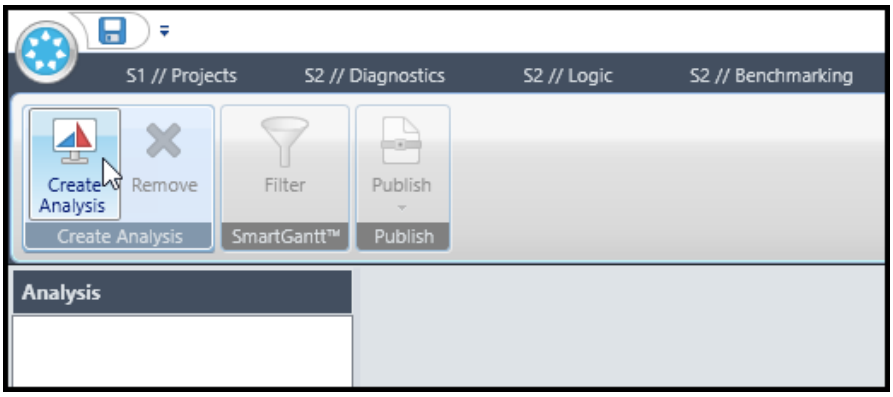
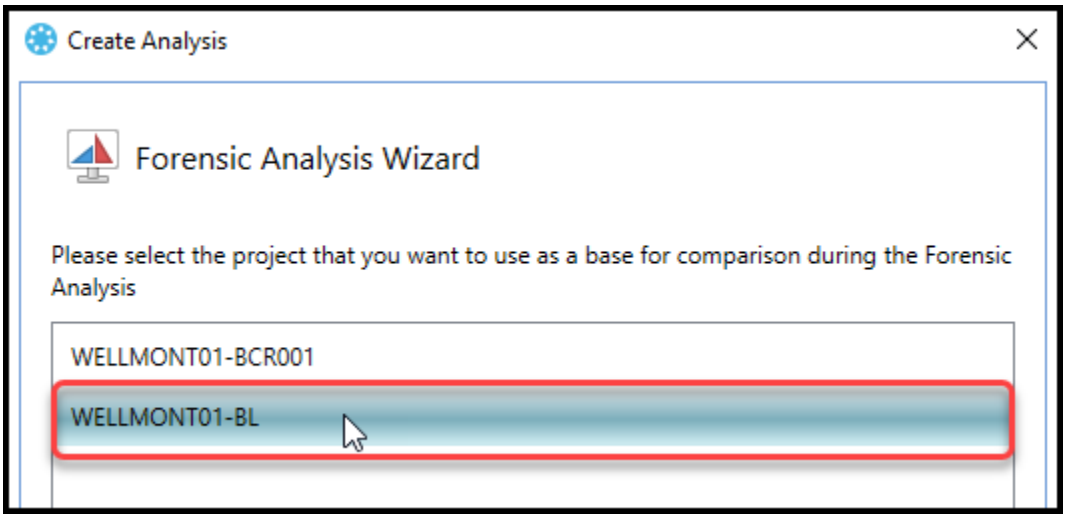
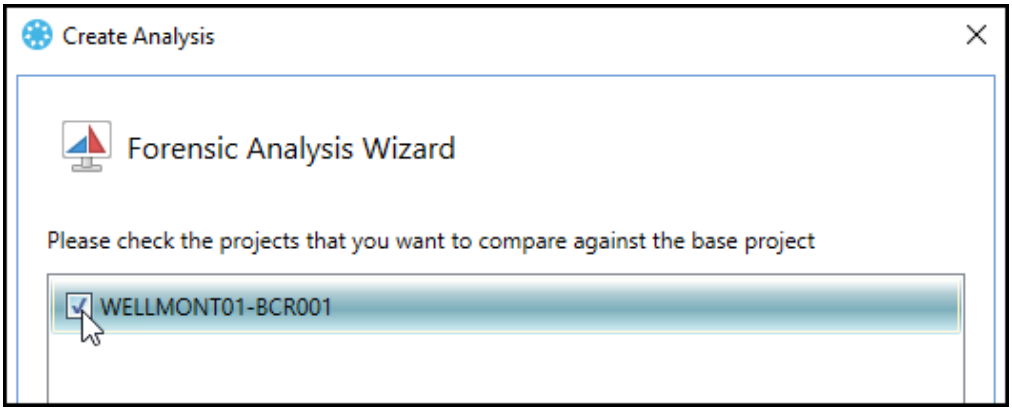


6. Choose Wellmont01-BL as the base for comparison.



7. Click Next.

8. Toggle to compare Wellmont01-BCR001 against the baseline.



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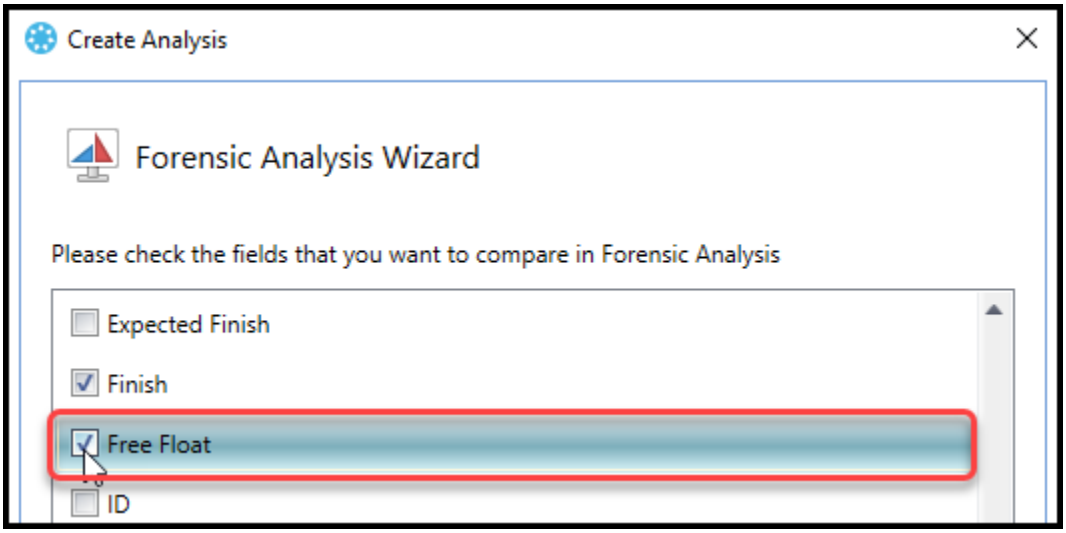
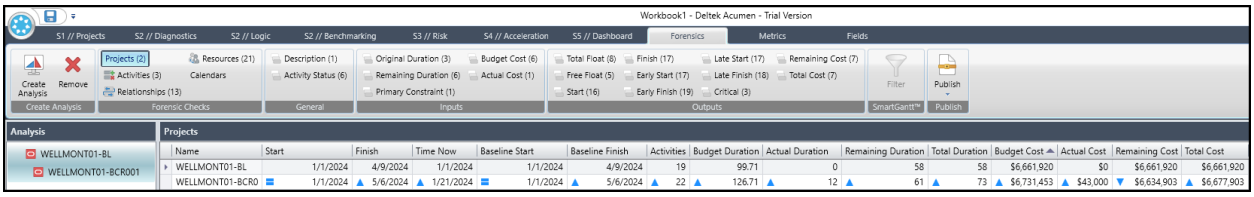
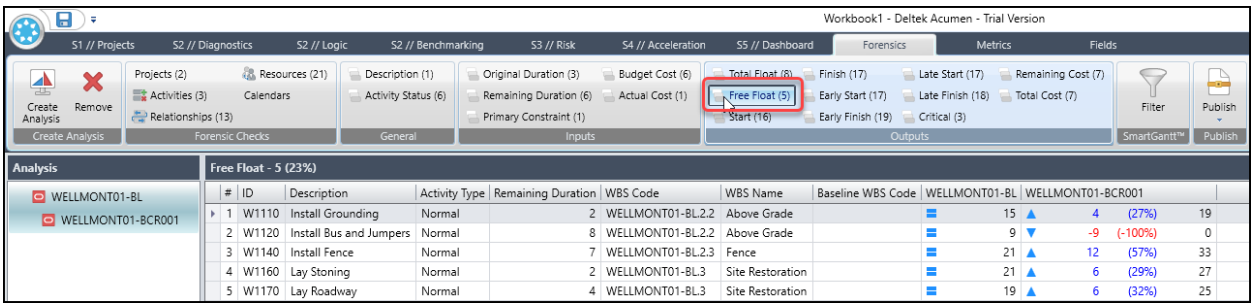
9. Include Free Float in the selected Forensics checks.



10. Click Finish.



11. Inspect tasks with Free Float.



Observe that four tasks free float increase in the schedule update, which is good news. But is this free float addition because the schedule duration extended?

12. In Forensics Checks select projects and inspect the schedule end date.

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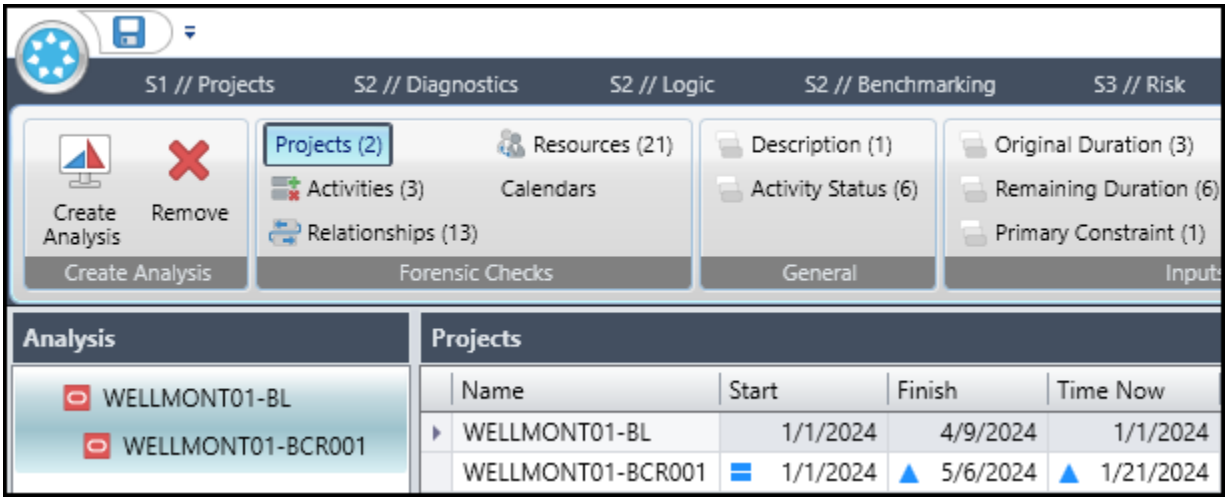
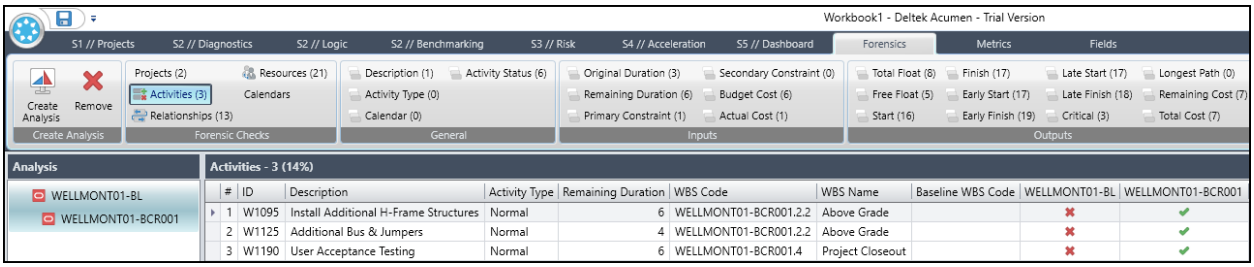


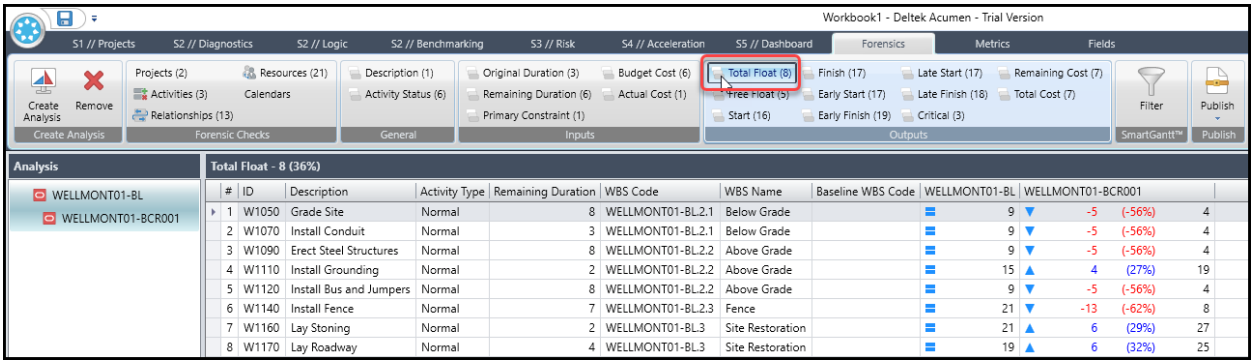
We find that the project completion date extended from April to May, which would most likely explain the increase in free float on these four tasks.

13. In Forensics Checks select activities and review the addition/subtraction of tasks.



Three activities were added in the update which could also explain the schedule extension in part The real mystery is the why did 'Install Bus and Jumpers' have a one hundred percent decrease in free float? The 'Additional Bus & Jumpers' task appears like it could be a successor effort to the 'Install Bus and Jumpers' task.

14. Inspect Total Float activities.



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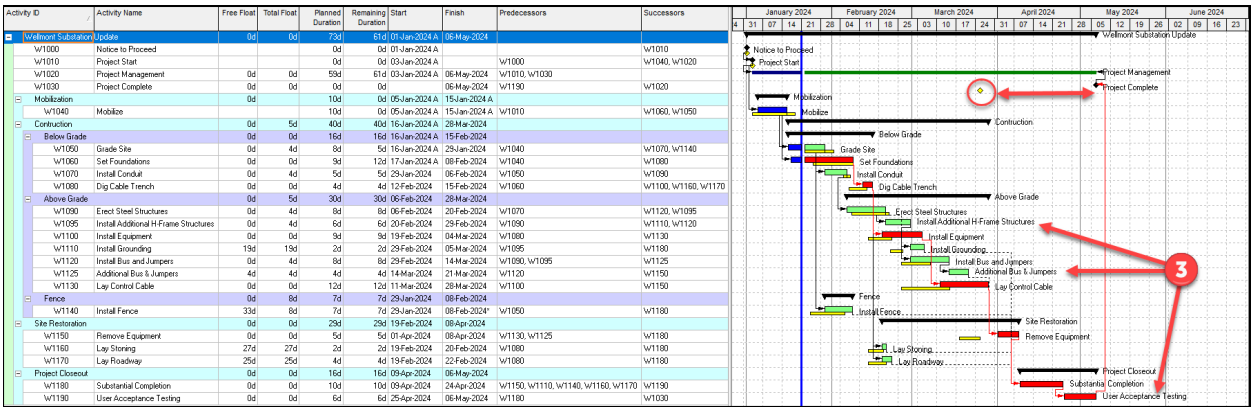
We find that the Total Float of Install Bus and Jumpers decreased five days. Let us review the schedule in P6 Professional.



Activity ID	Activity Name	Free Float	Total Float	Planned Duration	Remaining Duration	Start	Finish	Predecessors	Successors
Wellmont Substation Update		0d	0d	73d	61d	01-Jan-2024 A	06-May-2024		
W1000	Notice to Proceed			0d	0d	01-Jan-2024 A			W1010
W1010	Project Start			0d	0d	03-Jan-2024 A		W1000	W1040, W1020
W1020	Project Management	0d	0d	59d	61d	03-Jan-2024 A	06-May-2024	W1010, W1030	
W1030	Project Complete	0d	0d	0d	0d		06-May-2024	W1190	W1020
Mobilization		0d		10d	0d	05-Jan-2024 A	15-Jan-2024 A		
W1040	Mobilize			10d	0d	05-Jan-2024 A	15-Jan-2024 A	W1010	W1060, W1050
Contruction		0d	5d	40d	40d	16-Jan-2024 A	28-Mar-2024		
Below Grade		0d	0d	16d	16d	16-Jan-2024 A	15-Feb-2024		
W1050	Grade Site	0d	4d	8d	5d	16-Jan-2024 A	29-Jan-2024	W1040	W1070, W1140
W1060	Set Foundations	0d	0d	9d	12d	17-Jan-2024 A	08-Feb-2024	W1040	W1080
W1070	Install Conduit	0d	4d	5d	5d	29-Jan-2024	06-Feb-2024	W1050	W1090
W1080	Dig Cable Trench	0d	0d	4d	4d	12-Feb-2024	15-Feb-2024	W1060	W1100, W1160, W1170
Above Grade		0d	5d	30d	30d	06-Feb-2024	28-Mar-2024		
W1090	Erect Steel Structures	0d	4d	8d	8d	06-Feb-2024	20-Feb-2024	W1070	W1120, W1095
W1095	Install Additional H-Frame Structures	0d	4d	6d	6d	20-Feb-2024	29-Feb-2024	W1090	W1110, W1120
W1100	Install Equipment	0d	0d	9d	9d	19-Feb-2024	04-Mar-2024	W1080	W1130
W1110	Install Grounding	19d	19d	2d	2d	29-Feb-2024	05-Mar-2024	W1095	W1180
W1120	Install Bus and Jumpers	0d	4d	8d	8d	29-Feb-2024	14-Mar-2024	W1090, W1095	W1125
W1125	Additional Bus & Jumpers	4d	4d	4d	4d	14-Mar-2024	21-Mar-2024	W1120	W1150
W1130	Lay Control Cable	0d	0d	12d	12d	11-Mar-2024	28-Mar-2024	W1100	W1150
Fence		0d	8d	7d	7d	29-Jan-2024	08-Feb-2024		
W1140	Install Fence	33d	8d	7d	7d	29-Jan-2024	08-Feb-2024*	W1050	W1180
Site Restoration		0d	0d	29d	29d	19-Feb-2024	08-Apr-2024		
W1150	Remove Equipment	0d	0d	5d	5d	01-Apr-2024	08-Apr-2024	W1130, W1125	W1180
W1160	Lay Stoning	27d	27d	2d	2d	19-Feb-2024	20-Feb-2024	W1080	W1180
W1170	Lay Roadway	25d	25d	4d	4d	19-Feb-2024	22-Feb-2024	W1080	W1180
Project Closeout		0d	0d	16d	16d	09-Apr-2024	06-May-2024		
W1180	Substantial Completion	0d	0d	10d	10d	09-Apr-2024	24-Apr-2024	W1150, W1110, W1140, W1160, W1170	W1190
W1190	User Acceptance Testing	0d	0d	6d	6d	25-Apr-2024	06-May-2024	W1180	W1030

We observe the three additional activities and the significant schedule extension. We have confirmation that 'Additional Bus & Jumpers' was inserted on to the end of 'Install Bus and Jumpers.' It is located as its immediate successor with no free float and 4-day duration. The total float of 'Install Bus and Jumpers' decreased due to the insertion of 'Additional Bus & Jumpers' and 'User Acceptance Testing' tasks and a delayed 1-day start of a critical path task.

Acumen Forensics was not able to completely describe the schedule updates, but it does provide supporting data to document your reporting on the several changes to the schedule situation.

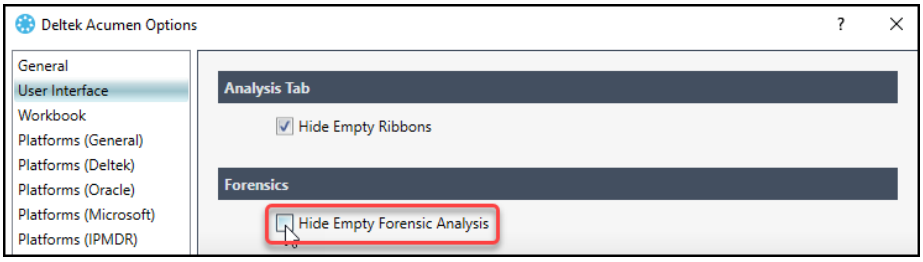
9.2 Exercise – Show Empty Forensics and Add Fields Option

Adjust the Deltek Acumen settings to display forensics with no change between baseline and update. Then add free float to the Compare in Forensics Deltek Acumen Fields options, so that it is automatically included in all new forensics analyses.

1. Confirm Forensics with no change.

2. Click the home button and choose Deltek Acumen Options.

3. Untoggle Hide Empty Forensic Analysis



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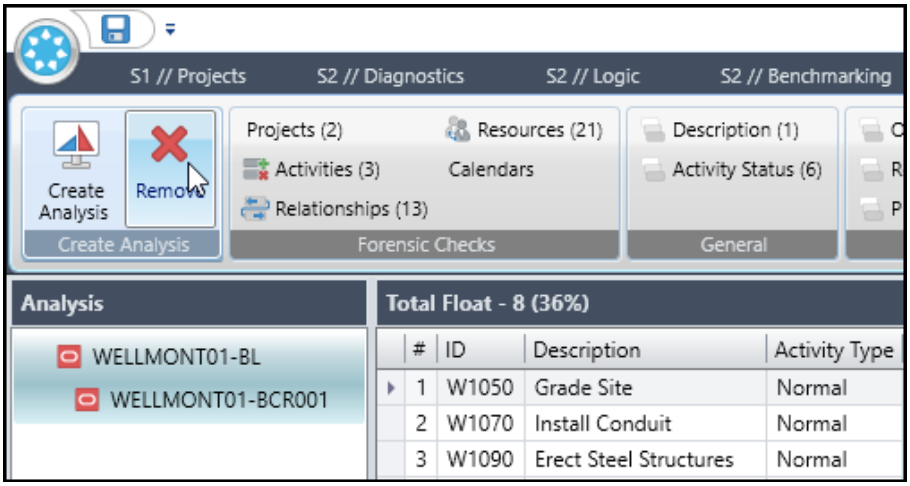
To see this options change in the Forensics output we must remove the current Forensics analysis and create a new analysis.

4. Click to remove Forensics analysis.

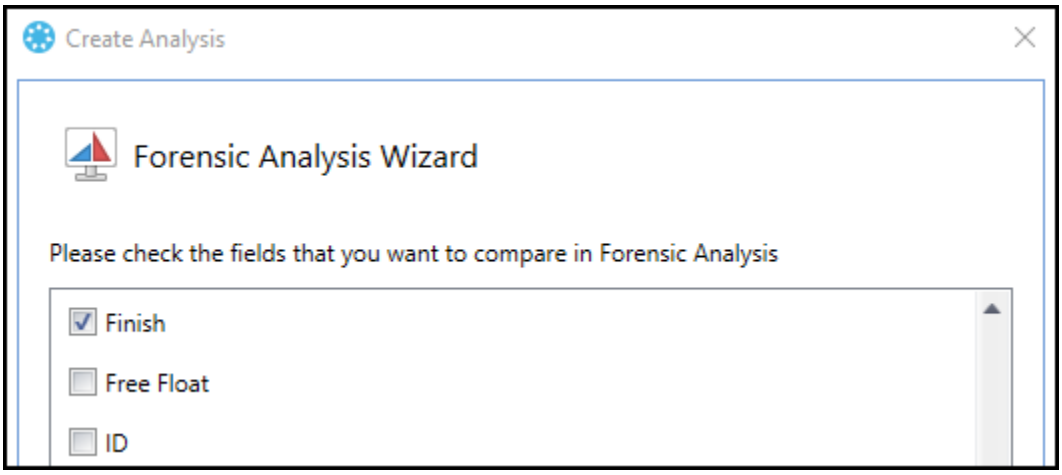


5. Create a Forensics analysis.

6. Step through the dialogue.

7. This time go with the default Forensics analyses.

Note that Free Float is untoggled for this analysis.



8. Observe that there are no changes in the update for Activity Type, Calendar, Secondary Constraint, and Longest Path.

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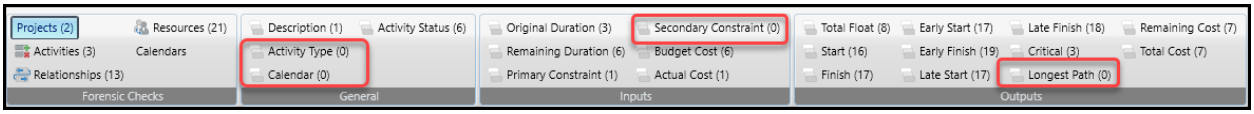
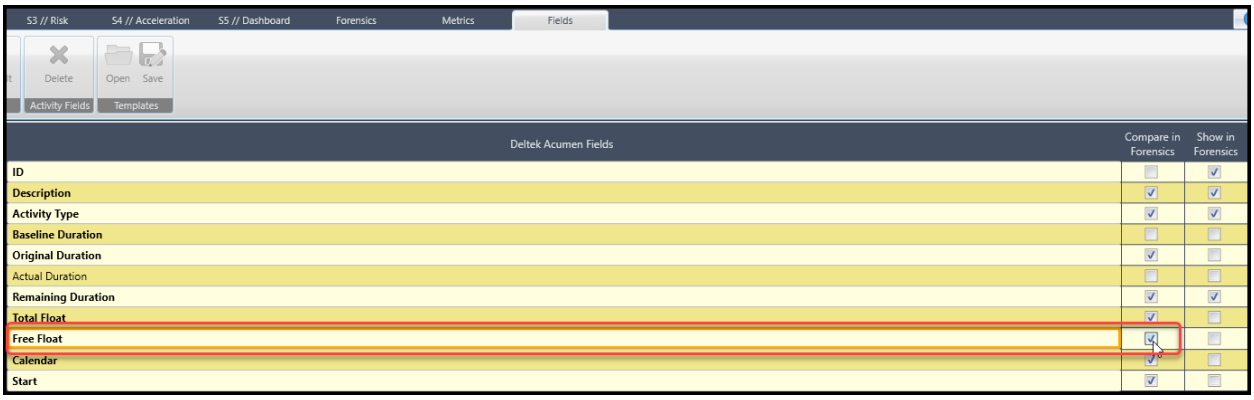


Let us make Free Float so that it appears in all new Forensics analyses.

9. Click Fields.

10. In the Compare in Forensics column toggle on Free Float.



11. Click the Forensics tab.

Remember that every time a Forensics setting is adjusted to see that change, we must remove the current Forensics analysis and create a new analysis.

12. Remove the Forensics analysis.

13. Create a new Forensics analysis as before.

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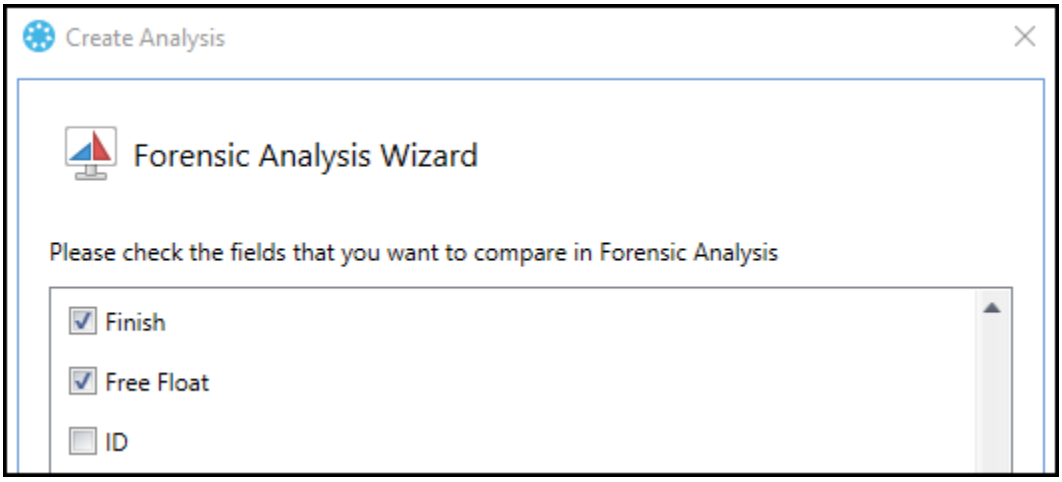
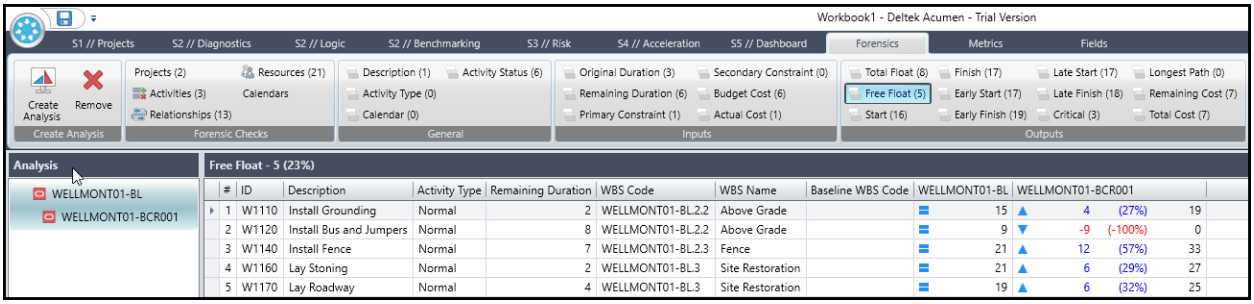
Note that Free Float is already selected in the Forensics fields to check.



Note that Forensics once again appears in the Forensics analysis.



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10 Reporting

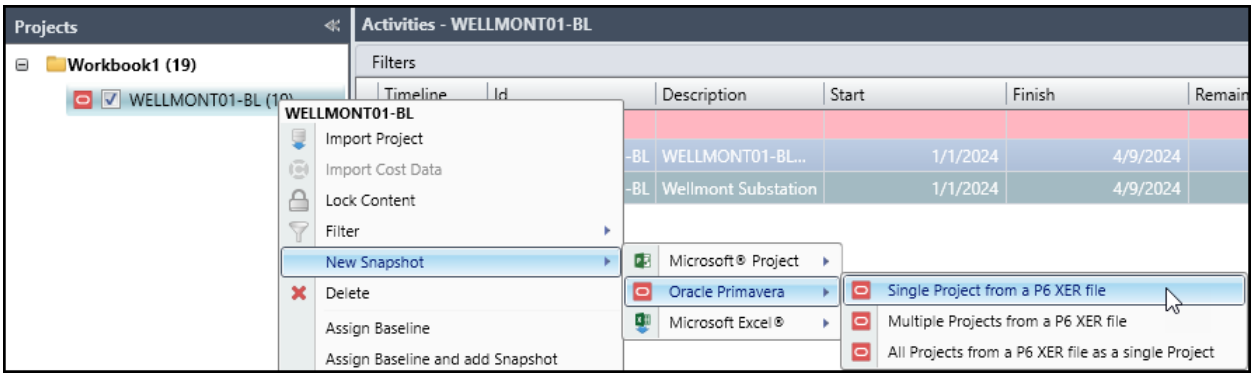
10.1 Exercise – Plot a Baseline and Snapshot on the Gantt Chart

Import a baseline and snapshot then use SmartGantt to display the baseline on the bottom bar and the snapshot on the top bar.

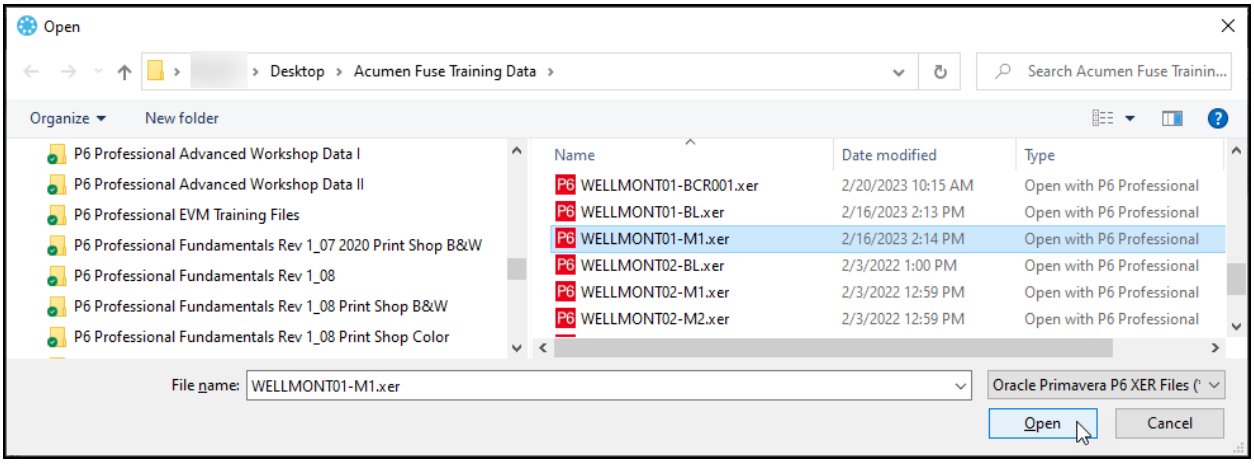
1. Find Wellmont01-BL.xer (baseline) in the training data folder and link it to workbook1 then import it.

2. Select Wellmont01-BL in the navigator pane.

3. Right click on Wellmont01-BL and in the popup menu, choose New Snapshot | Oracle Primavera | Single Project from a P6 XER file.



4. Choose Wellmont01-M1.xer and open.



5. Select Wellmont01-M1 in the navigator pane.

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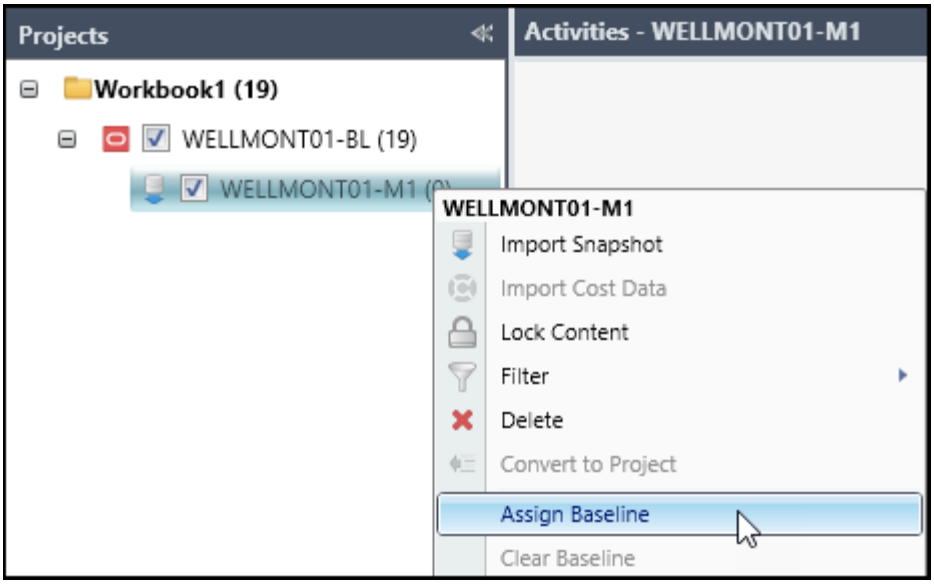
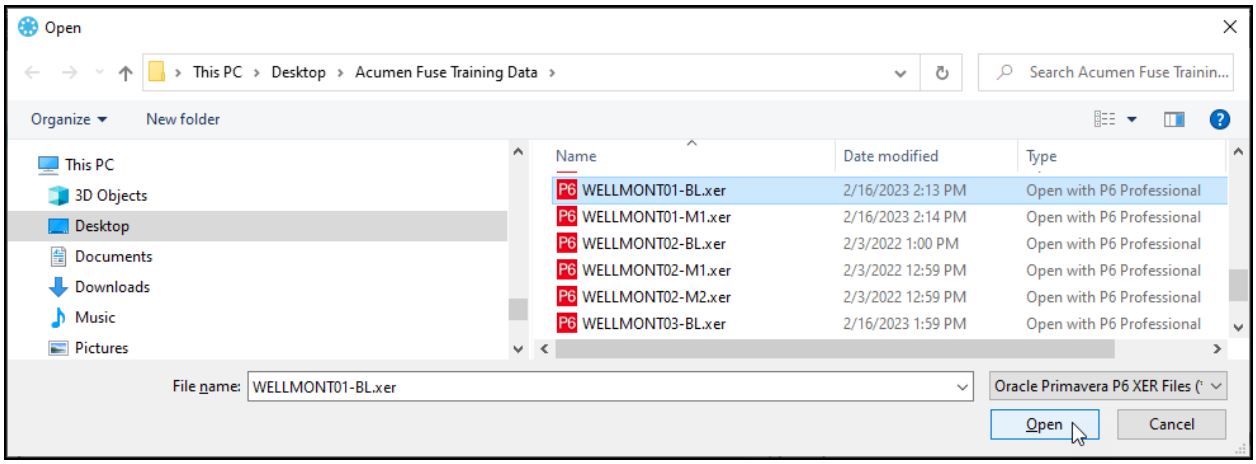
6. Right click and from the popup menu choose Assign Baseline.



7. Choose Wellmont01-BL and open.



8. Import all projects.

The navigator pane appears as follows.

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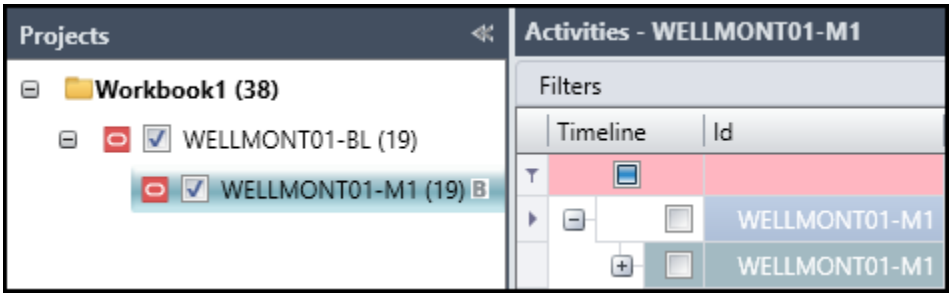
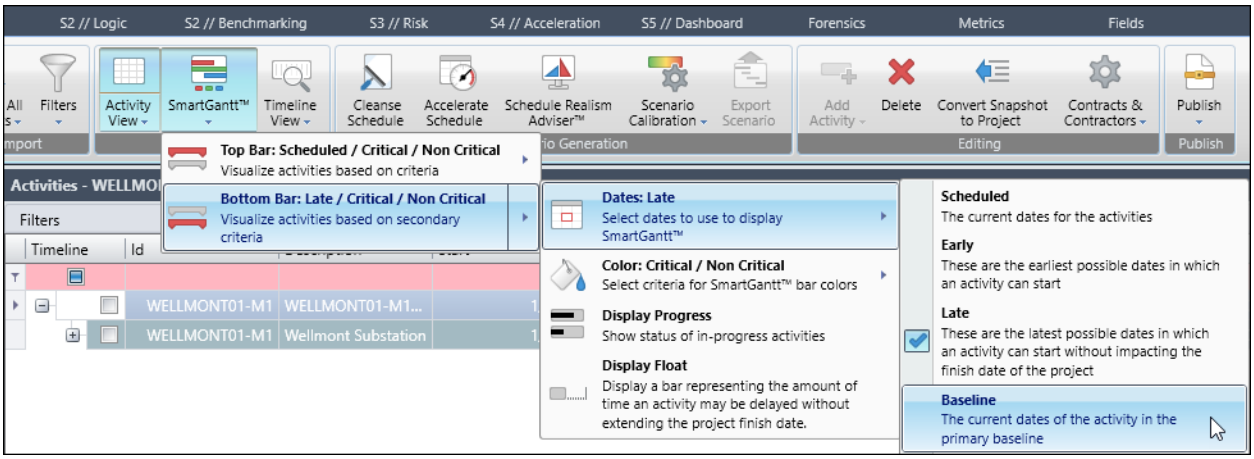


Remember! You must reimport all projects again after a baseline assignment.

9. In the Activities ribbon group click the bottom portion of SmartGantt and choose Bottom Bar | Dates | Baseline.



10. In the Activities ribbon group click the bottom portion of SmartGantt and choose Top Bar | Dates | Schedule.

11. Choose Activity View | Grouping | Display Level – 4.

12. Collapse the bottom dock.

The Gantt chart appears as follows.

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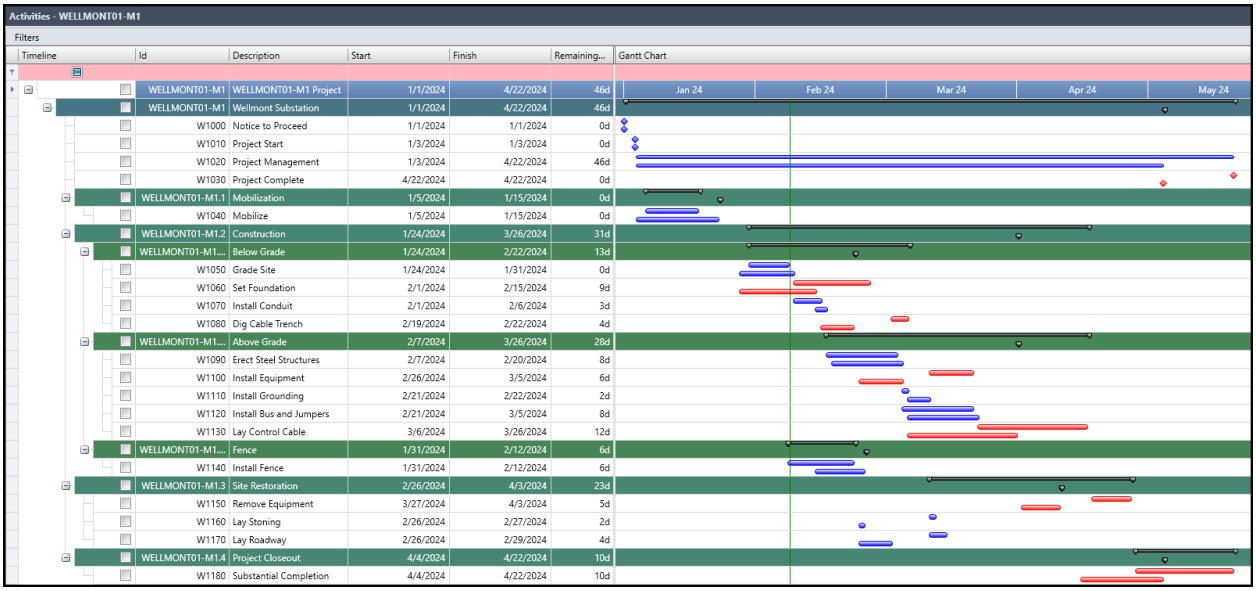

Inspect the snapshot (the top bar) and the baseline (the bottom bar).

13. Choose SmartGantt | Bottom Bar and click to reset the Gantt Chart plot.

10.2 Exercise – Report Key Indicators on a Dashboard

1. Find Wellmont01-BL.xer in the training data folder and link it to workbook1 then import it.

2. Select Wellmont01-BL in the navigator pane.

3. Right click on Wellmont01-BL and in the popup menu, choose New Snapshot | Oracle Primavera | Single Project from a P6 XER file.

4. Choose Wellmont01-BCR001.

5. Select the Wellmont01-BCR001 snapshot and assign Wellmont01-BL as its baseline.

6. Import all projects again.

The navigator pane appears as follows:

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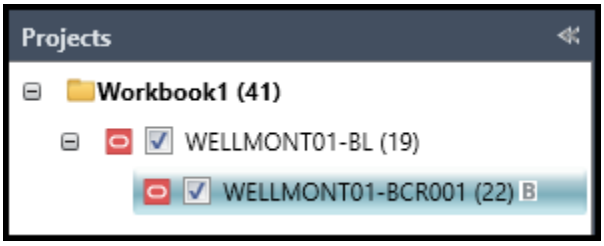
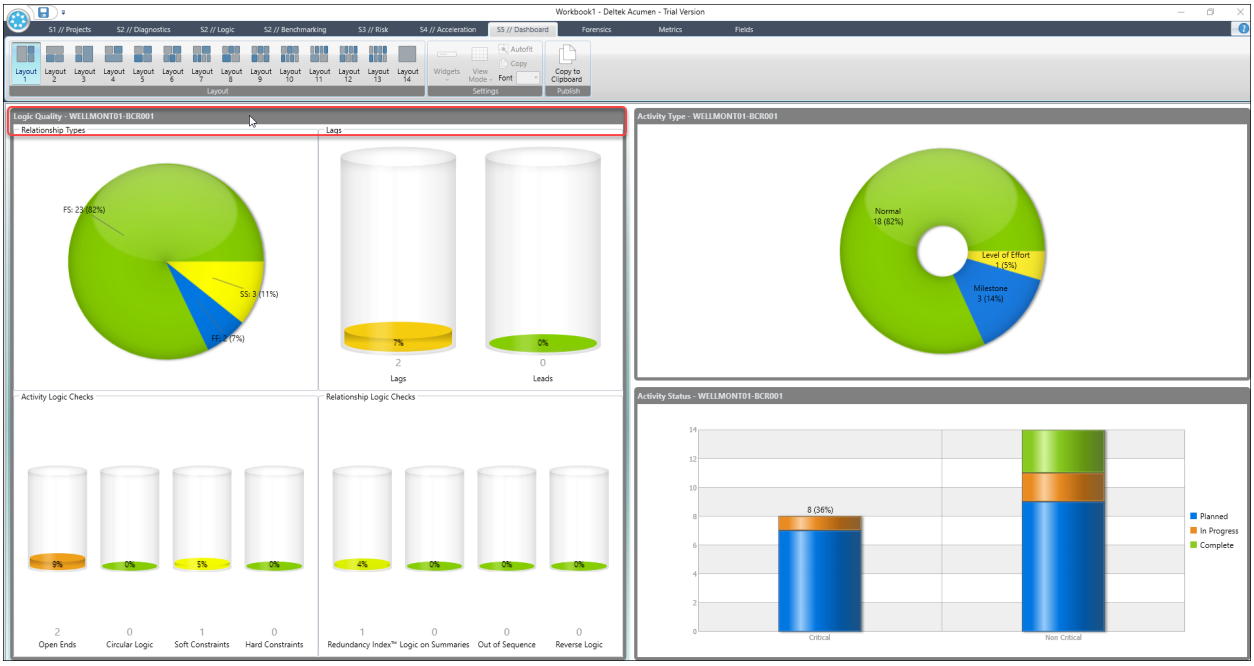
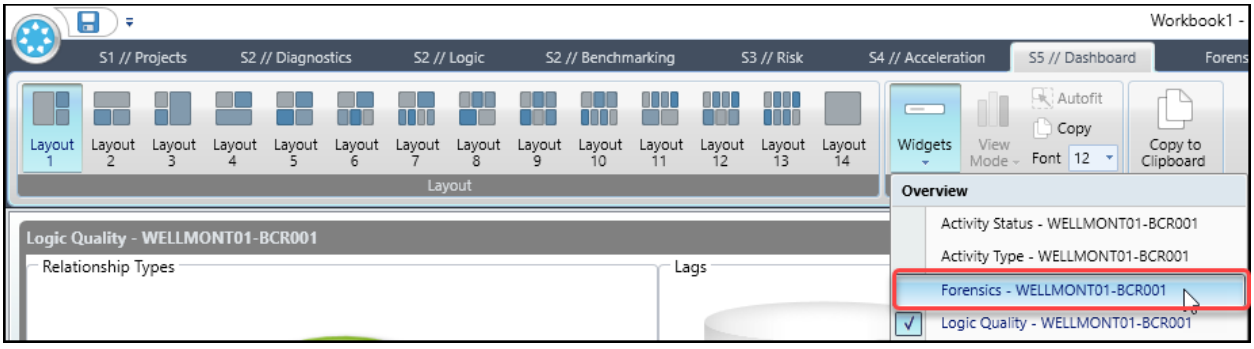


7. Click on S5 // Dashboards tab.

8. Click on the banner for Logic Quality.



9. Click on Widgets and choose Forensics from the drop down menu.



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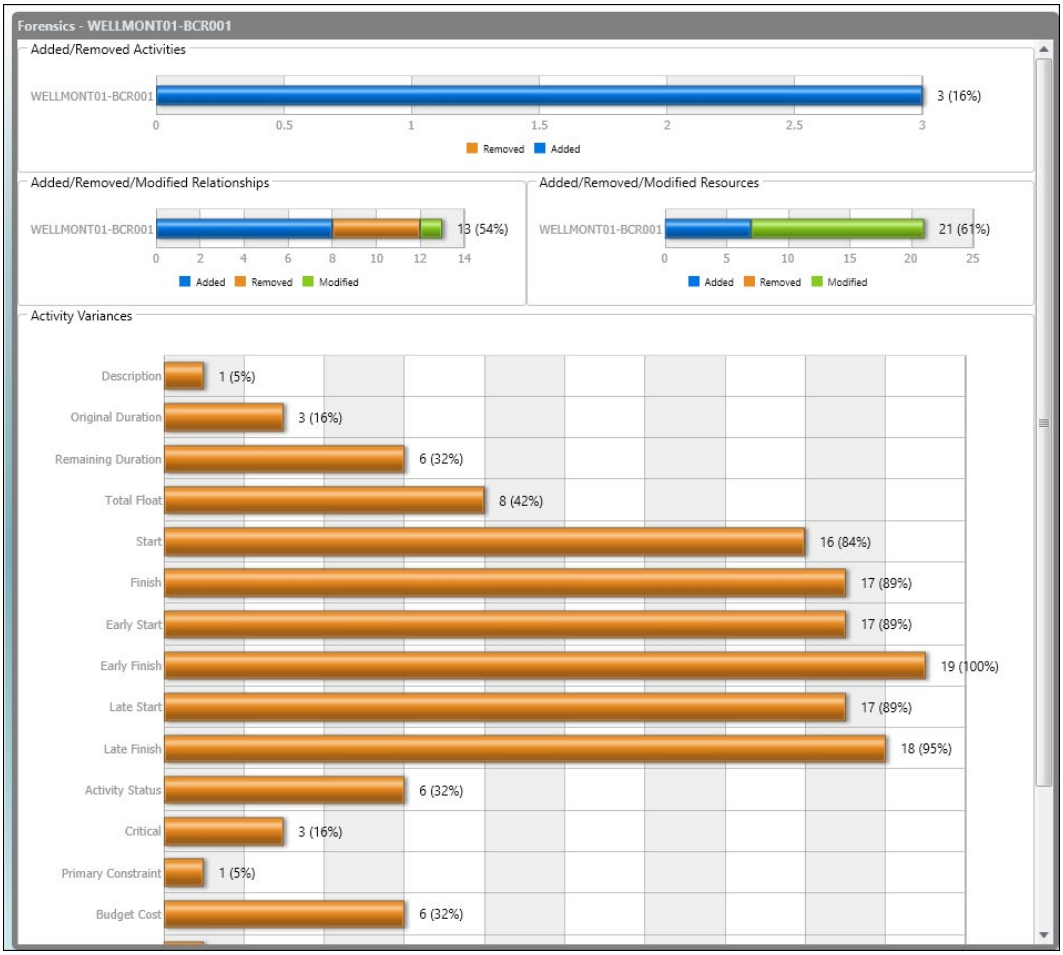
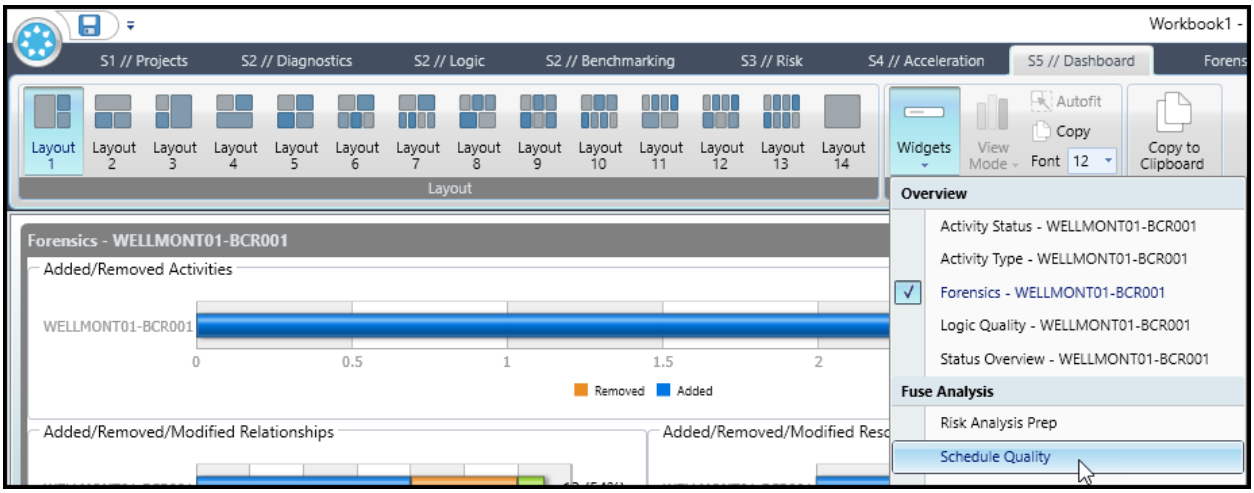
The Forensics widget appears as follows.



10. Select the Forensics widget banner and then Select widgets | Schedule Quality.



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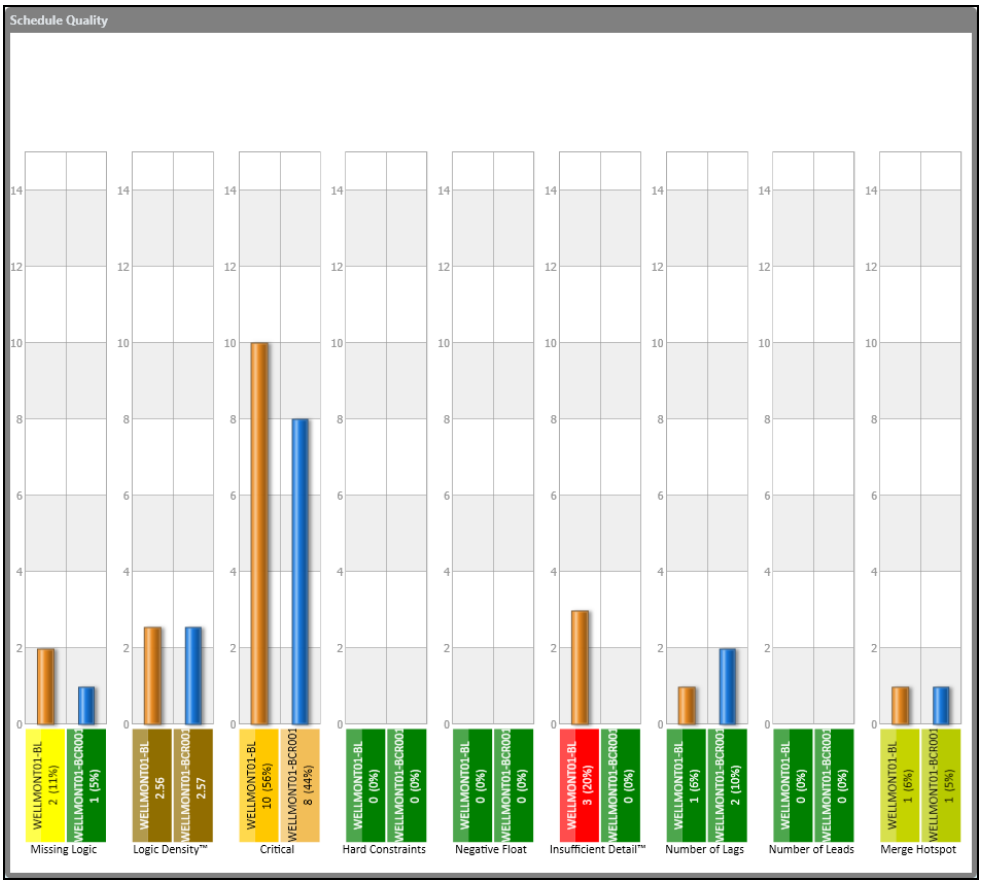
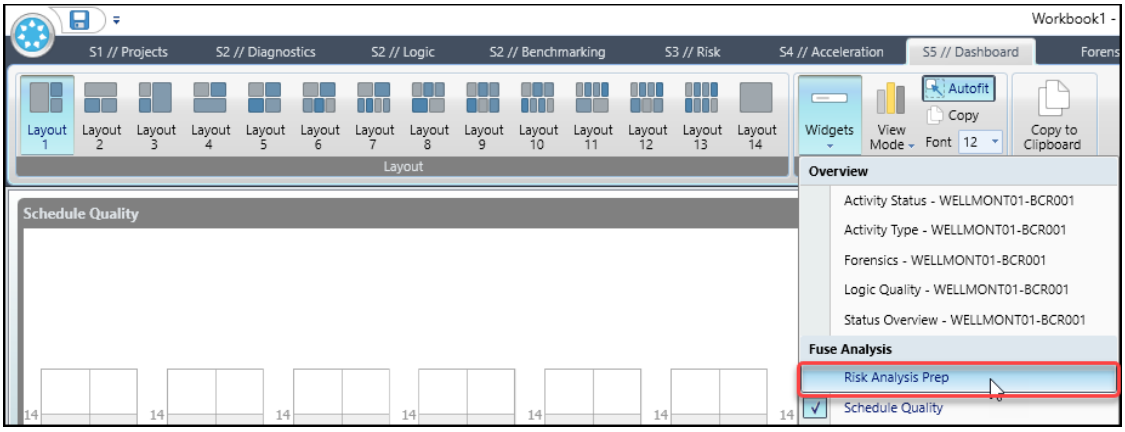
11. Select the Forensics widget banner and then select widgets | Schedule Quality.

The schedule quality metric appears as follows.



12. Select the Schedule Quality widget banner and then Select widgets | Risk Analysis Prep



Note that Risk Analysis Prep is the personal metric group created in lesson 5 Metrics tab.

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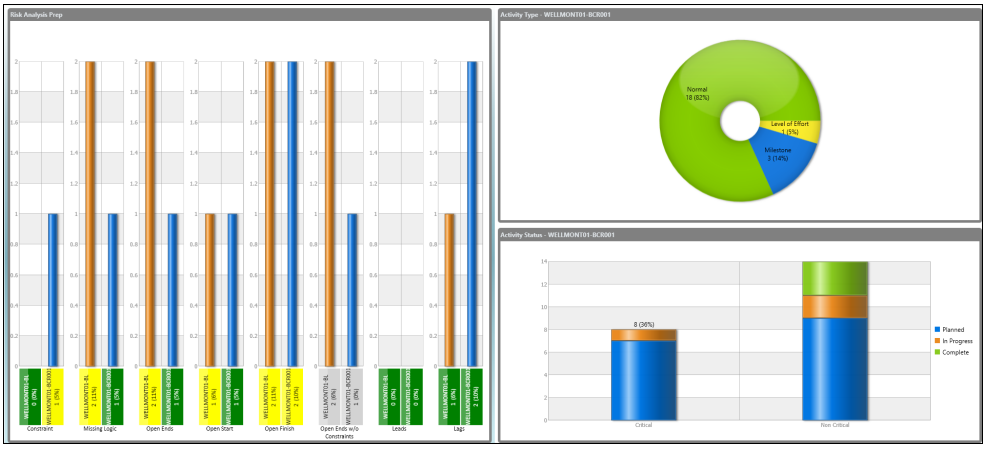
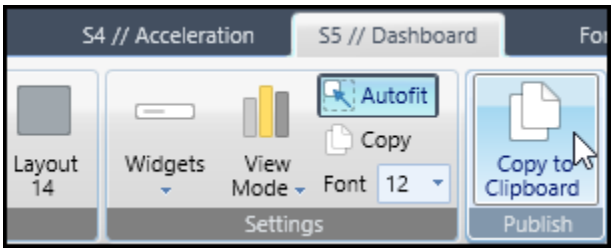
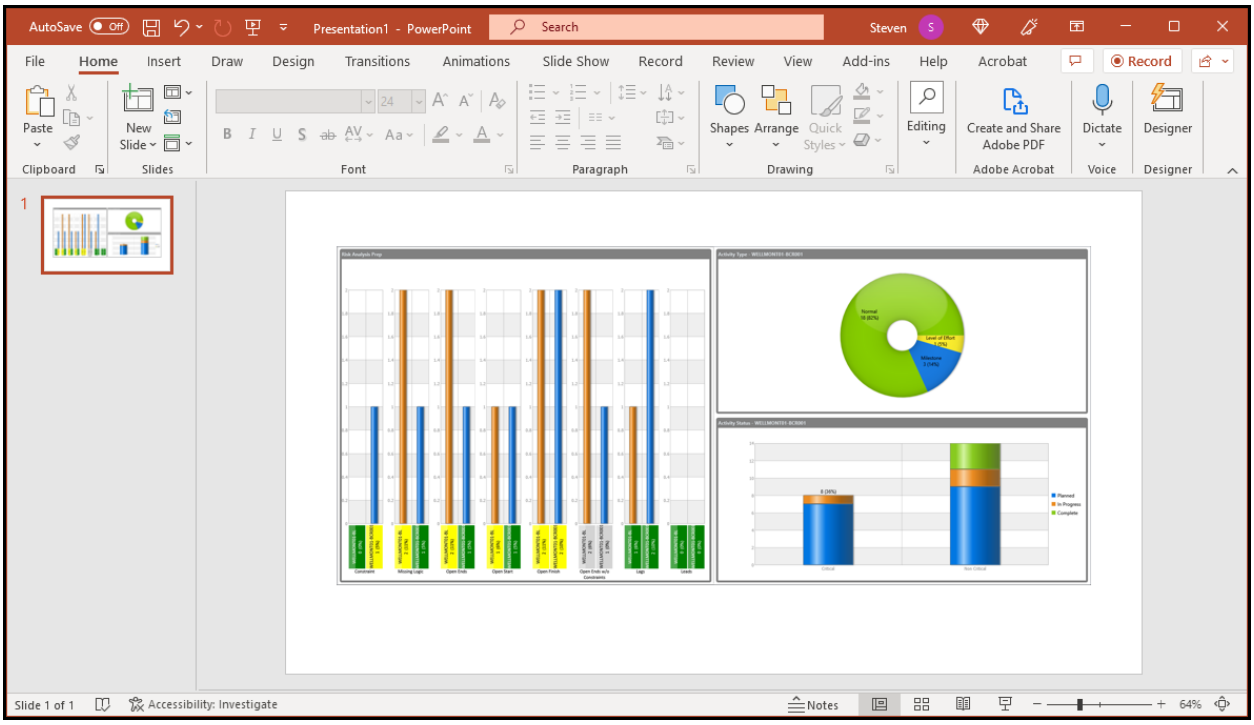


13. In settings click on copy to Clipboard.



14. Paste into PowerPoint.



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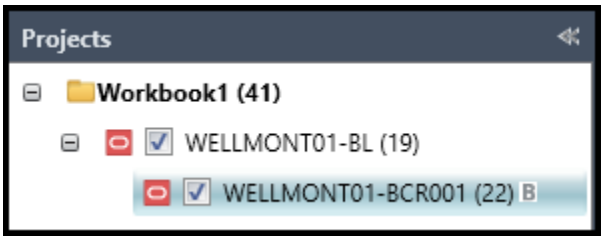
10.3 Exercise – Publishing

Publish and executive briefing of a schedule baseline and its snapshot then generate an Excel Fuse Analyst Report.

1. Continue using the Wellmont01-BL baseline and Wellmont01-BCR001 snapshot from Exercise 10.2.

The navigator pane appears as follows:

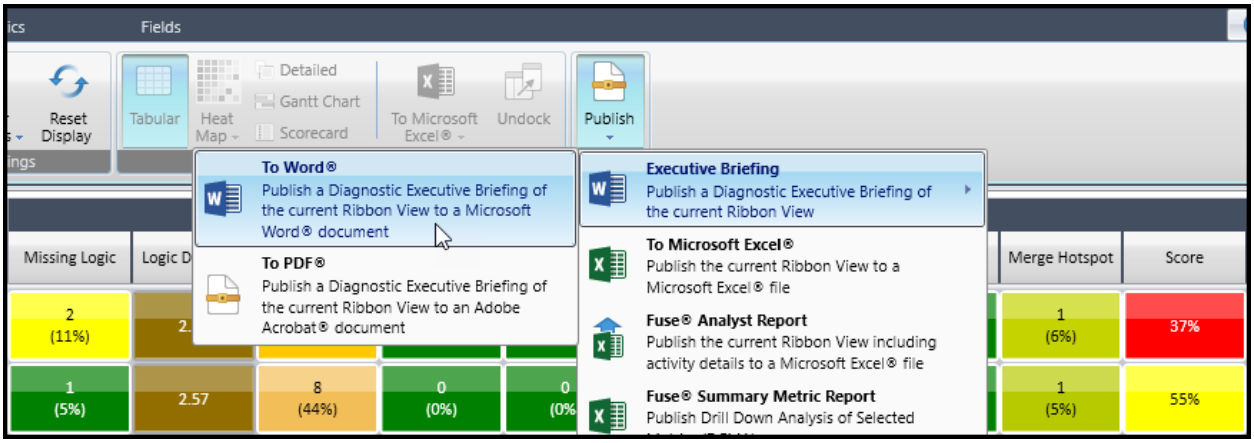


2. Click S2 // Diagnostics tab.

3. Select the Schedule Quality metric group in the playlist.

4. Run a Fuse analysis of the baseline and snapshot.

5. Choose Publish | Executive Briefing | To Word.



6. Save to your training exercise folder.

Confirm the output is like the following.

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Acumen Fuse® Diagnostic Executive Briefing

Report Generated On Tuesday, February 21, 2023
Created by steve

Workbook1 Summary

An Acumen Fuse analysis was conducted on Tuesday, February 21, 2023 on the Workbook1 workbook. It contains 1 project: WELLMONT01-BL, modeled in Oracle Primavera P6. It also contains 1 snapshot: WELLMONT01-BCR001, modeled in Oracle Primavera P6.

This project represents a total cost of $6.66MM of which $6.66MM are remaining with $0 spent as actual cost. The earliest start date is Monday, January 1, 2024 with the latest completion date being Monday, May 6, 2024.

Ribbon Browser

Ribbons \ Phases	1/2024	2/2024	3/2024	4/2024	5/2024
WELLMONT01-BL					
WELLMONT01-BCR001					

Trend Analysis

The following section details how the characteristics of the workbook vary over time. This provides useful insight by showing improving/worsening trends. The analysis was conducted using months as time intervals:

- **Missing Logic:** decreases over time with the best period being 2/2024 (0) and the worst period being 1/2024 (1).
- **Logic Density:** decreases over time with the highest period being 4/2024 (4.50) and the lowest period being 2/2024 (2.33).
- **Critical:** decreases over time with the highest period being 1/2024 (4) and the lowest period being 5/2024 (0).
- **Hard Constraints:** remains constant over time.
- **Negative Float:** remains constant over time.
- **Insufficient Detail:** decreases over time with the best period being 3/2024 (0) and the worst period being 1/2024 (3).
- **Number of Lags:** decreases over time with the best period being 2/2024 (0) and the worst period being 1/2024 (1).
- **Number of Leads:** remains constant over time.
- **Merge Hotspot:** decreases over time with the best period being 1/2024 (0) and the worst period being 3/2024 (1).

Projects Summary

WELLMONT01-BL Project

The WELLMONT01-BL project has a start date of Monday, January 1, 2024 and has Tuesday, April 9, 2024 as the completion date. The project is currently planned with a status date of Monday, January 1, 2024. It has 15 normal activities of which 0 (0%) are complete, 0 (0%) are in progress and 15 (100%) are still planned. It contains 3 milestones, no summaries and 1 LOE.

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The project baseline start date was Monday, January 1, 2024 with the baseline finish date being Tuesday, April 9, 2024. The project is currently on schedule.

The total cost of the project is $6.66MM (compared to baseline cost of $6.66MM) of which $0 has been actualized with $6.66MM remaining. The project is currently on budget.

WELLMONT01-BCR001 Project

The WELLMONT01-BCR001 project has a start date of Monday, January 1, 2024 and has Monday, May 6, 2024 as the completion date. The project is currently in progress with a status date of Sunday, January 21, 2024. It has 18 normal activities of which 1 (5.6%) is complete, 2 (11.1%) are in progress and 15 (83.3%) are still planned. It contains 3 milestones, no summaries and 1 LOE.

The project baseline start date was Monday, January 1, 2024 with the baseline finish date being Tuesday, April 9, 2024. The project is currently behind schedule by 27 days.

The total cost of the project is $6.68MM (compared to baseline cost of $6.66MM) of which $43.0K has been actualized with $6.63MM remaining. The project is currently under budget by $53.6K.

Ribbon Analysis

A ribbon analysis shows how the results from the selected metrics vary across the selected groupings of activities. This is a useful means of comparing between such groupings. In addition, the scorecard value for each ribbon provides an overarching summary of each ribbon.

The workbook has been grouped by projects. The analysis contains 2 ribbons: "WELLMONT01-BL" and "WELLMONT01-BCR001".

Ribbon Analyzer

Ribbons \ Phases	Missing Logic	Logic Density™	Critical	Hard Constraints	Negative Float	Insufficient Detail™	Number of Lags	Number of Leads	Merge Hotspot	Scorecard Value
WELLMONT01-BL	2	2.56	10	0	0	9	1	0	1	36.8%
WELLMONT01-BCR001	1	2.57	8	0	0	8	2	0	1	54.5%

- WELLMONT01-BL has the worst scorecard value with a score of 36.8%.
- WELLMONT01-BCR001 has the best scorecard value with a score of 54.5%.

WELLMONT01-BL Ribbon Analysis

The WELLMONT01-BL ribbon contains 15 normal activities, 3 milestones, 0 summaries and 1 LOEs spanning from Monday, January 1, 2024 to Tuesday, April 9, 2024.

0% of the activities in this ribbon are complete; 100% are planned and 0% are in progress.

The ribbon is 99 days long and has a remaining cost of $6.61MM.

The ribbon was analyzed using 9 metrics, as detailed below:

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- 2 activities (11%) have Missing Logic. Less than 25% exceptions. Some improvements may be required.
- This ribbon has a Logic Density of 2.56. There are between two and four links per activity.
- 10 activities (56%) are Critical.
- 0 activities (0%) have Hard Constraints. No exceptions.
- 0 activities (0%) have Negative Float. Less than 5% of schedule has negative float
- 9 activities (60%) have Insufficient Detail.
- This ribbon has a Number of Lags of 1 (6%). Less than 25% of activities have lags. Some improvements may be required.
- 0 activities (0%) have Number of Leads. Less than 5% of activities have negative lags.
- 1 activity (6%) is Merge Hotspot. Less than 10% of activities have more than two predecessors.

WELLMONT01-BCR001 Ribbon Analysis

The WELLMONT01-BCR001 ribbon contains 18 normal activities, 3 milestones, 0 summaries and 1 LOEs spanning from Monday, January 1, 2024 to Monday, May 6, 2024.

13.6% of the activities in this ribbon are complete; 72.7% are planned and 13.6% are in progress.

The ribbon is 126 days long and has a remaining cost of $6.59MM.

The ribbon was analyzed using 9 metrics, as detailed below:

- 1 activity (5%) has Missing Logic. Less than 10% exceptions. Some improvements may be required.
- This ribbon has a Logic Density of 2.57. There are between two and four links per activity.
- 8 activities (44%) are Critical.
- 0 activities (0%) have Hard Constraints. No exceptions.
- 0 activities (0%) have Negative Float. Less than 5% of schedule has negative float
- 8 activities (44%) have Insufficient Detail.
- This ribbon has a Number of Lags of 2 (10%). Less than 25% of activities have lags. Some improvements may be required.
- 0 activities (0%) have Number of Leads. Less than 5% of activities have negative lags.
- 1 activity (5%) is Merge Hotspot. Less than 10% of activities have more than two predecessors.

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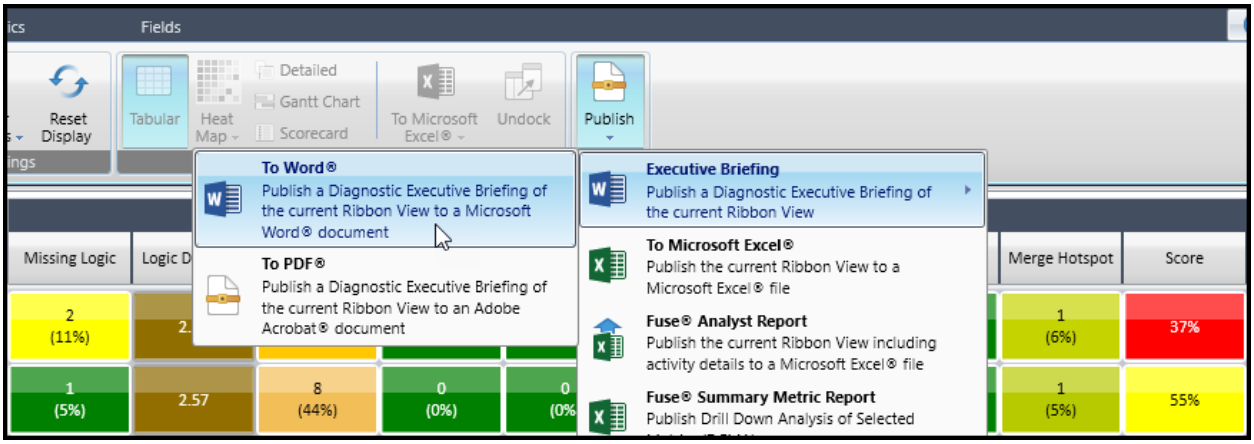
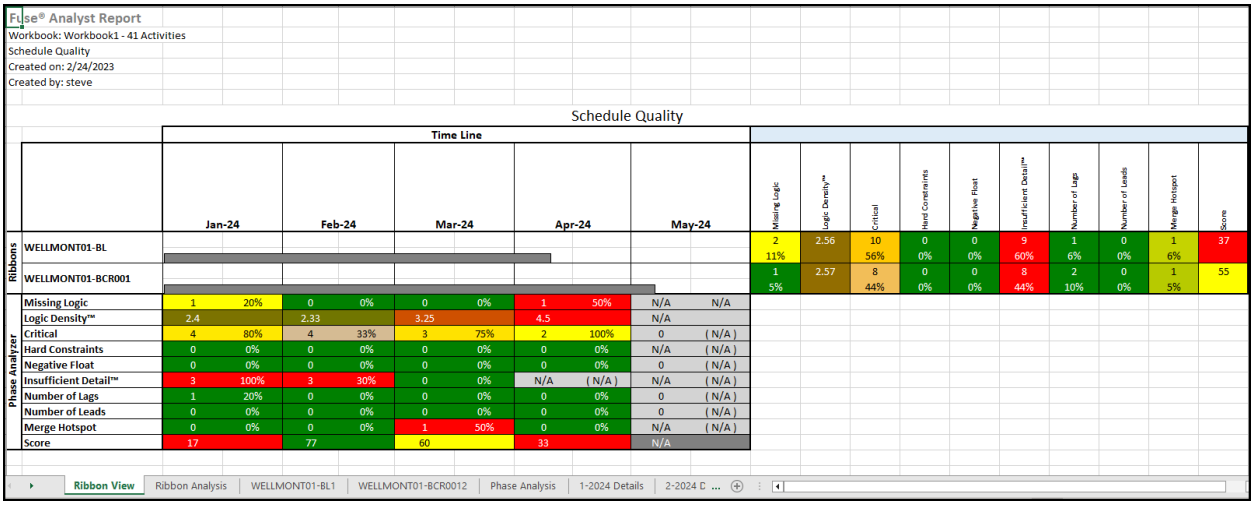
7. Choose Publish | Fuse Analyst Report.



8. Save the Excel spreadsheet to your local training folder.

The ribbon view worksheet should appear like the following.



That concludes the Deltek Acumen Fuse Workbook Exercises.

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