STUDENT READING / BEFORE THE P6 PRACTICAL

Introduction to Schedule Baselines

A baseline is the approved programme you measure against. This reading explains what makes a programme a baseline, how to read the gap between the baseline and the live programme, and when the baseline itself may change.



BEFORE YOU START

About this reading

Read it before the P6 practical. Allow about 25 minutes, and keep a pencil handy for the worked examples.



AFTER THIS READING YOU CAN

- Say what a schedule baseline records and what it is used for.
- List what a programme needs before it is fit to approve.
- Work out finish variance and explain why a slip does or does not move handover.
- Tell a progress update from a baseline change, and say who approves each.
- Save, assign and display a baseline in Primavera P6 Professional.

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The worked examples use sample data from a fictional building services package. Days are numbered working days on one calendar.

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01

What a schedule baseline represents

The approved programme, kept fixed, so the live programme always has something to be measured against.

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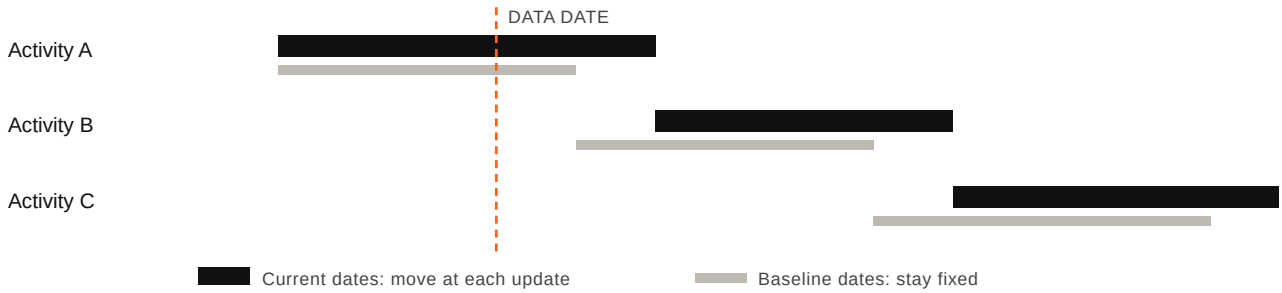
1 / WHAT A SCHEDULE BASELINE REPRESENTS

The approved version, kept fixed

A schedule baseline is the approved version of the programme that the project uses to measure performance.

It records when the team expected each activity to start and finish, how the work was sequenced and when key milestones were due. Once approved it stays fixed, while the live programme moves with events. That fixed reference is what lets a team say, with evidence, that work is ahead, on time or behind.

In practice the baseline is a stored copy of the plan. Every activity carries two sets of dates: baseline dates, which stay put, and current dates, which change at each update as progress is recorded and the remaining work is rescheduled. Where resources and costs are loaded, the baseline stores those planned values as well.



Two sets of dates. Activity A started on time and is running long; B and C have moved later as a result.

Three records, three questions

RECORD	QUESTION IT ANSWERS	EXAMPLE
Schedule baseline	What did we agree to deliver, and when?	Handover finishes on working day 20
Current programme	What do we now expect?	Handover forecast for working day 22
Actual progress	What has happened by the reporting cut-off?	Ductwork finished on working day 12

The schedule baseline is the time component of the wider project baseline, which also fixes the scope and, where applicable, the agreed resource and cost targets.

READING BASIS AACE PSP Study Guide, sections 1.3.11 and 2.3.1 / APM PSMC, section 21.1

1 / WHAT A SCHEDULE BASELINE REPRESENTS

What the baseline is for

Without a baseline there is nothing to compare the working programme with, and no way to measure performance.

Measure progress	Compare where the work is with where the approved plan said it would be.
Spot trends early	Movement at a milestone shows as soon as an update is set against the baseline.
Assess change and delay	The baseline is the reference point for showing what a change or delay event did to the plan.
Plan cash and resources	A cost or resource loaded baseline gives the planned spend and labour curves.
Estimate better next time	Planned against actual durations is the raw material for future estimates.

Each organisation baselines at the level it manages. A client may hold a summary baseline of key dates, the main contractor a detailed one, and a subcontractor only its own scope and the interfaces it depends on.

Three statements to challenge

YOU MAY HEAR	WHAT IS ACTUALLY TRUE
“The baseline is the latest programme.”	The latest programme is the current programme. The baseline is the approved reference it is compared with.
“We update the baseline every month.”	Progress goes into the current programme. The baseline changes only through an approved change.
“The baseline is the handover date.”	It is the whole approved plan: activities, logic, calendars and dates. A date with no logic behind it cannot explain a variance.

> EXAMPLE
>
> A fit-out contractor issues programme revision C, showing handover two weeks later than revision B. Until the client approves revision C as the new reference, reports still measure against the approved baseline. Revision C is a forecast.

READING BASIS AACE PSP Study Guide, sections 1.3.11 and 2.3.1 / APM PSMC, sections 21.1 and 21.2

SECTION 2 OF 5

02

Building a baseline worth measuring against

A baseline is only as good as the programme behind it: built from scope and method, reviewed, recorded and approved.

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Record the basis, then issue 08



2 / BUILDING A BASELINE WORTH MEASURING AGAINST

From scope to an approved programme

A baseline is only as useful as the programme behind it. Build the programme from the scope and the intended construction method, then review it before anyone approves it.

01 **Scope.** Confirm what is in and out from the contract, drawings and specification.

02 **Structure.** Organise the work into a work breakdown structure (WBS).

03 **Activities and milestones.** Define the tasks and key dates that show how each package is delivered.

04 **Logic.** Link activities in the order the teams can actually perform them.

05 **Durations and calendars.** Base durations on quantity, output and crew. Assign working calendars.

06 **Review and approve.** Check the programme, record its basis and obtain approval.

Review the programme before approval

CHECK	WHAT THE REVIEW SHOULD CONFIRM	A QUICK TEST
Scope and interfaces	Design, procurement, temporary works, construction, testing and handover are covered where applicable. Supplier and client dependencies are visible.	Can every deliverable be found in the WBS?
Logic and milestones	Relationships reflect the construction sequence. The driving path to completion is credible and key dates can be traced through the logic.	Does every activity, other than the first and last, have a predecessor and a successor?
Durations and calendars	Durations reflect quantities, productivity and available crews. Calendars include shifts, holidays and access restrictions.	Can the supervisor explain each duration from quantity and output?
Constraints and feasibility	Date constraints have a documented reason. Access, equipment and labour support the planned sequence.	Can each constraint be traced to a contract date or an access restriction?
Basis and approval	Assumptions, exclusions, calendar rules and the reasons for major dates are recorded.	Is there a named approver and an approval date?

READING BASIS AACE PSP Study Guide, sections 2.2.8 and 2.2.9 / APM PSMC, section 21.3

2 / BUILDING A BASELINE WORTH MEASURING AGAINST

Record the basis, then issue

A schedule basis is a short narrative that explains how the programme was built, so the next planner can interpret its dates and assumptions.

It covers the scope included and excluded, the calendars, key assumptions on output and crews, the constraints and their reasons, a description of the critical path, and who supplied which information. Keep it current: when a revised baseline is approved, the basis is revised with it.

SAMPLE SCHEDULE BASIS EXTRACT / BUILDING SERVICES PACKAGE

Scope	Pipework, ductwork, insulation, power on, commissioning and handover for Plant Area 2. Excludes builder's work and fire stopping.
Calendar	Monday to Friday, 8 hours a day. No holidays fall in the period.
Assumptions	Two pipework crews. Ductwork delivered to site before day 1. Permanent power available for day 15.
Critical path	Pipework, insulation, power on, commissioning, handover. Ductwork has one day of float.
Constraints	None. The handover date is produced by the logic.
Approval	Project manager, revision R00.

When to set the baseline

Agree the baseline before significant work starts or, on a staged project, before each phase begins. Set it only when the team accepts that the programme can be delivered. Near-term work can be baselined in detail while later phases are held at a higher level and detailed as they approach.

Issue the approved version

Archive the approved schedule file, the schedule basis, the approval record and the key milestone dates under the same revision reference.

CONSTRUCTION EXAMPLE

If commissioning needs permanent power, include the power-available milestone and link it to the relevant tests. A handover date is meaningful only when its enabling work is visible in the programme.

READING BASIS AACE PSP Study Guide, sections 2.2.9 and 2.3.1 / APM PSMC, sections 21.4 and 21.5

SECTION 3 OF 5

03

Reading baseline variance

Set each update against the baseline, then read what moved, why it moved and whether handover moved with it.

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3 / READING BASELINE VARIANCE

Update first, then compare

Variance is the gap between the baseline and the current programme. You can only read it after a disciplined update.

The data date is the cut-off between recorded progress and the forecast of remaining work. At each update:

- Enter confirmed actual start and finish dates.
- Assess the remaining duration of work in progress.
- Record physical percent complete where it is used.
- Note the reason for any delay.
- Move the data date to the reporting cut-off.
- Reschedule, then compare with the baseline.

Worked example: the approved baseline

Sample data. An activity starts at the beginning of its start day and finishes at the end of its finish day. All links are finish to start with no lag.

ID	ACTIVITY	DAYS	PREDECESSORS	BASELINE START	BASELINE FINISH	FLOAT
BS10	Pipework installation	10	none	Day 1	Day 10	0
BS20	Ductwork installation	9	none	Day 1	Day 9	1
BS30	Insulation and second fix	4	BS10, BS20	Day 11	Day 14	0
BS40	Electrical connections and power on	2	BS30	Day 15	Day 16	0
BS50	Commissioning	2	BS40	Day 17	Day 18	0
BS60	Witness tests and handover	2	BS50	Day 19	Day 20	0

Read the baseline first

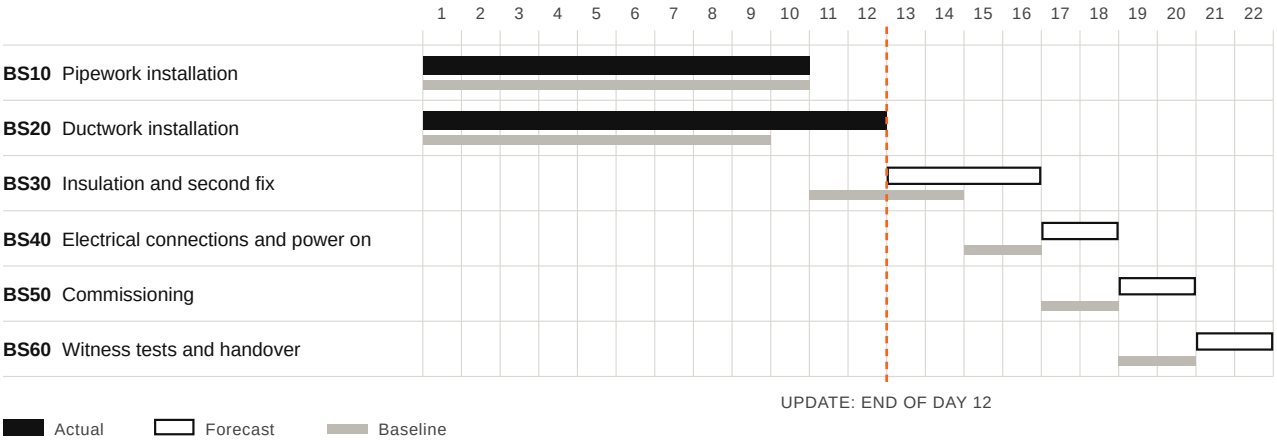
Two routes lead into insulation. Pipework takes 10 days and ductwork takes 9, so pipework drives and ductwork has one day of float. From there a single chain runs to handover at the end of day 20. Before any progress is reported, you already know which trade can slip by a day without consequence and which cannot.

READING BASIS AACE PSP Study Guide, sections 2.3.1 and 2.3.2 / APM PSMC, section 22.3

3 / READING BASELINE VARIANCE

The update at the end of day 12

Pipework finished on day 10 as planned. Ductwork finished on day 12, three days late.



ID	ACTIVITY	BASELINE FINISH	CURRENT FINISH	FINISH VARIANCE
BS10	Pipework installation	Day 10	Day 10 actual	0 days
BS20	Ductwork installation	Day 9	Day 12 actual	+3 days
BS30	Insulation and second fix	Day 14	Day 16 forecast	+2 days
BS40	Electrical connections and power on	Day 16	Day 18 forecast	+2 days
BS50	Commissioning	Day 18	Day 20 forecast	+2 days
BS60	Witness tests and handover	Day 20	Day 22 forecast	+2 days

Finish variance = current finish minus baseline finish. Positive means later, negative means earlier.

Why three days became two

Ductwork had one day of float. The first day of its delay used that float and moved nothing. The next two days pushed insulation from day 11 to day 13, and every later activity followed. Notice what else changed: insulation was driven by pipework in the baseline and is now driven by ductwork.

IF DUCTWORK HAD FINISHED	FLOAT USED	HANDOVER MOVES	INSULATION DRIVEN BY
1 day late (day 10)	1 day	0 days	Pipework and ductwork jointly
2 days late (day 11)	1 day	+1 day	Ductwork
3 days late (day 12)	1 day	+2 days	Ductwork

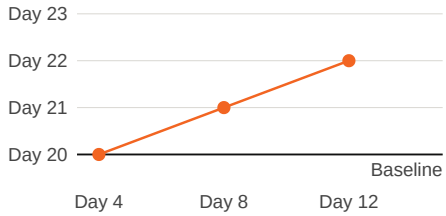
3 / READING BASELINE VARIANCE

From variance to action

A variance is a snapshot. A trend is the direction of travel across several updates.

Suppose the handover forecast was day 20 at the day 4 update, day 21 at day 8 (ductwork was then expected to finish on day 11) and day 22 at day 12. One update tells you handover is late. Three tell you it is slipping a day per update, and that the plan to recover it has not yet worked.

Treat early trends with care. One or two data points can mislead, and a trend is more reliable for a single work package than for a whole project.



Handover forecast at each update.

Agree thresholds in advance

A threshold is a level, set by the project team, beyond which a variance needs action. Where the variance sits matters as much as its size: check whether it is on the critical path, a near-critical path or a path with float.

SAMPLE THRESHOLD	RESPONSE
Slip absorbed by float, off the critical path	Record it, watch the remaining float at the next update.
Up to 2 days on a critical or near-critical activity	Explain the cause in the report and agree mitigation with the delivery team.
More than 2 days on a key milestone	Prepare recovery options and take them to the approving authority.

Sample values only. Each project sets its own thresholds.

Write a report that leads to action

WEAK	BETTER
“Ductwork is three days late.”	“Handover is forecast for day 22, two working days later than baseline. Ductwork finished on day 12, three days late; one day was absorbed by float and ductwork now drives insulation. The planner and commissioning lead will test recovery options and report at the next update.”

READING BASIS AACE PSP Study Guide, sections 2.3.2 and 2.4.2 / APM PSMC, sections 22.1 to 22.3

SECTION 4 OF 5

04

Controlling baseline change

Progress goes into the current programme. The baseline moves only through an approved change, and the record shows why.

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4 / CONTROLLING BASELINE CHANGE

Two acts, two approvals

Updating the programme and changing the baseline are different acts with different approvals.

Use each reporting cycle to bring the current programme up to date. If a crew is late, record the effect in the forecast and assess recovery options. Changes to the agreed measuring point follow the authority and process set out in the project's governance and, where applicable, its contract.

	PROGRESS UPDATE	BASELINE CHANGE
What changes	The current programme	The reference the programme is measured against
How often	Every reporting cycle	Only when an approved change requires it
Who decides	The planner, with the delivery team	The approving authority named in the project governance
Effect on variance	Variance becomes visible	Variance is re-measured from the revised reference

Which action fits which situation

SITUATION	ACTION
Progress falls behind	Update the current programme and explain the variance. Review mitigation with the delivery team.
A recovery sequence is proposed	Test revised logic or additional resources in a controlled copy. If adopted, apply the recovery plan to the live programme and continue reporting against the approved baseline.
An approved change adds scope	Assess the impact, follow the applicable approval procedure and incorporate the authorised change when the approval permits a baseline revision.
A major change makes the reference unsuitable	Seek formal approval for a revised baseline. Retain the previous baseline, explain the changes and state when reporting will switch to the revised reference.

READING BASIS AACE PSP Study Guide, sections 2.3.1 and 2.3.4 / APM PSMC, sections 21.3 and 21.10

4 / CONTROLLING BASELINE CHANGE

Three levels of baseline change

Not every change to a baseline is a re-baseline. The APM guide separates three levels, each with a wider effect than the last.

LEVEL	WHAT IT DOES	WHAT HAPPENS TO VARIANCE	TYPICAL TRIGGER
Baseline maintenance	Keeps the baseline in step with the working programme: more detail is added, or authorised work and budget are brought in.	Unchanged. Maintenance must never hide good or poor performance.	A summary activity is broken into detailed tasks. An authorised change adds work.
Re-planning	Resets the timing of the remaining work, inside the existing scope, contract dates and budget.	Schedule variance is reset. Cost variance is kept.	The client asks for it, or the team no longer finds the original dates credible.
Re-baselining	Sets a completely new baseline for both time and budget.	Schedule and cost variance both return to zero.	The client insists, or a significant renegotiation has taken place.

Re-planning and re-baselining are departures from normal practice and should be rare. Only authorised change goes into a baseline, whichever level applies.

Keep a traceable record

Link each approved revision to its change reference and approving authority. Record which activities and milestones moved, why they moved, and any changes to scope, resources or budget. Keep the original baseline and the superseded revisions, so later reports can show how much movement came from performance and how much from approved change.

> EXAMPLE OF MAINTENANCE
>
> The baseline holds one 20-day activity, “Level 2 fit-out”. As the work approaches, the planner replaces it with four detailed tasks covering the same 20 days. The baseline is maintained so the new tasks have baseline dates. No milestone moves, and any delay already reported stays visible.

READING BASIS APM PSMC, sections 21.6 to 21.10 / AACE PSP Study Guide, sections 1.3.11 and 2.3.4

4 / CONTROLLING BASELINE CHANGE

An approved change in practice

Return to the building services package after the day 12 update. Handover is forecast for day 22, two days later than baseline R00.

On day 14 the client approves change CR-014: a three-day controls integration test, to follow power on and precede commissioning. The approval includes a matching revision to the baseline, recorded as R01.

	BASELINE R00	BASELINE R01	CURRENT PROGRAMME
Power on finishes	Day 16	Day 16	Day 18
Controls integration test (new)	Not in scope	Days 17 to 19	Days 19 to 21
Commissioning finishes	Day 18	Day 21	Day 23
Handover finishes	Day 20	Day 23	Day 25

What each comparison tells you

COMPARE THE CURRENT PROGRAMME WITH	HANDOVER VARIANCE	WHAT THE NUMBER CONTAINS
Baseline R00	+5 days	Three days of approved change mixed with two days of performance
Baseline R01	+2 days	Performance only: the ductwork delay

The revision moved the measuring point by the three authorised days and nothing more. The two-day slip caused by late ductwork is still there to be reported and recovered. A baseline revision that made it disappear would be hiding performance.

The change log entry

REVISION	APPROVED	CHANGE REFERENCE	WHAT CHANGED	BASELINE HANDOVER
R00	Before day 1	Original approval	Approved programme	Day 20
R01	Day 14	CR-014	Controls integration test added, 3 days	Day 23

> CLASS DISCUSSION
>
> A late delivery shifts handover by two days. One week later, the client separately approves an extra test that takes one day. Which event belongs in the progress update, and under what approval could the extra test change the reporting baseline?

SECTION 5 OF 5

05

Moving into Primavera P6

Save the approved version, assign it for comparison, and show its dates and bars beside the live programme.

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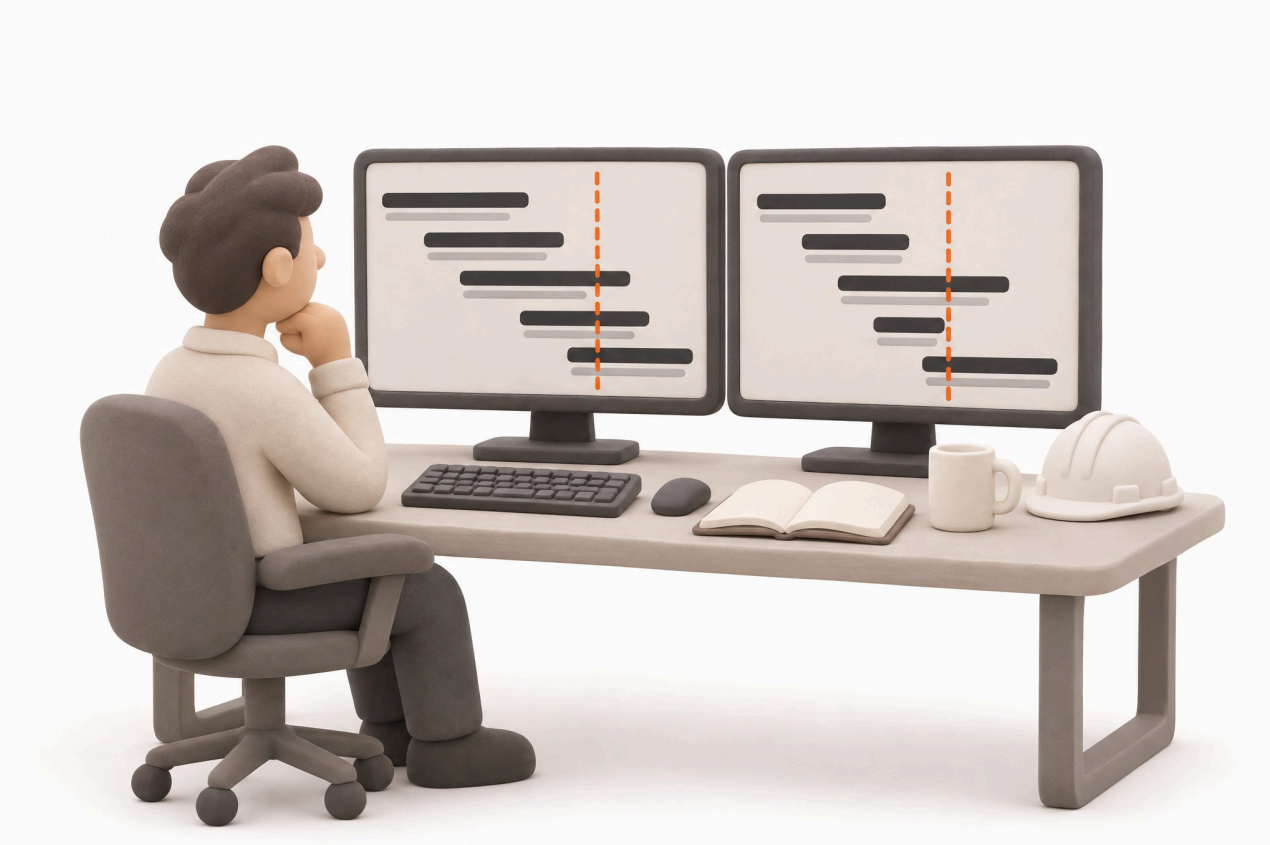

5 / MOVING INTO PRIMAVERA P6

Save, assign, display

In P6 a baseline is a complete copy of the project, stored with it. You save it, assign it for comparison, then display its dates and bars beside the live ones.

ACTION	IN P6 PROFESSIONAL
Save the agreed version	Open **Project > Maintain Baselines > Add**. Choose to save a copy of the current project as a new baseline. P6 names it after the project with a suffix such as “- B1”. Rename it with a clear revision name, for example *Building Services Baseline R00*.
Assign it for comparison	Open **Project > Assign Baselines**. Set the Primary baseline to R00 for the BL1 comparison. Set the separate Project Baseline field as well when you use project baseline columns or project-level reporting.
Display the reference dates	In Activities, show the columns Start, Finish, BL1 Start and BL1 Finish. In the Gantt bar settings, display the Primary Baseline bar.
Check before you update	With no progress entered, Start and Finish should equal BL1 Start and BL1 Finish on every activity. If they do not, check which baseline is assigned.
Update and compare	Enter the agreed update, reschedule with F9 and compare the handover Finish with BL1 Finish.

Which columns read which baseline

YOU ASSIGNED	COLUMNS THAT READ IT	TYPICAL USE
Project Baseline	BL Project Start, BL Project Finish	Project-level reporting shared by all users
Primary baseline	BL1 Start, BL1 Finish	Your own comparison in layouts and bars

> **SIGN CONVENTION**
>
> This reading reports finish variance as current minus baseline, so a late finish is positive. P6’s own variance columns subtract the other way, so the same two-day slip appears there as a negative number. State the convention in every report you issue.

READING BASIS Oracle Primavera P6 Professional Help: Create a baseline; Maintain Baselines dialog box; Assign baselines to projects

5 / MOVING INTO PRIMAVERA P6

If the comparison looks wrong

Most baseline problems in class come from the assignment, not the schedule.

WHAT YOU SEE	LIKELY CAUSE	WHAT TO DO
BL1 Finish moves when you reschedule	The Primary baseline is set to the current project instead of the saved baseline.	Open Assign Baselines and select the saved baseline.
Every variance is zero after an update	The baseline was saved after the update, or the wrong baseline is assigned.	Check the baseline's data date in Maintain Baselines, then check the assignment.
No baseline bar on the Gantt chart	The Primary Baseline bar is switched off, or no baseline is assigned.	Turn the bar on in the bar settings and confirm the assignment.
A copied project has no baselines	The copy was made without its baselines.	Copy again with baselines included, then confirm the assignment in the copy.

Other baseline tools you will meet

Convert a project	Maintain Baselines can turn another project into a baseline of the open one. The converted project leaves the project list, so copy it first if you still need it.
Restore	Brings a baseline back as a separate project that you can open and inspect.
Update Baseline	Brings selected new or changed data from the current project into an existing baseline. This is the tool behind baseline maintenance.

Bring these results to the practical review

- A Gantt view with both the current and the baseline bars visible.
- One activity with a finish variance, and the handover forecast stated in working days.
- A short explanation, using the driving logic, of whether that activity variance affected handover.

READING BASIS Oracle Primavera P6 Professional Help: Create a baseline; Maintain Baselines dialog box

KEY TERMS AND SOURCE READING

Key terms

Schedule baseline	The approved programme used as the fixed reference for measuring performance.
Current programme	The live programme, updated with progress and rescheduled at each data date.
Data date	The cut-off between recorded progress and the forecast of remaining work.
Finish variance	The gap between an activity's current finish and its baseline finish.
Trend	The direction a variance is moving across successive updates.
Threshold	An agreed level of variance beyond which action is required.
Total float	The time an activity can slip without delaying project completion.
Driving predecessor	The predecessor that sets an activity's earliest start.
Schedule basis	The narrative recording how the programme was built: scope, assumptions, calendars, constraints.
Baseline maintenance	Routine upkeep that adds detail or authorised change without hiding performance.
Re-baselining	Setting a new approved baseline, with the agreement of the appropriate authority.

Source reading

AACE International, *Planning and Scheduling Professional (PSP) Certification Study Guide*, First Edition Revised (2014), sections 1.3.11, 2.2.8, 2.2.9, 2.3.1, 2.3.2, 2.3.4 and 2.4.2.

Association for Project Management, *Planning, Scheduling, Monitoring and Control* (2015), chapters 21 and 22, pages 209 to 224.

Oracle, *Primavera P6 Professional Help*: "Create a baseline", "Maintain Baselines dialog box" and "Assign baselines to projects".
docs.oracle.com/cd/G48902_01/English/User_Guides/p6_pro_user/assign_baselines_to_projects.htm