Eastwood Harris Pty Ltd as trustee for Eastwood Harris Family Trust **ACN** 085 065 872 **ABN** 18 133 912 173
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Causes of Negative Float in Oracle Primavera P6

1 Introduction

I recently had a discussion with a student who was trying to track down the reason for Negative Float on an activity and I decided to write this article as a check list for people who want to track down the cause of Negative Float in their program.

There are a number of reasons why a P6 program will display Negative Float, some are well known and expected, some less well known and some not expected.

2 Aim

The aim of the article is to list the reasons why a P6 program will display Negative Float under the following headings:

- Well Known and Expected,
- Less Well Known and
- Unexpected.

3 Negative Float Definition

There are not very many definitions of Negative Float in documents that have a list of scheduling definitions and AACE Recommended Practice 10S-90 Cost Engineering Terminology defines it in the as:

(1) The amount of time by which the early date of and activity exceeds its late date. It is how far it is behind an activity is behind its planned early start/finish date.
(2) Time by which the duration of an activity has to be reduced in order to permit a limiting imposed date to be achieved. (June 2007)

Scheduling software calculates Negative Float when the Lates Dates are earlier that the Early Dates and is calculated by the subtraction of the Late Finish minus the Early Finish calculated over the calendar assigned to the Activity.

The issue of why a schedule has Negative Float is as a result of the algorithms that the software used to calculate the Late Finish.

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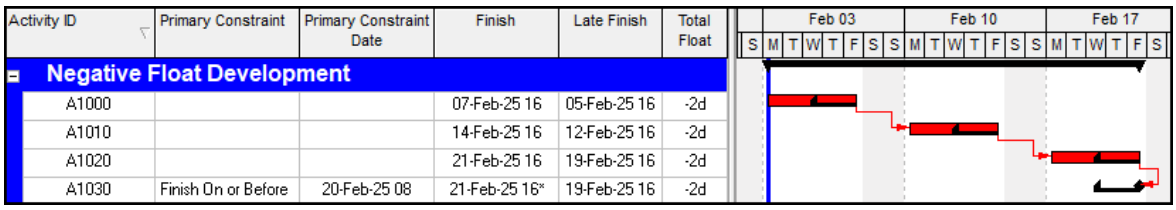
4 Well Known and Expected

4.1 Activity Constraints

Setting a Finish Constraint such as a **Finish On**, **Finish On or Before** or **Mandatory Finish** before the calculated activity Finish Date will generate Negative Float:

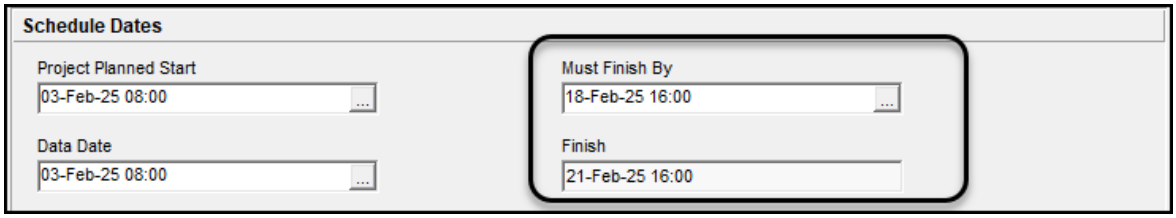


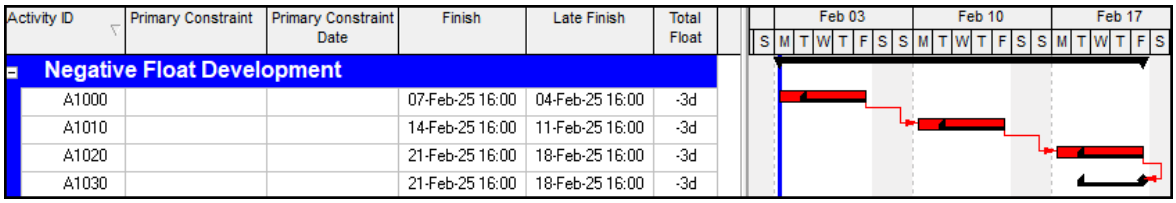
Activity ID	Primary Constraint	Primary Constraint Date	Finish	Late Finish	Total Float
Negative Float Development					
A1000			07-Feb-25 16	05-Feb-25 16	-2d
A1010			14-Feb-25 16	12-Feb-25 16	-2d
A1020			21-Feb-25 16	19-Feb-25 16	-2d
A1030	Finish On or Before	20-Feb-25 08	21-Feb-25 16*	19-Feb-25 16	-2d

The finish constraint is set two days before calculated activity finish date of A1020 and 2 days Negative Float has been calculated.

4.2 Project "Must Finish By" Date

Setting a **Project Must Finish By date** will generate Negative Float:





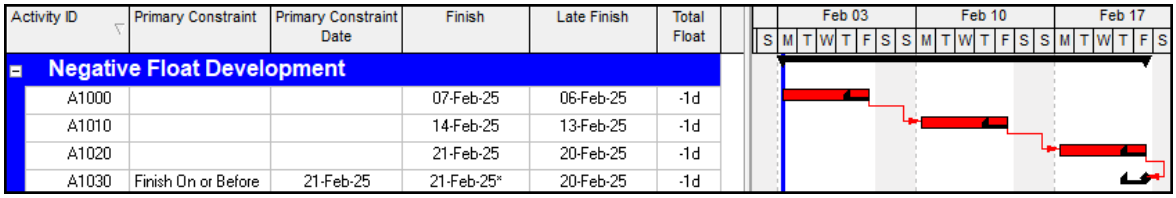
Activity ID	Primary Constraint	Primary Constraint Date	Finish	Late Finish	Total Float
Negative Float Development					
A1000			07-Feb-25 16:00	04-Feb-25 16:00	-3d
A1010			14-Feb-25 16:00	11-Feb-25 16:00	-3d
A1020			21-Feb-25 16:00	18-Feb-25 16:00	-3d
A1030			21-Feb-25 16:00	18-Feb-25 16:00	-3d

The **Project Must Finish By date** is set three days before calculated project finish date and 3 days Negative Float has been calculated.

5 Less Well Known

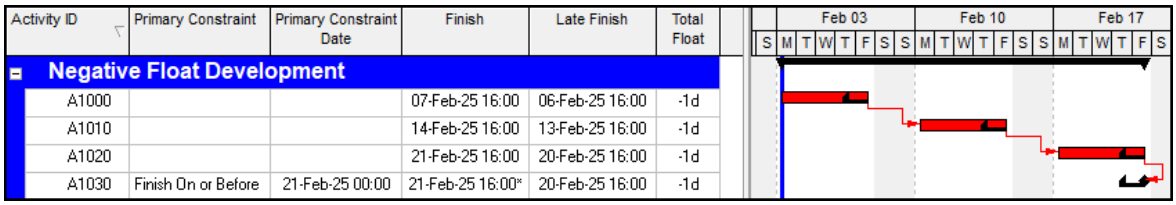
5.1 Setting a Constraint without Displaying the Time

The picture below shows a project where the user was not displaying the time and when they set the **Finish On or Before** constraint the software set the time to be midnight at the start of the day and thus the Finish of the activity is calculated at the evening before resulting in negative float:



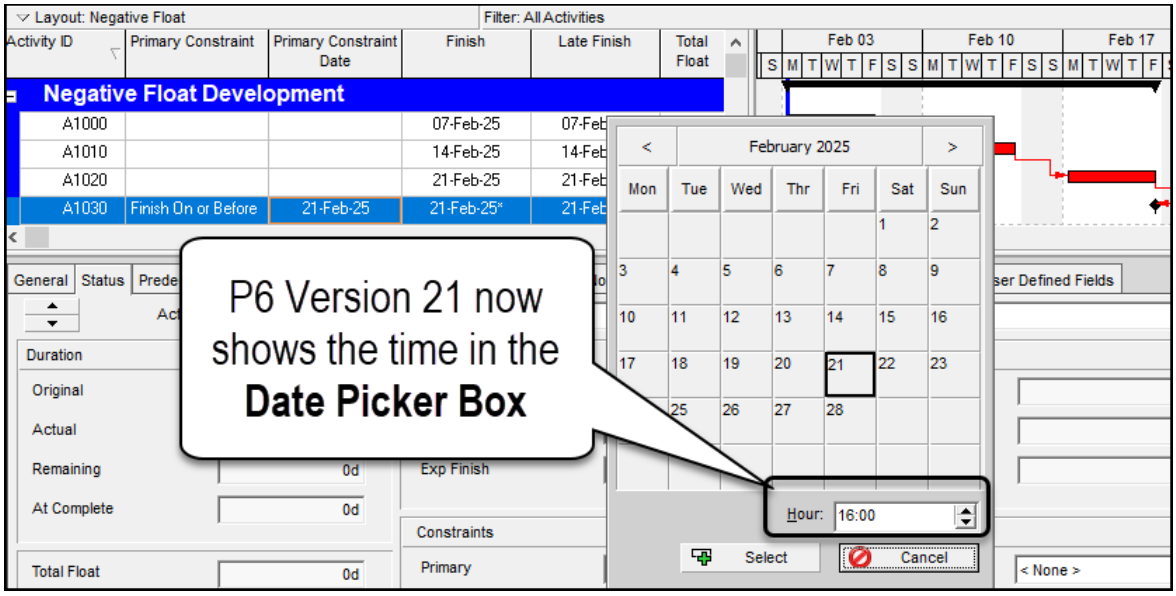
Activity ID	Primary Constraint	Primary Constraint Date	Finish	Late Finish	Total Float
Negative Float Development					
A1000			07-Feb-25	06-Feb-25	-1d
A1010			14-Feb-25	13-Feb-25	-1d
A1020			21-Feb-25	20-Feb-25	-1d
A1030	Finish On or Before	21-Feb-25	21-Feb-25*	20-Feb-25	-1d

When the time is displayed the issue is obvious and the user may now see that the constraint time is at midnight at the start of the day, thus generating Negative Float:



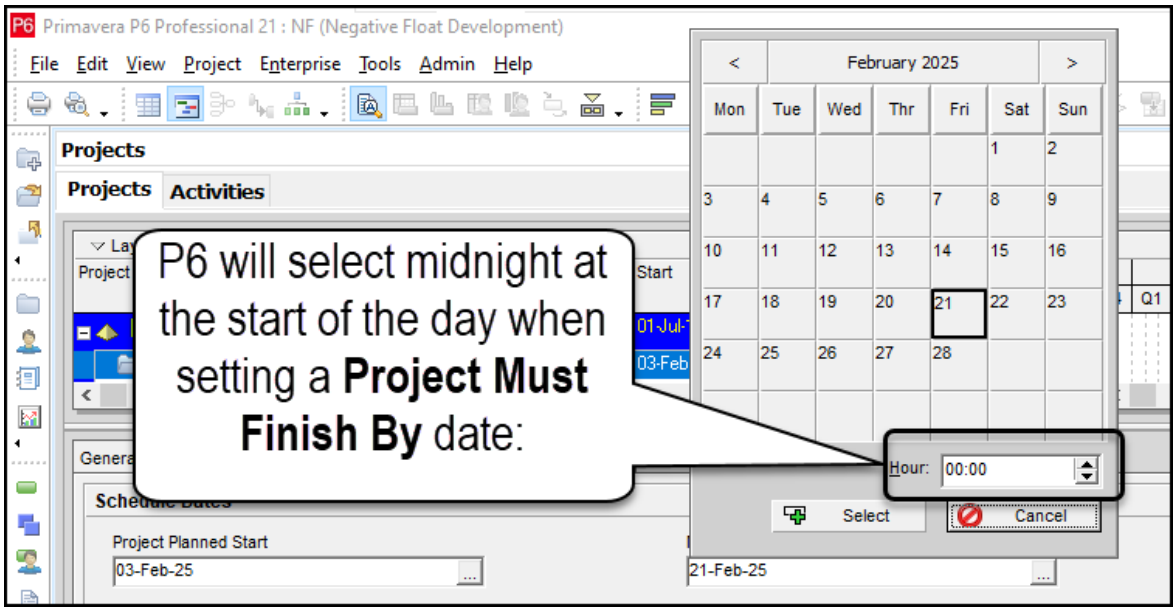
Activity ID	Primary Constraint	Primary Constraint Date	Finish	Late Finish	Total Float
Negative Float Development					
A1000			07-Feb-25 16:00	06-Feb-25 16:00	-1d
A1010			14-Feb-25 16:00	13-Feb-25 16:00	-1d
A1020			21-Feb-25 16:00	20-Feb-25 16:00	-1d
A1030	Finish On or Before	21-Feb-25 00:00	21-Feb-25 16:00*	20-Feb-25 16:00	-1d

P6 Version 21 now shows the time in the **Date Picker Box** which helps to resolve this issue and this versionseems less prone to setting constraint times at midnight at the start of the day:

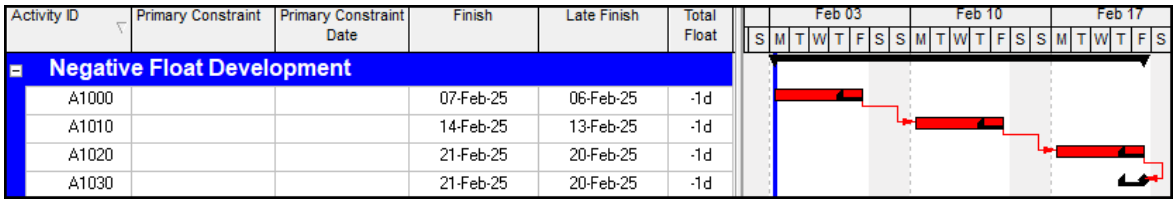


5.2 *Project "Must Finish By" Date Without Displaying the Time*

Setting a **Project Must Finish by Date** without showing the time will also set the P**roject Must Finish Time** at midnight, the picture below show that P6 will select midnight at the start of the day when setting a **Project Must Finish By** date:



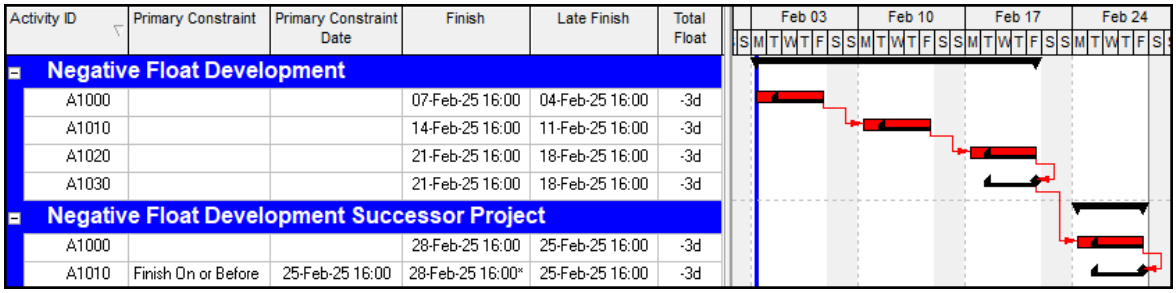
This again will create Negative Float when the **Project Must Finish By** date is set at the same date as the calculated finish date but at Midnight at the start of the day.



Activity ID	Primary Constraint	Primary Constraint Date	Finish	Late Finish	Total Float
Negative Float Development					
A1000			07-Feb-25	06-Feb-25	-1d
A1010			14-Feb-25	13-Feb-25	-1d
A1020			21-Feb-25	20-Feb-25	-1d
A1030			21-Feb-25	20-Feb-25	-1d

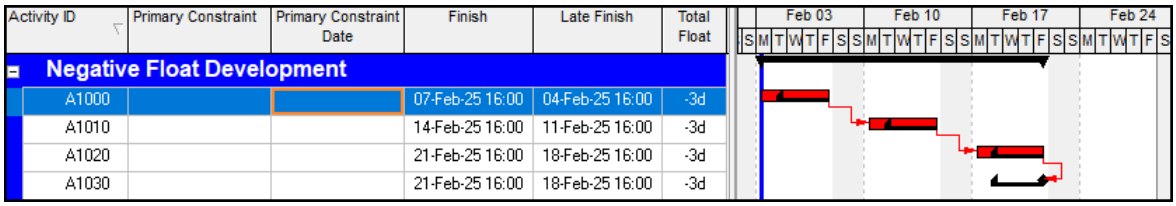
5.3 *External Relationships*

When a project has link to a project with successors activities that have a constraint the negative float will be reflected in the predecessor project's activities:



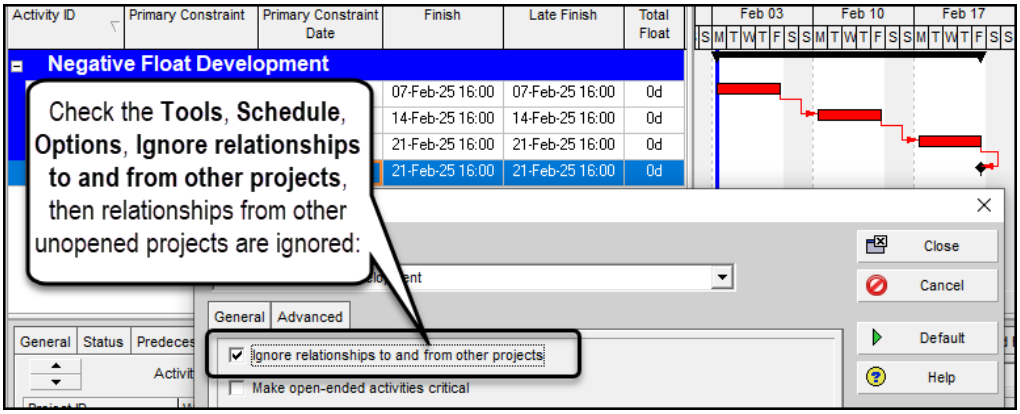
Activity ID	Primary Constraint	Primary Constraint Date	Finish	Late Finish	Total Float
Negative Float Development					
A1000			07-Feb-25 16:00	04-Feb-25 16:00	-3d
A1010			14-Feb-25 16:00	11-Feb-25 16:00	-3d
A1020			21-Feb-25 16:00	18-Feb-25 16:00	-3d
A1030			21-Feb-25 16:00	18-Feb-25 16:00	-3d
Negative Float Development Successor Project					
A1000			28-Feb-25 16:00	25-Feb-25 16:00	-3d
A1010	Finish On or Before	25-Feb-25 16:00	28-Feb-25 16:00*	25-Feb-25 16:00	-3d

When the project is opened on its own the Negative Float is still calculated:



Activity ID	Primary Constraint	Primary Constraint Date	Finish	Late Finish	Total Float
Negative Float Development					
A1000			07-Feb-25 16:00	04-Feb-25 16:00	-3d
A1010			14-Feb-25 16:00	11-Feb-25 16:00	-3d
A1020			21-Feb-25 16:00	18-Feb-25 16:00	-3d
A1030			21-Feb-25 16:00	18-Feb-25 16:00	-3d

But if you check the **Tools**, **Schedule**, **Options**, **Ignore relationships to and from other projects**, then relationships from other unopened projects are ignored:

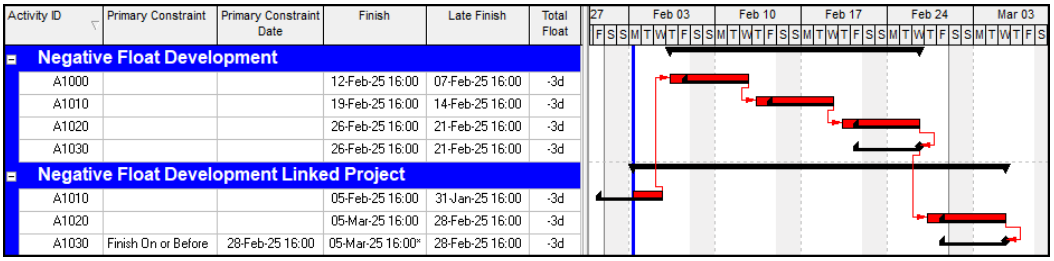


5.4 External Constraints

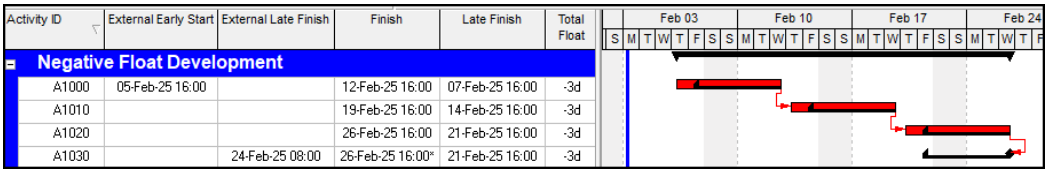
When a project is exported and imported into another database the missing external relationships are replaced with **External Early Start** and **External Late Finish** constraints which will create negative float:

The project below had the **Negative Float Development Project** exported and then imported into another database.

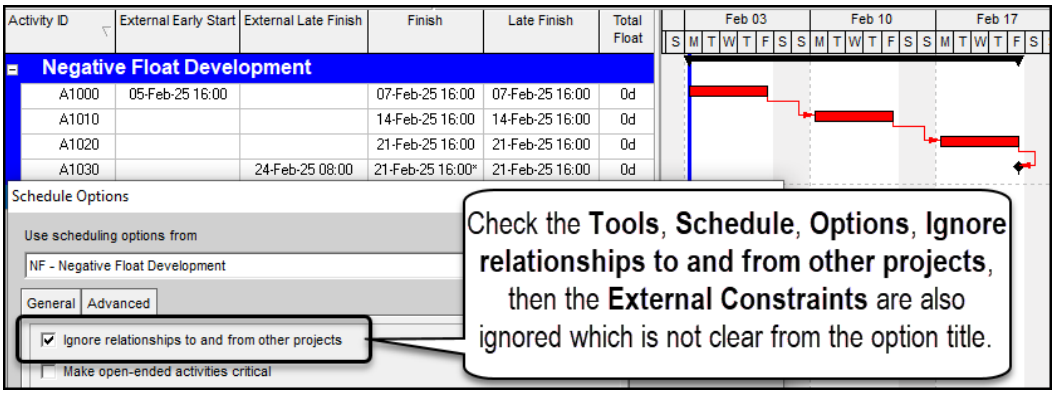
Before exporting:



After importing into another database, the **External Constraints** will create Negative Float:



The **External Constraints** may be deleted but if you check the **Tools**, **Schedule**, **Options**, **Ignore relationships to and from other projects**, then the **External Constraints** are also ignored which is not clear from the option title:



6 Unexpected Reasons for Negative Float

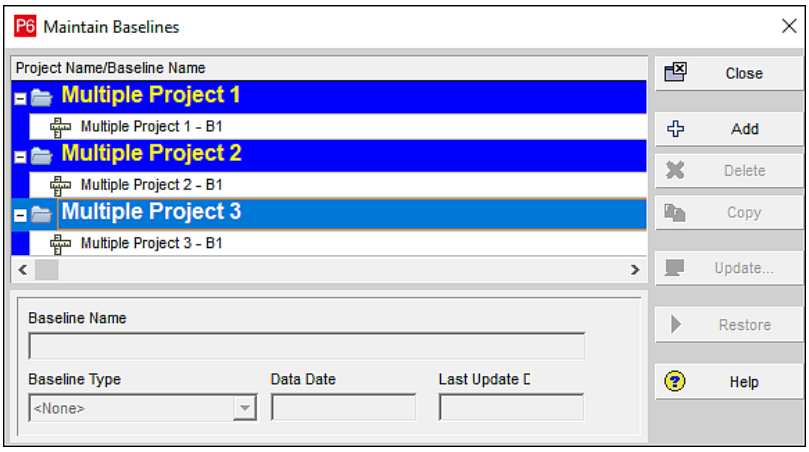
6.1 Setting Multiple Baselines

When you open multiple projects and set the baselines for all the projects then restoring these baseline projects will create ghost relationships and the restored projects and current projects may not calculate correctly and may create Negative Float in any of the projects. The text below is an extract from my P6 books explaining the issue and the fix.

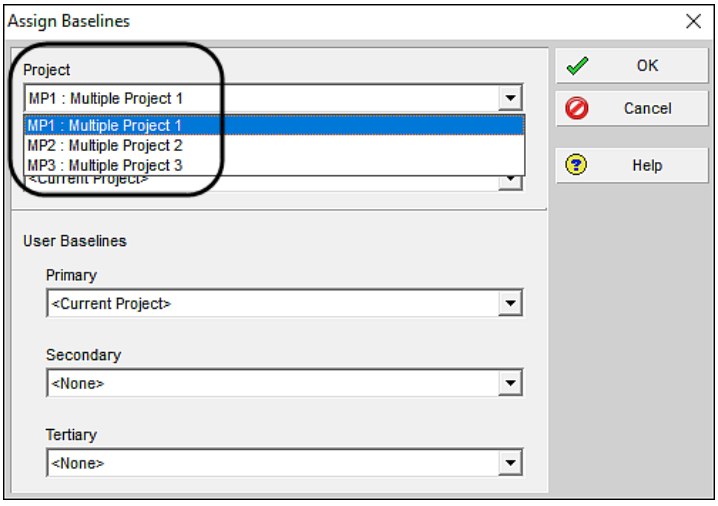
6.1.1 Setting Baselines for Multiple Projects

The following process is **NOT RECOMMENDED** because issues covered next when restoring baselines set this way. The Baselines may be set for all the projects using the **Maintain Baselines** form (when multiple projects are open) and the **Assign Baselines** form. The following picture show the process of setting multiple project baselines:

- Open the **Maintain Baselines** form by selecting **Project**, **Maintain Baselines…**:
  - Either all projects may be selected and a copy of all projects set as the Baselines at one time, or
  - Other current projects may be converted from the database one at a time.
- Select Add to open the **Add New Baseline** form and create the new baselines,



- Select **Project**, **Assign Baselines…** to open the **Assign Baselines** form and select one project at a time to assign the baselines.



Remember, a **User Baseline** set by one user will not be displayed when another user opens the project. The **<Current Project> Baseline** displays the **Planned Dates** from the current schedule and will be shown as a baseline.

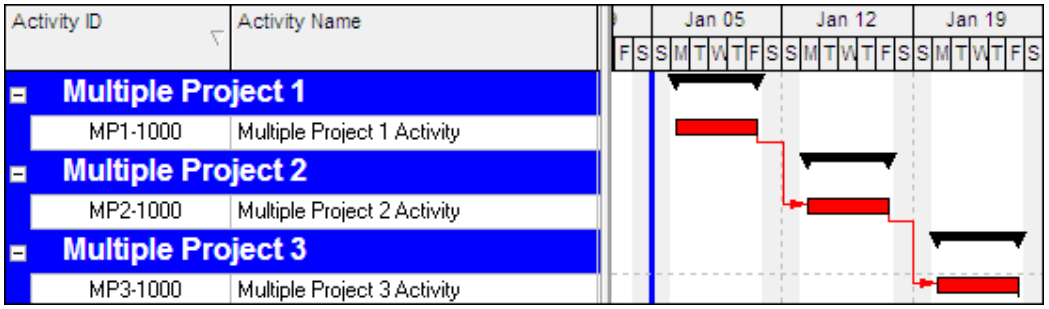
6.1.2 Restoring Baselines for Multiple Projects

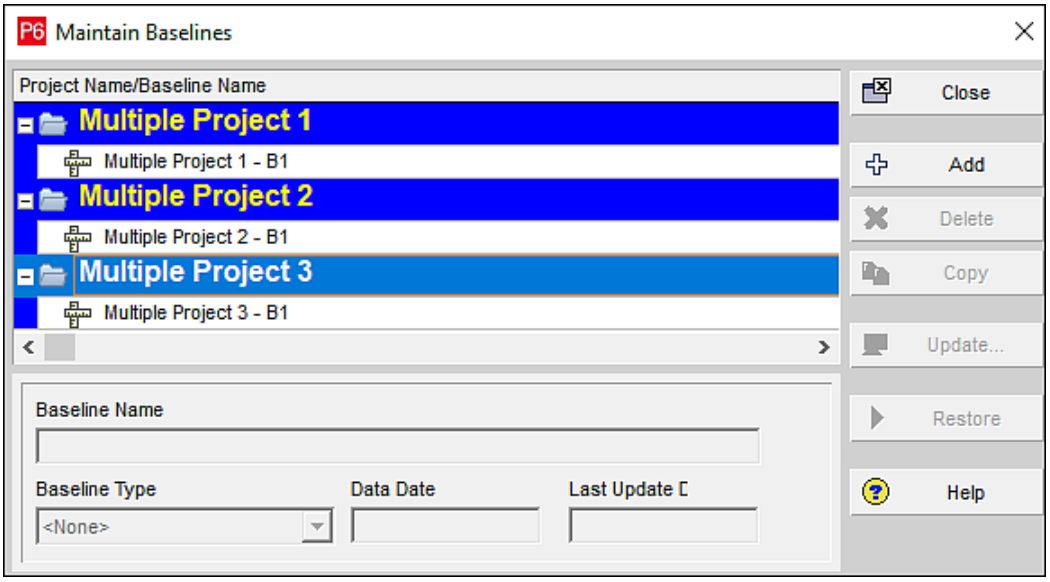
Schedulers often wish to restore baselines to inspect or review the original schedule.

The process using **Save a copy of the current project as a new baseline** identified in the previous page results in one interesting issue when Baseline projects are restored. The software creates **Ghost Relationships** between the Current Schedules and Baseline schedules which must be avoided because there is a high risk that neither the Baseline nor Current projects will calculate correctly once Multiple Project Baselines are restored.

The example below explains what happens when three simple projects are baselined together:

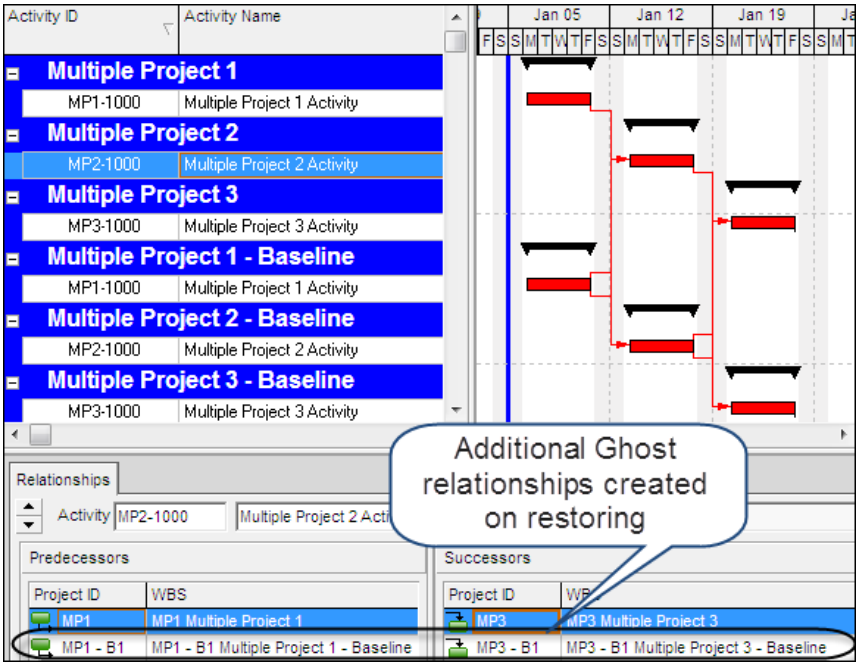
- The three projects were opened together and baselined and restored:



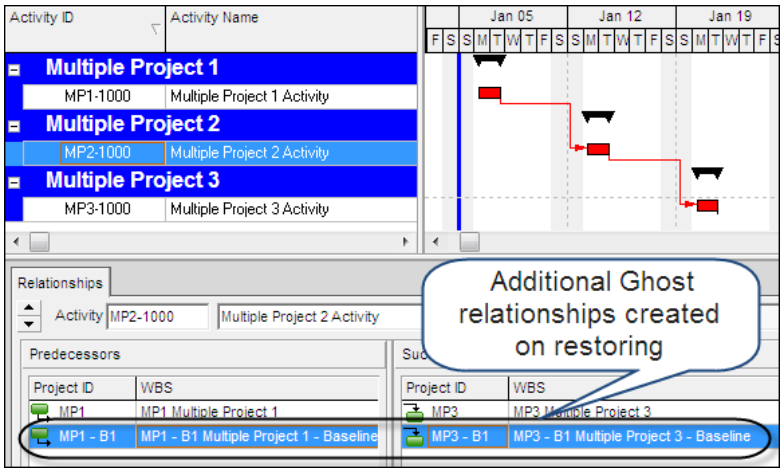


- The baselines were unlinked and restored,

- When the current and baseline projects are opened together there are unwanted **Ghost Relationships** created by the software, without warning, between the Current and Baseline projects:



- When the current projects are opened on their own and activity durations shortened you will see that the schedule does not calculate correctly because of the **Ghost Relationships**:



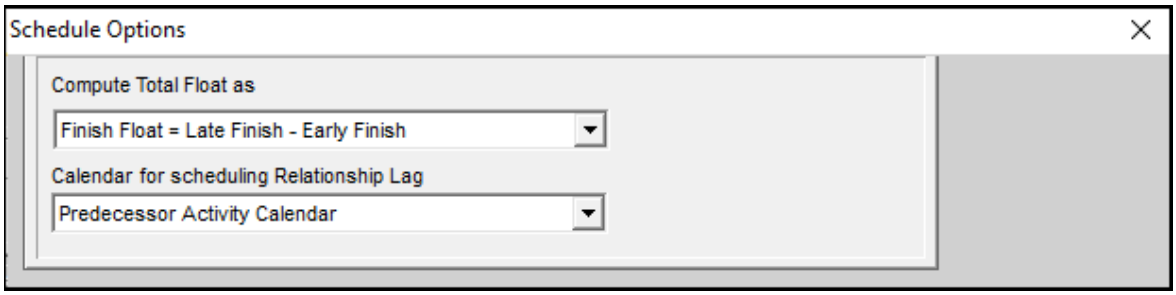
Therefore, if you wish your baseline projects to maintain the relationships to other baselined projects only and not have **Ghost Relationships** created with the current projects when the multiple current projects with relationships amongst them are baselined, then you must:

- Open the **Projects Window**,
- Copy the multiple projects in this view P**rojects Window**,
- Then set the baselines using the **Convert another project** to a new baseline of the current project option in the **Maintain Baseline** form.

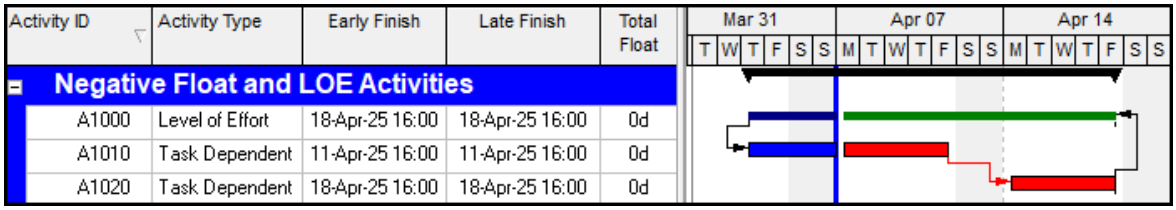
Now if the baselined projects are restored there will be no **Ghost Relationships** created.

6.2 Inprogress LOE Activity

When an LOE activity has progress and the **Schedule Options** are the **Default**:

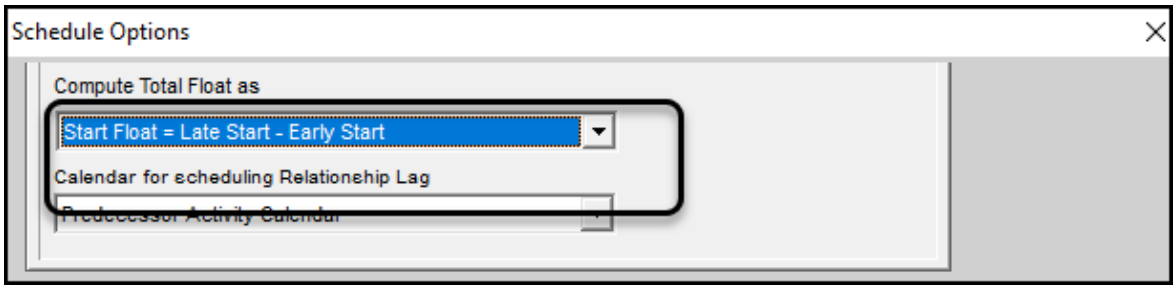


There is no Negative Float on LOE activities:

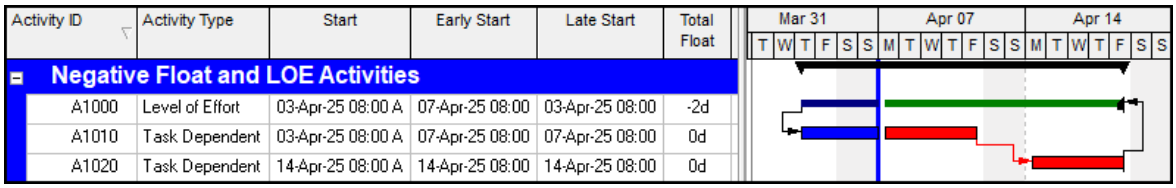


Activity ID	Activity Type	Early Finish	Late Finish	Total Float
Negative Float and LOE Activities				
A1000	Level of Effort	18-Apr-25 16:00	18-Apr-25 16:00	0d
A1010	Task Dependent	11-Apr-25 16:00	11-Apr-25 16:00	0d
A1020	Task Dependent	18-Apr-25 16:00	18-Apr-25 16:00	0d

But if the **Schedule**, **Options** for **Compute Total Float as bare** are changed to **Strat Float = Late Start – Early Start**:



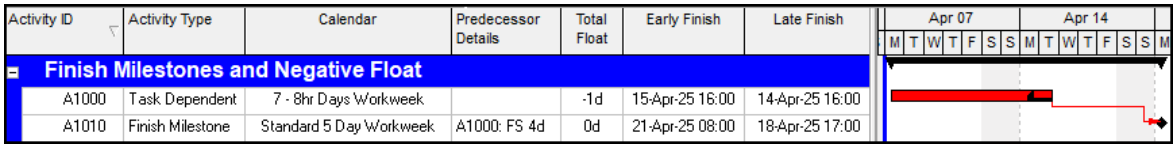
Then Negative Float is calculated on the LOE activity although the Late Start and Start are the same, but the Early Start is actually the Remaining Early Start and thus the Negative Float:



Activity ID	Activity Type	Start	Early Start	Late Start	Total Float
Negative Float and LOE Activities					
A1000	Level of Effort	03-Apr-25 08:00 A	07-Apr-25 08:00	03-Apr-25 08:00	-2d
A1010	Task Dependent	03-Apr-25 08:00 A	07-Apr-25 08:00	07-Apr-25 08:00	0d
A1020	Task Dependent	14-Apr-25 08:00 A	14-Apr-25 08:00	14-Apr-25 08:00	0d

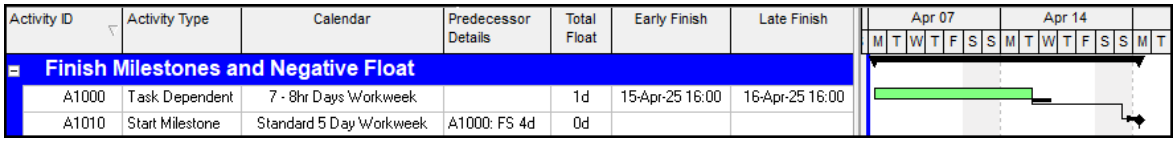
6.3 *Finish Milestones and Lags*

There has been a longstanding issue with Finish Milestones with a predecessor that has a Lag and another calendar which often calculate Negative Float:



Activity ID	Activity Type	Calendar	Predecessor Details	Total Float	Early Finish	Late Finish
Finish Milestones and Negative Float						
A1000	Task Dependent	7 - 8hr Days Workweek		-1d	15-Apr-25 16:00	14-Apr-25 16:00
A1010	Finish Milestone	Standard 5 Day Workweek	A1000: FS 4d	0d	21-Apr-25 08:00	18-Apr-25 17:00

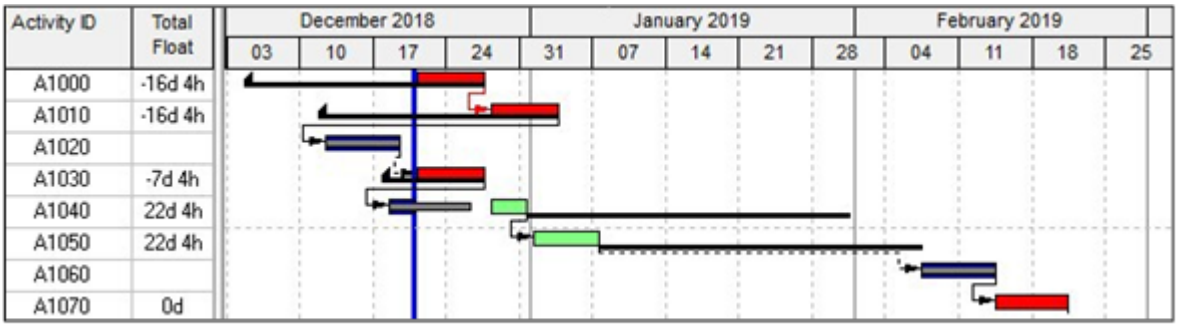
The issue can be resolved by changing the Finish Milestone to a Start Milestone:



Activity ID	Activity Type	Calendar	Predecessor Details	Total Float	Early Finish	Late Finish
Finish Milestones and Negative Float						
A1000	Task Dependent	7 - 8hr Days Workweek		1d	15-Apr-25 16:00	16-Apr-25 16:00
A1010	Start Milestone	Standard 5 Day Workweek	A1000: FS 4d	0d		

6.4 *Schedule Options and Circular Relationships*

When the **Scheduling**, **Option, When scheduling progressed activities use** is set to **Actual Dates** then often Negative Float is generated and also **Circular Relationships** may not be identified:



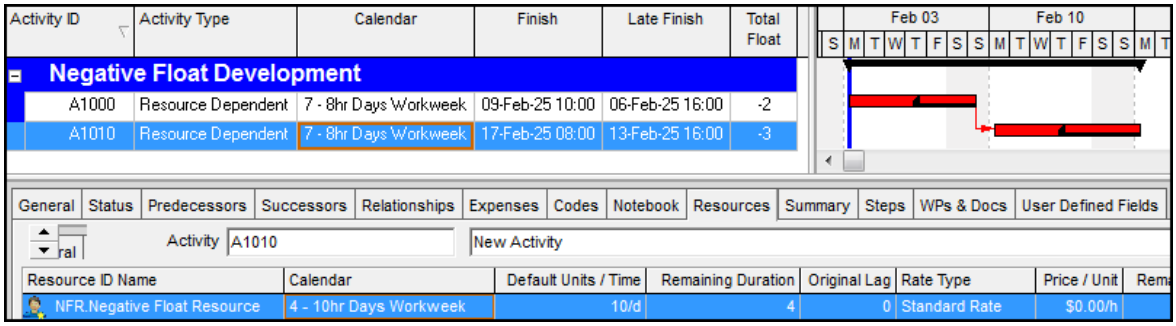
Activity ID	Total Float
A1000	-16d 4h
A1010	-16d 4h
A1020	
A1030	-7d 4h
A1040	22d 4h
A1050	22d 4h
A1060	
A1070	0d

Please read my article Understanding the P6 Scheduling Options "When scheduling activities use, Retained Logic, Progress Override or Actual Dates" by clicking on this link:

http://eastwoodharris.com/DL/TP/190416_Understanding_P6_Schedule_Options_When_scheduling_activities_use.pdf

6.5 *Resource Dependant Activities and Calendars*

When an activity is made **Resource Dependent** and has calendars that are different to the assigned resources Negative Float may be exhibited:



Activity ID	Activity Type	Calendar	Finish	Late Finish	Total Float
Negative Float Development					
A1000	Resource Dependent	7 - 8hr Days Workweek	09-Feb-25 10:00	06-Feb-25 16:00	-2
A1010	Resource Dependent	7 - 8hr Days Workweek	17-Feb-25 08:00	13-Feb-25 16:00	-3

General | Status | Predecessors | Successors | Relationships | Expenses | Codes | Notebook | Resources | Summary | Steps | WPs & Docs | User Defined Fields

Activity A1010 New Activity

Resource ID Name	Calendar	Default Units / Time	Remaining Duration	Original Lag	Rate Type	Price / Unit
NFR.Negative Float Resource	4 - 10hr Days Workweek	10/d	4	0	Standard Rate	$0.00/h

Paul E Harris
Director Eastwood Harris Pty Ltd
16 August 2022

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