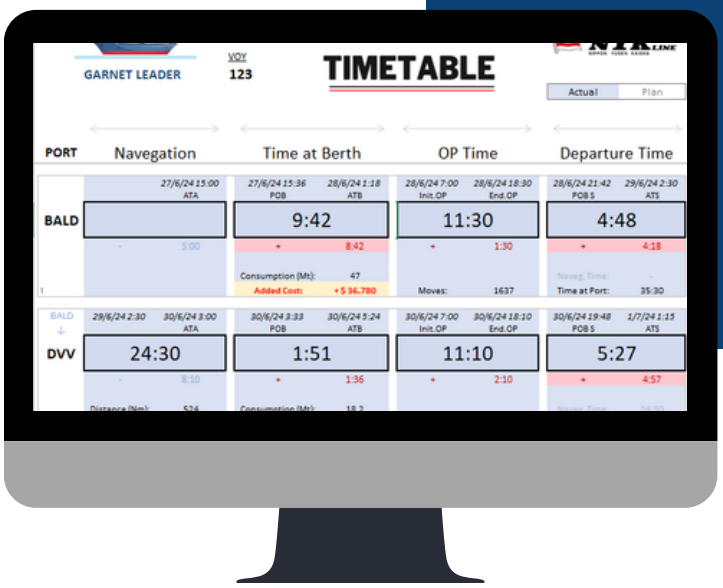
TIMETABLE



TECH GUIDE

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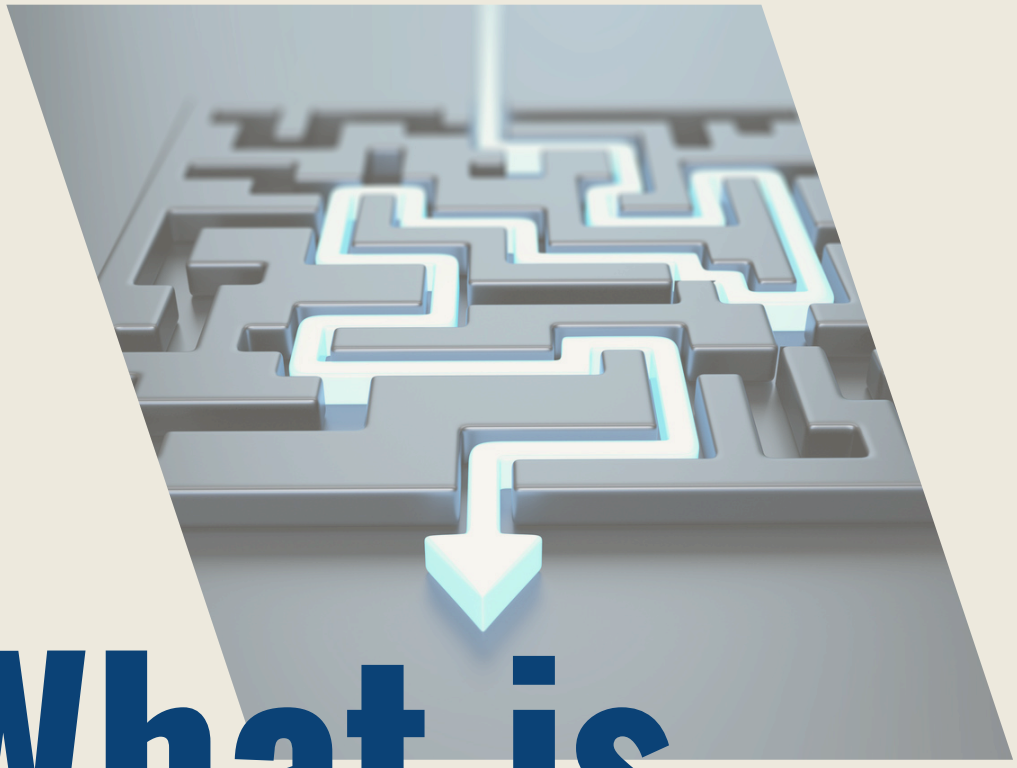
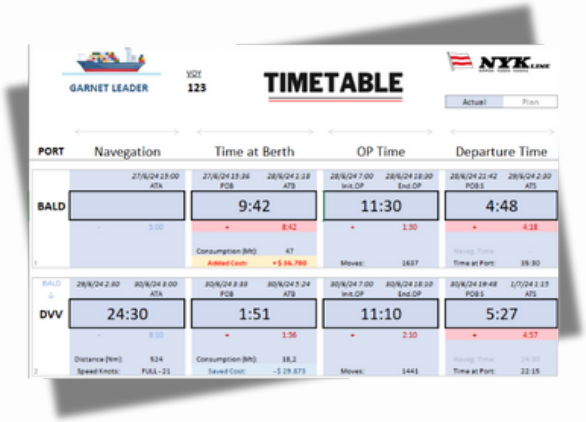
Contents



What is the TT?



The Timetable is a time and cost simulator that keeps a complete voyage log, making it possible to have an accurate analysis of partial and overall time spent as well as fuel consumption. It also includes voyage status - On or Behind Schedule - and more detailed port call information such as number of movements by operation, ship speed, consumption and costs, as well as simulations.

Structure

INITIALIZATION AND SETUP

- **Params:** Constant and Voyage Params are added to their respective tabs

PLAN

- **Base Zero:** Planned datetimes are manually entered in Base Zero for all stages of each port call throughout the entire voyage.

ACTUAL

- **Base Real:** As the voyage progresses, actual datetimes are gradually added.

PROJECTION

- **Timetable:** Strips in blue showing what has been real information so far and in white showing what is being projected from the last actual datetime entered.

SIMULATION

- **Timetable:** Speed, Movements and Datetimes for ETB and ETS can be simulated in each of the projected strips/calls.

ADJUSTED PROJECTION

- **Timetable:** As simulations are entered to specific calls, the subsequent ones are adjusted accordingly.

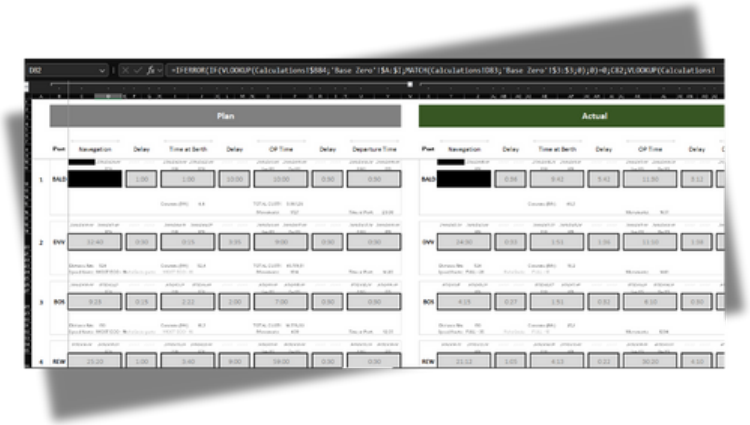
CASCADING EFFECT

See page 9

FINAL REPORT

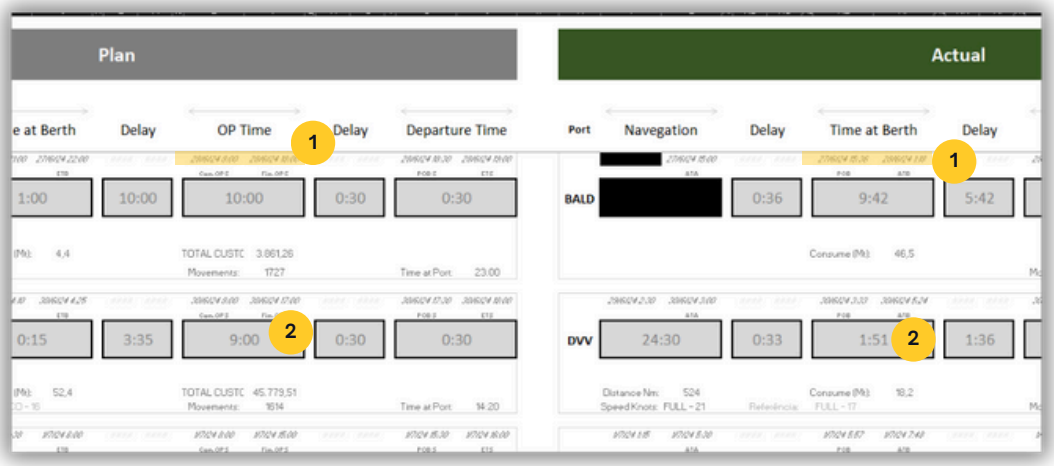
- **Report:** Final report showing voyage deltas for time and costs, as well as CII information.

Calculations Tab



The Calculations tab is the engine of the Timetable solution, where all planned, actual, and simulated data are processed to generate projections and calculate fuel consumption, costs, and CII scores. It integrates and consolidates data, driving the visual outputs and reports in the Timetable. Key sections handle plan and actual data, simulations, projections, and consumption, all linked to ensure accurate and dynamic updates throughout the voyage.

Logic behind 'Plan' and 'Actual' sections:



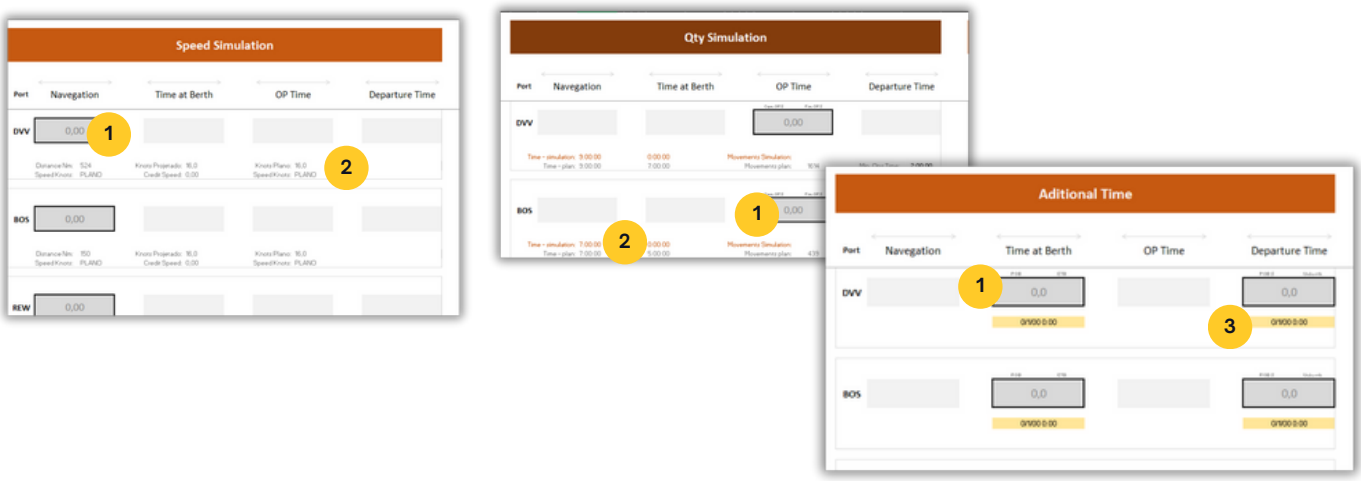
1. Datetimes being **fetched from the Plan**, Base Zero, through **lookup formulas**

2. **Number of hours** in that specific stage of the port call by **subtracting** the initial datetime for that stage from the ending datetime.

Calculations Tab

Logic behind '**Simulation**' sections:

The simulation sections in the Calculations tab allow users to adjust vessel speed, operation movements, and arrival/departure times for upcoming port calls. These simulations modify the planned data and cascade through subsequent stages, updating projections dynamically to reflect potential changes in the voyage schedule.
Simulations are manually entered on the Timetable tab.

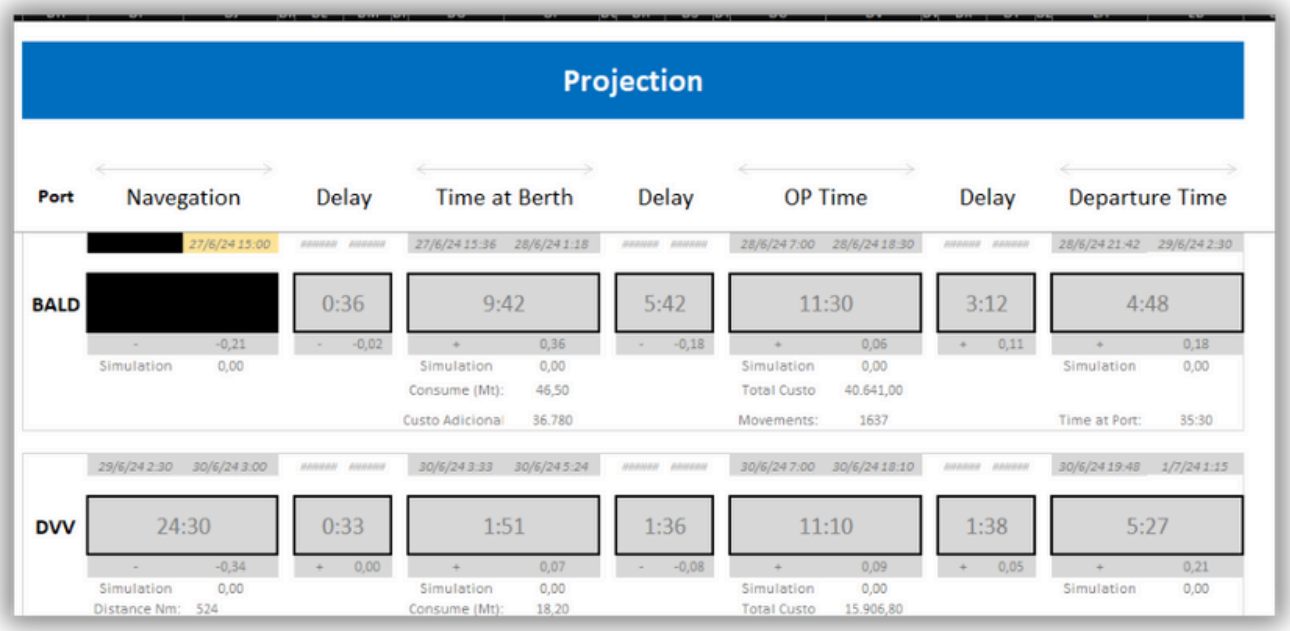


1 **Number of hours** to be **added or subtracted**, if it's negative, from the one that is currently the case, **as per the Plan.**

2 Calculations to support the **translation** of simulated values into **hours.**

Calculations Tab

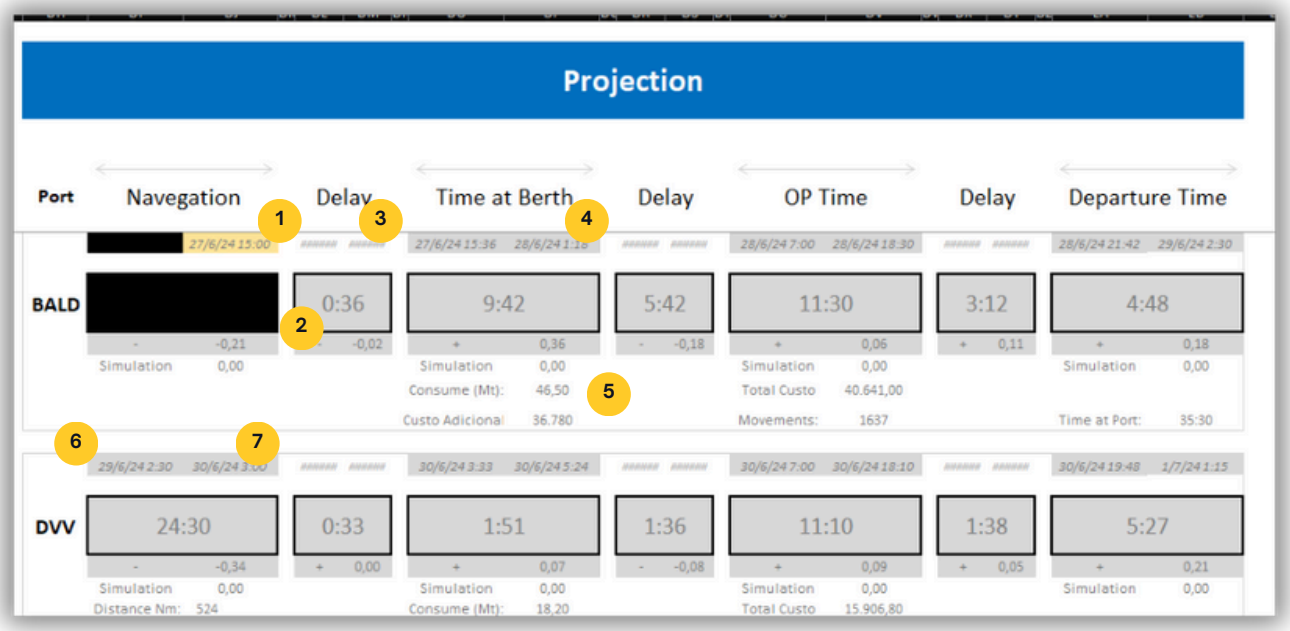
About the '**Projection**' section:



The Projection section of the Calculations tab is **the core that drives the Timetable report**, with each strip in the Timetable **directly referencing this section.**
It determines the displayed data by **checking for actual entries; if none exist, it combines planned data with any applicable simulations.** The **cascading effect** ensures that any change in one port call's timing affects **all subsequent calls**, providing an up-to-date and accurate projection of the voyage schedule.

Calculations Tab

Logic behind '**Projection**' section:



1. Checks whether there is **actual data** for the first strip. If there is, **Actual data will be prioritized.**

2. Checks whether there is an actual calculated delay in the **Actual section** to **prioritize** it. If there isn't, it will **default to delay from Plan.**

3. **Adds delay to the datetime** of the beginning of the voyage to serve as the **datetime for beginning of the next stage.**

4. Datetime as a result of its **previous** + **stage duration in hours.**

5. Consumption and cost calculations **prioritizing actual data** and defaulting to plan if Actual is 0.

6. Last datetime of the previous strip to **set the ground for the subsequent strips.**

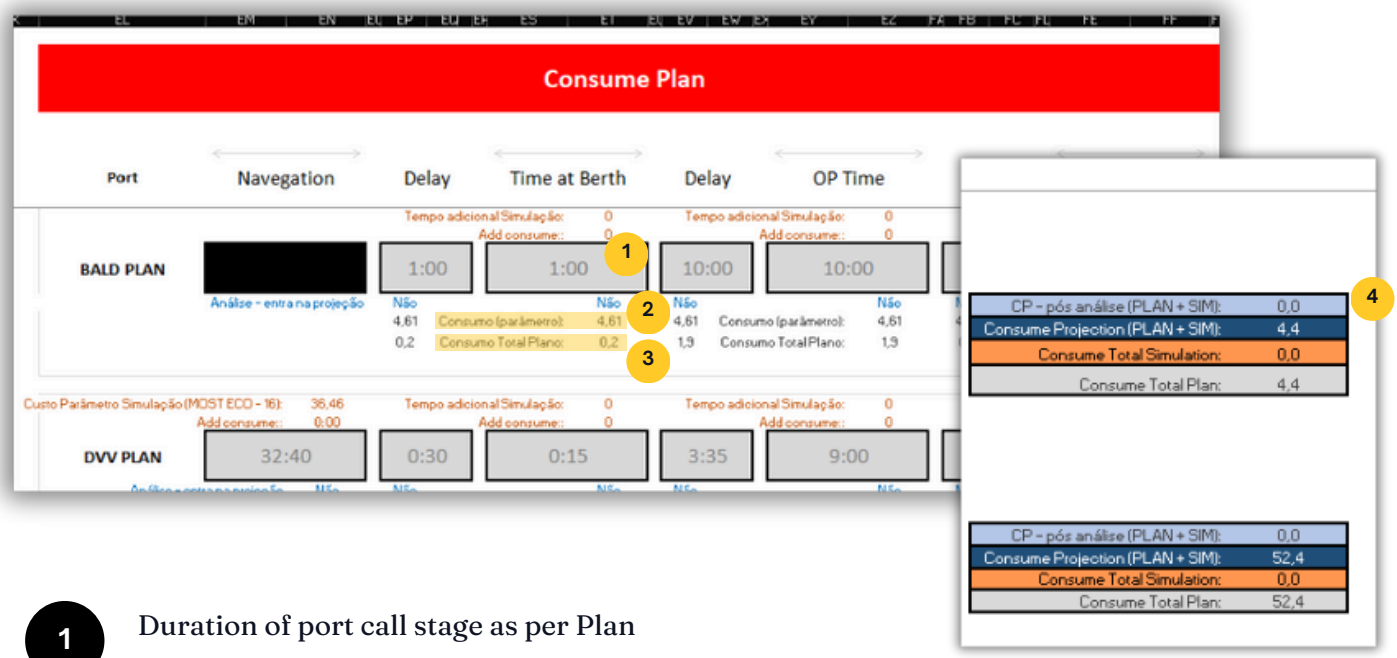
7. The **cycle repeats** having the last datetime of the previous strip as **basis**, hence the **cascading effect.**

Calculations Tab

Logic behind '**Consumption**' sections:

Plan:

The **Planned Consumption** section in the Calculations tab estimates fuel costs by calculating the **time spent during navigation and port calls**, using speed and fuel consumption data from the **Params_Voy tab.** It provides a detailed projection of fuel expenses based on the vessel's planned itinerary and speed, ensuring cost forecasts are accurate and aligned with the voyage plan.



1. Duration of port call stage as per Plan

2. Consumption parameter from Params_Voy tab

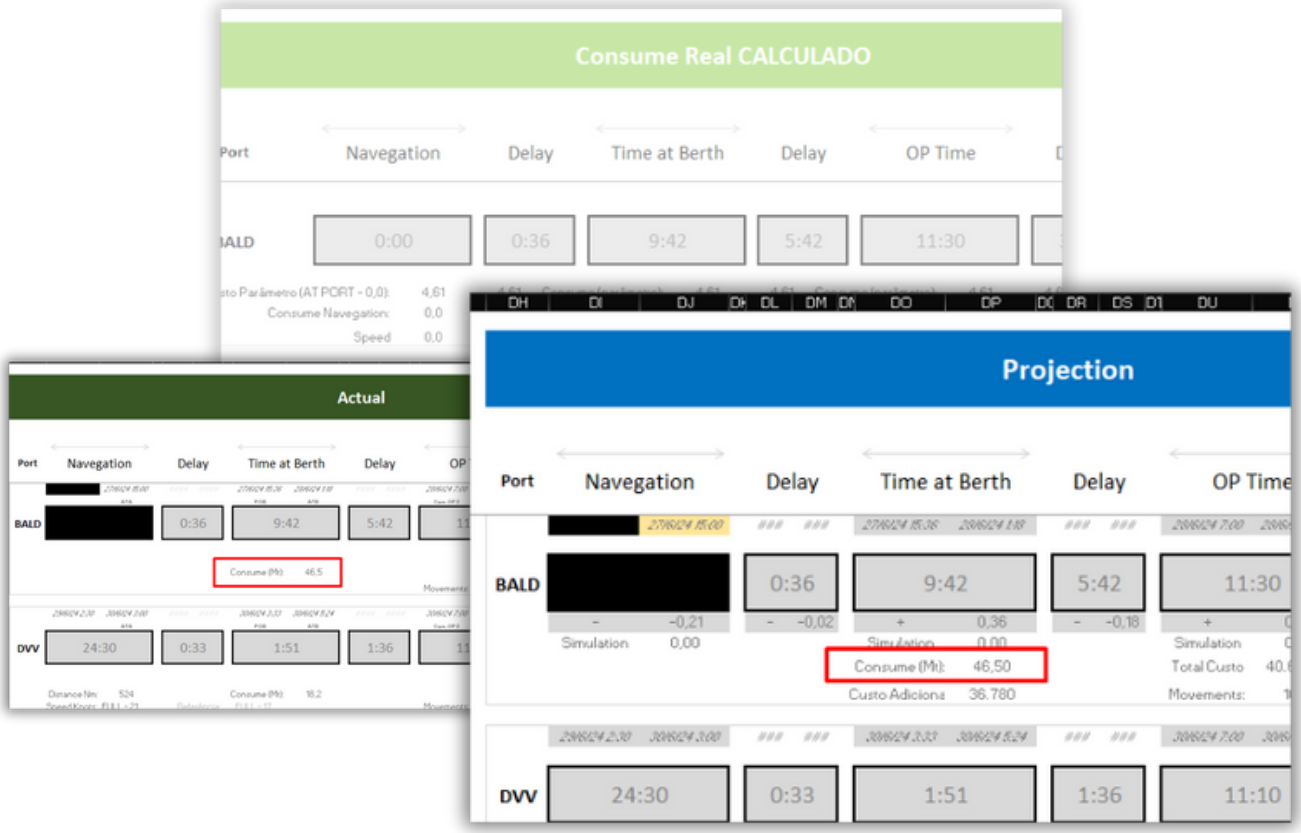
3. Consumption calculation based on parameterized cost and duration.

4. Consolidation of **planned consumption with simulations**, if any, to return a projected consumption. For this, simulations of vessel speed, movements and datetimes are **translated into how much more or less would be consumed.** This panel **feeds back the Projection section** which, in turn, will be presented on the Timetable report.

Calculations Tab

Logic behind '**Consumption**' sections:

Actual:



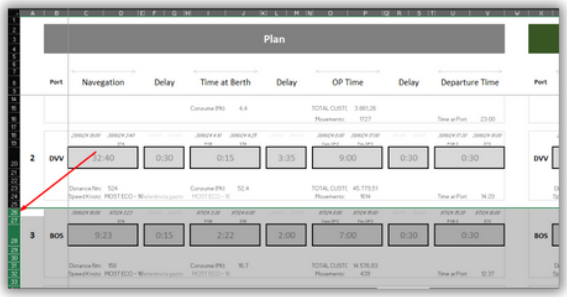
Although there is an actual consumption section in the Calculations tab, the actual consumption currently displayed in the Projection section, and consequently on the Timetable and final report, is **directly sourced from the data manually entered in the Base Real tab.** As the voyage progresses, users input actual port call information, including fuel consumption, which is then **reflected in the Projection section** to provide an accurate and up-to-date representation of the voyage's actual fuel usage.

Editing the Calculations tab

The Calculations tab in the Timetable solution is structured in strips, with each strip representing a port call. **Each strip is linked to the one before it, ensuring that changes in one port call cascade through to subsequent ones.** To make alterations to the formulas within this tab, **it is crucial to follow a specific sequence of steps** to avoid errors and ensure consistency across the entire dataset. Here's how you can do it:

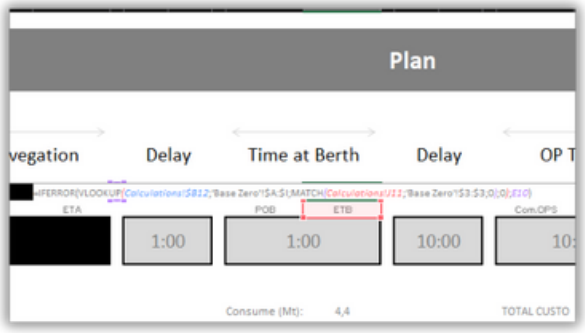
Step 1: Clearing Data from the Third Strip Down

- Begin by **clearing all data from the third strip** downward across all sections within the Calculations tab.
- To do this, select the entire range horizontally and downwards, starting from the third strip.
- Use the **Eraser feature** to clear the data. **Important:** Do not delete the rows during this process, as doing so will result in **#REF!** errors across all dependent cells in other tabs.



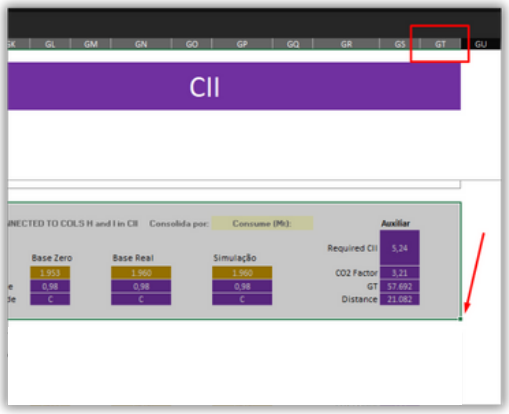
Step 2: Adjusting Formulas in the First and Second Strips

- Once the data from the third strip down has been cleared, make the necessary adjustments to the formulas in the **first and second strips.**
- Carefully review and **modify the formulas across all sections** (Plan, Actual, Speed Simulation, Quantity of Movements Simulation, Time Simulation, Projection, Planned Consumption, Actual Consumption, and CII sections).
- Ensure that any references within the formulas are **correctly locked using the F4 functionality** to maintain consistency when copying the formulas.



Step 3: Replicating the Adjusted Strips

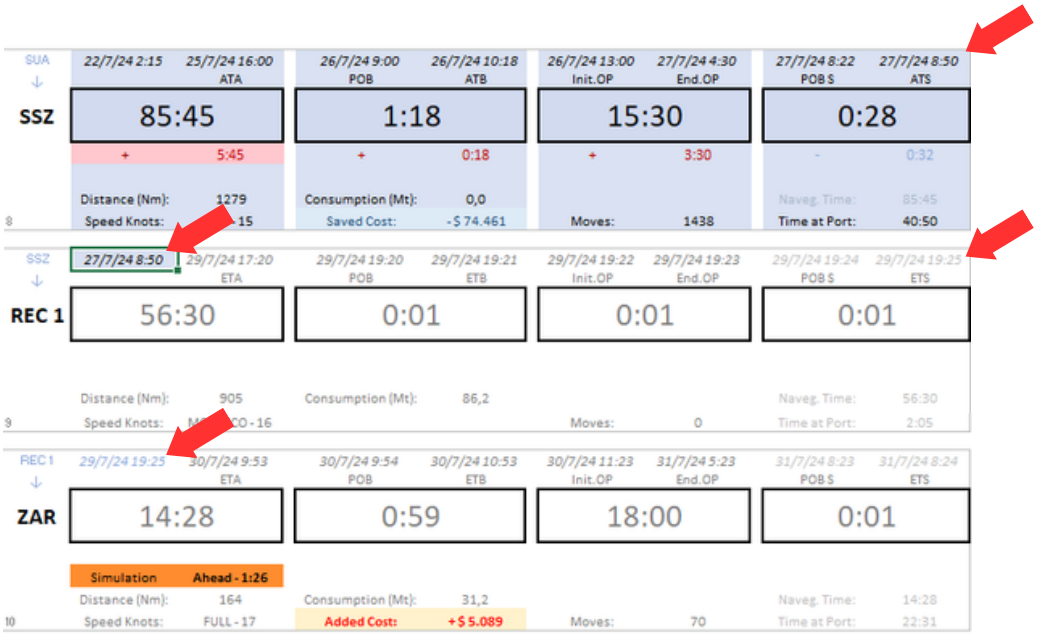
- After all necessary alterations have been made to the first and second strips, **select the entire second strip across all sections.**
- **Drag this strip down until row 288** to replicate the adjusted formulas across all **35 strips.**
- The **locked references will ensure that** as the strips are dragged down, the formulas automatically adjust to **reference the correct cells**, restoring the previously cleared port calls with the new adjustments.



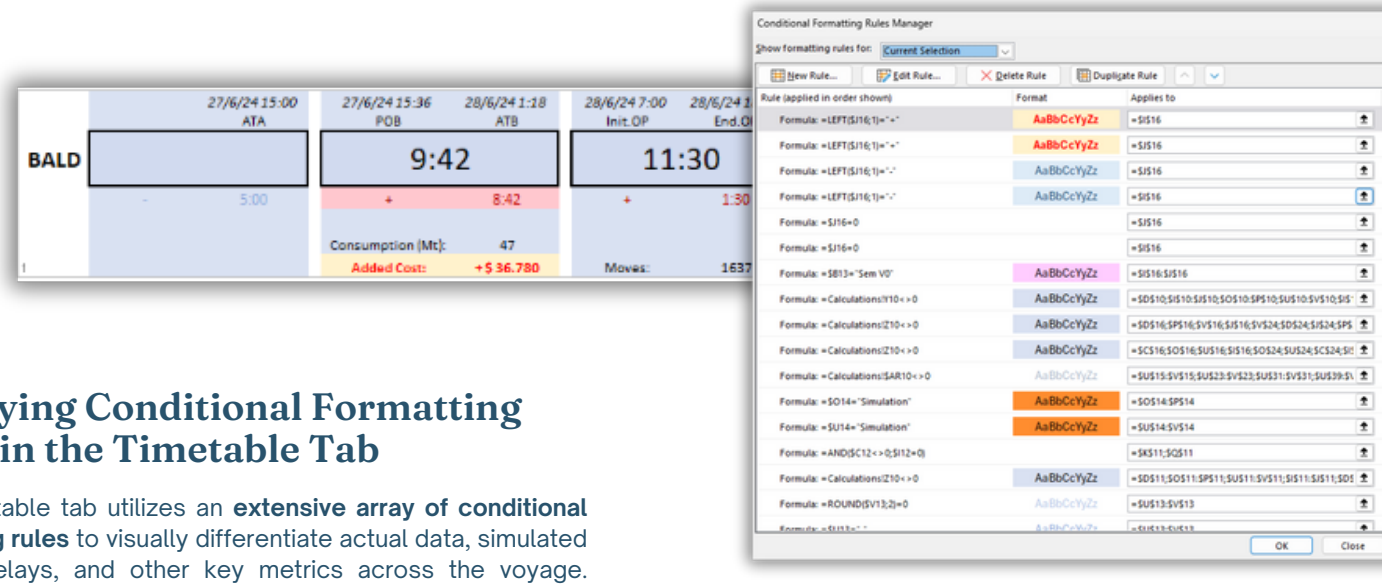
The Cascading Effect

The cascading effect in the Calculations tab refers to the sequential dependency where **each strip's calculations rely on the previous strip's output.**

Specifically, the **first datetime** in each strip (**ETA**) is calculated by **adding the navigation time to the final datetime of the preceding strip (ETS).**
Any changes—actual data, planned adjustments, or simulations—**propagate downstream**, **updating all subsequent port calls.** This ensures the timeline and related calculations (like fuel consumption and costs) consistently reflect earlier modifications, maintaining accuracy throughout the voyage.



Timetable Conditional Formatting



Modifying Conditional Formatting Rules in the Timetable Tab

The Timetable tab utilizes an **extensive array of conditional formatting rules** to visually differentiate actual data, simulated values, delays, and other key metrics across the voyage. These rules are crucial for quickly identifying important information, such as:

- Blue Strips: Indicating actual data entries.
- Orange Cells: Highlighting values that are products of simulation.
- Red Delay Cells: Signaling delays longer than 4 hours.

When modifications to these conditional formatting rules are necessary, it's important to follow a **structured process to ensure that the changes are applied consistently across all port call strips.** Here's the step-by-step procedure:

Step 1: Clear Data from the Third Strip Down

- Begin by **clearing all data from the third strip downward.**
- To do this, select the **entire range of the strip and downward** starting from the third strip.
- Use the **Eraser feature to clear the data.** Important: **Do not delete the rows**; this could cause **#REF!** errors across dependent cells and disrupt the totalizer panel.

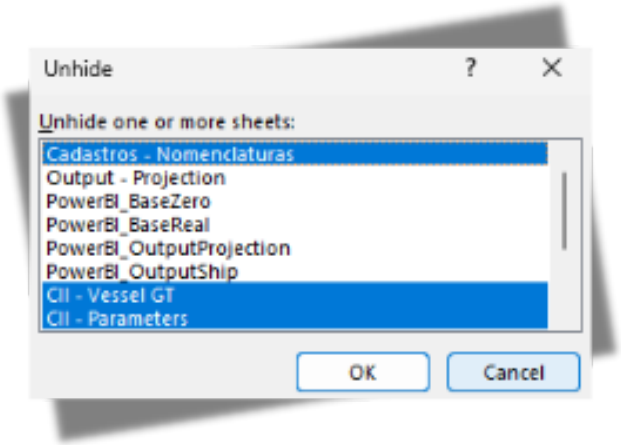
Step 2: Modify Conditional Formatting in the First and Second Strips

- With the lower strips cleared, proceed to **adjust the conditional formatting rules** in the first and second strips.
- Access the Conditional Formatting menu in Excel and make the necessary changes, such as altering color thresholds, modifying formulas that trigger formatting, or adding new rules.
- Ensure that the formatting changes are applied consistently across all relevant cells within these two strips.

Step 3: Replicate the Adjusted Strips

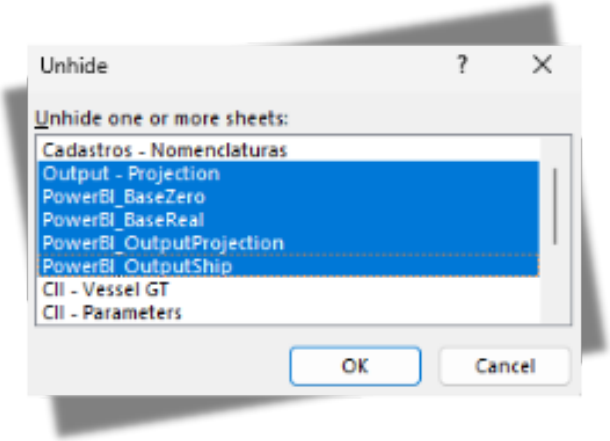
- After making the necessary adjustments to the first and second strips, **select the entire second strip.**
- **Drag this strip downward until you reach row 144.** This will replicate the formatting changes across all remaining strips, ensuring consistency in the conditional formatting.
- Caution: Row 144 is just above **the totalizer panel**, which should not be cleared or altered. Ensure that the **replication stops one row before this panel** to avoid any unintended changes.

Auxiliary Tabs



The Timetable includes hidden tabs dedicated to **CII background calculations and the registry of nomenclatures used across the solution.** The CII background calculations tab processes detailed data necessary for generating accurate Carbon Intensity Indicator (CII) scores and grades, **supporting the CII panels displayed in the report.** The nomenclature registry tab contains **standardized terms and labels used throughout the Timetable**.

PowerBI Tabs

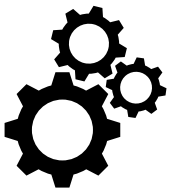


The Timetable also includes **hidden sheets** such as **"PowerBI_BaseZero" and "PowerBI_BaseReal,"** which serve as **datasets for a related PowerBI dashboard**.

These sheets are **fully automated and linked to Base Zero and Base Real**, but they have been treated to filter out unwanted values, ensuring that only clean and relevant data is imported into PowerQuery in PowerBI.

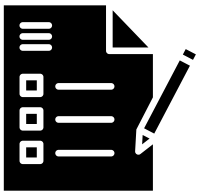
Flow Chart

Enter Parameters and Registry info.



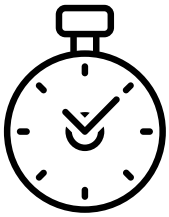
Params_Voy | Params_Constant

Enter planned datetimes



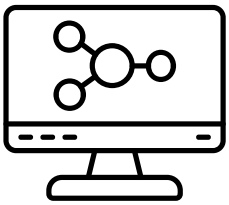
Base Zero

Enter actual datetimes as voyage progresses



Base Real

Run Simulations



Timetable

Analyze voyage progress on Timetable

Timetable

Analyze reports for managerial input

Report | CII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