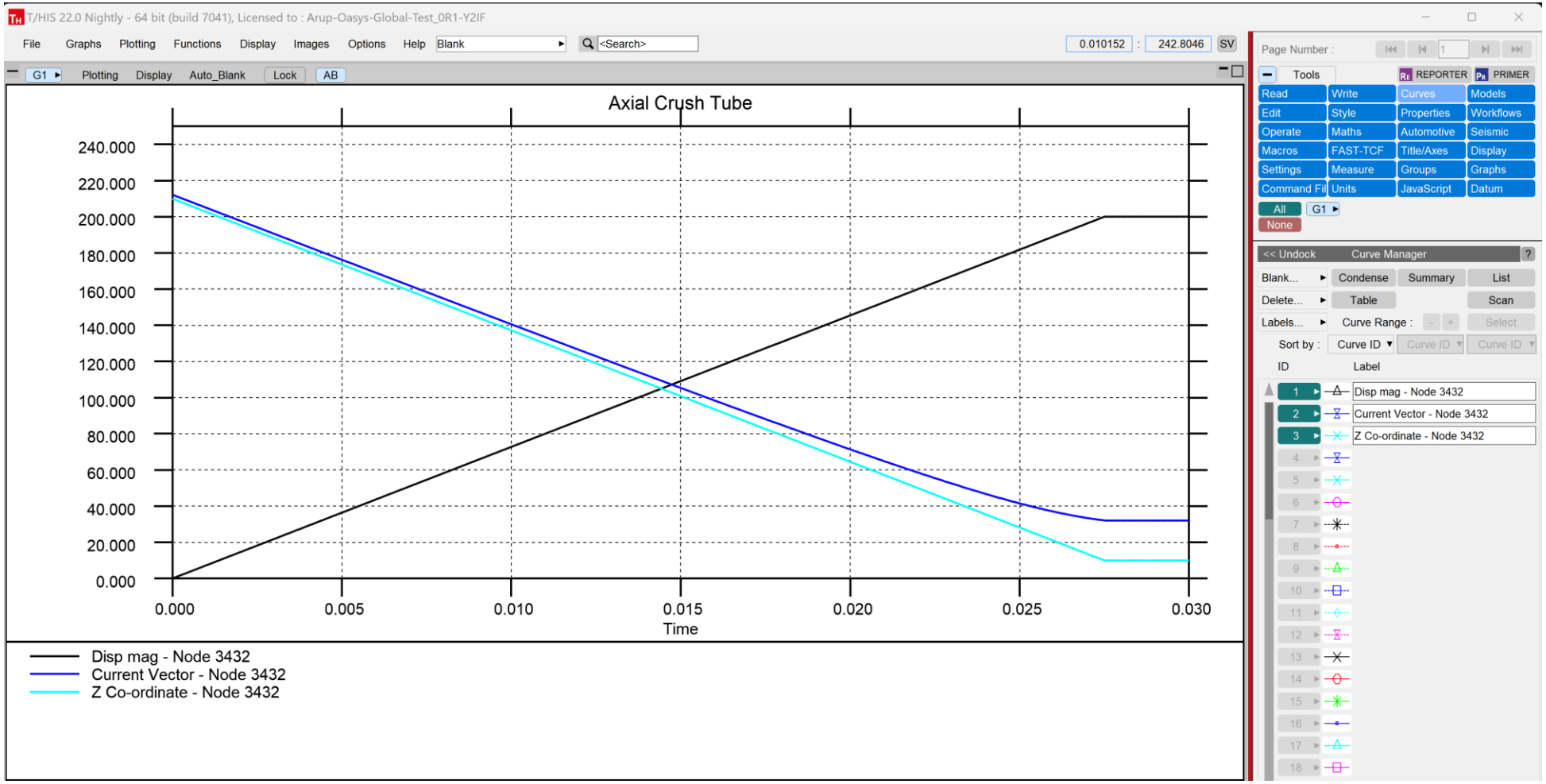
FAST - TCF

About FAST - TCF

- FAST-TCF is a scripting language for T/HIS, for use with automatic post-processing. Unlike Macros or JavaScript, the FAST-TCF input file can be automatically generated by T/HIS with a few clicks.
- A FAST-TCF script contains edited, the commands to setup and position multiple graphs, read in data, perform curve operations and generate output.
- It is a quick way to reproduce plots for similar models.
- Input files can be manually edited and scripts can be recorded by T/HIS.
- It can be used in batch mode to automatically post-process results.

Creating Scripts

- Creating a FAST-TCF script firstly requires creating the plot, formatting the plot as required; curve names, titles, axis, etc.



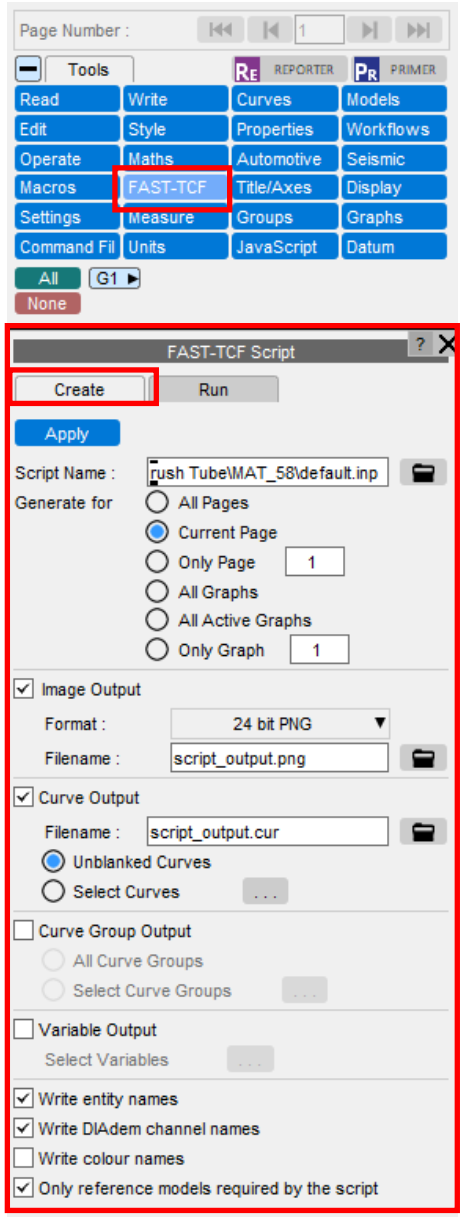
Creating Scripts

- To access the FAST-TCF menu, click the **FAST-TCF** button. Within the **FAST-TCF Script** menu, ensure that the **Create** menu is displayed, by clicking the **Create** button.

- Select the options required, which include; page/graph selection for the FAST-TCF script, Image Output, Curve Output, Curve Group Output and Variable Output.

- The FAST-TCF script name can be entered/edited in the **Script Name** text box and the file location can be chosen using the 🗀 icon.

- The script is saved as a *.inp file.



Play-back of Scripts

First, read in results from a model you want to play the script on.

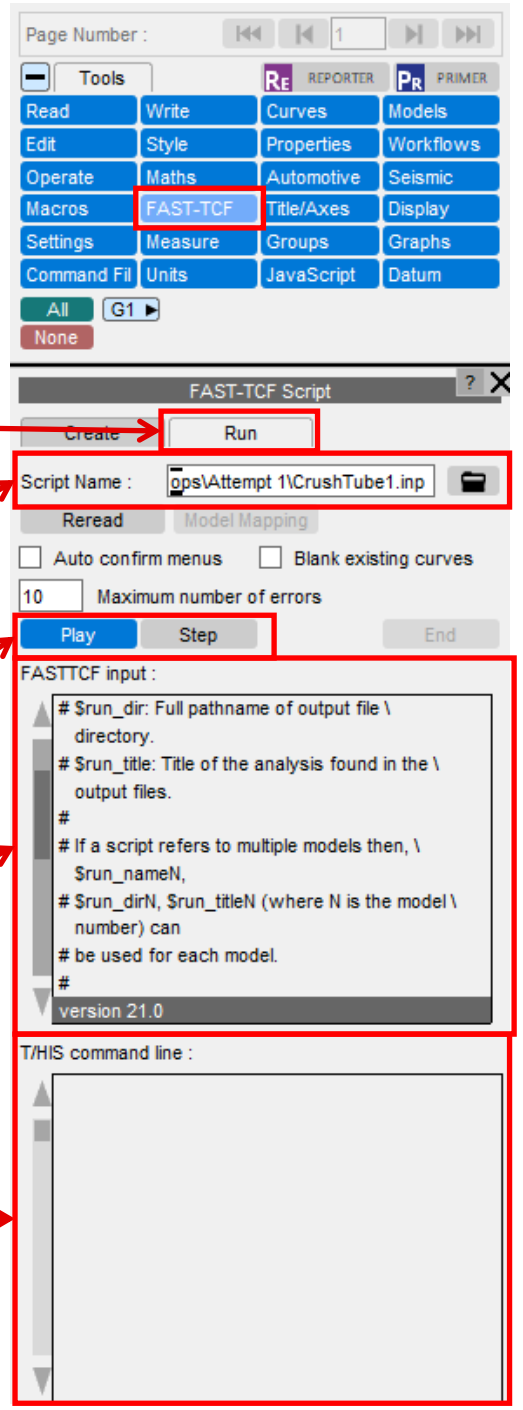
Saved scripts can be played back in the **Run** menu within the **FAST-TCF Script** menu. To play back FAST-TCF scripts, firstly read in a model (the model which the script is based on).

The script can be accessed by either typing in the name of the script in the **Script Name** text box or searching for the *.inp file using the icon.

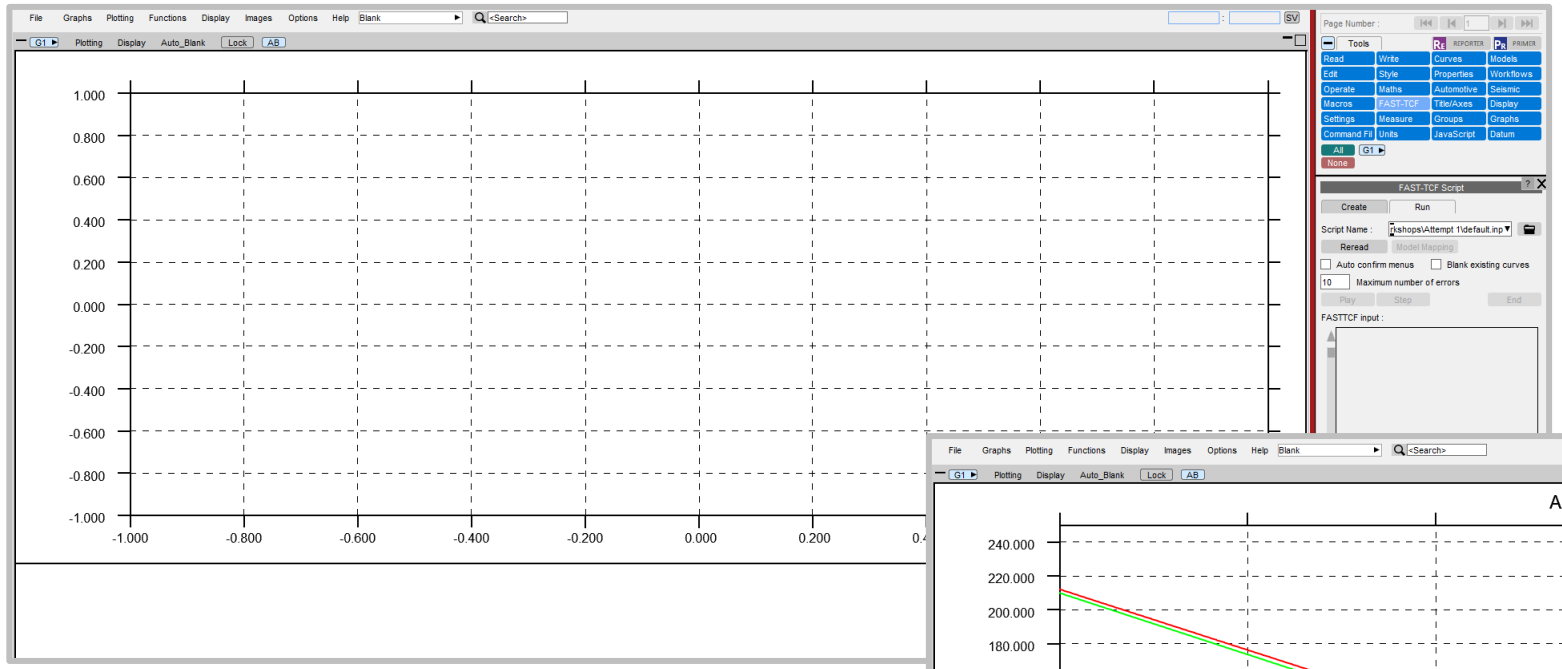
The script can be played in full or stepped through line by line.

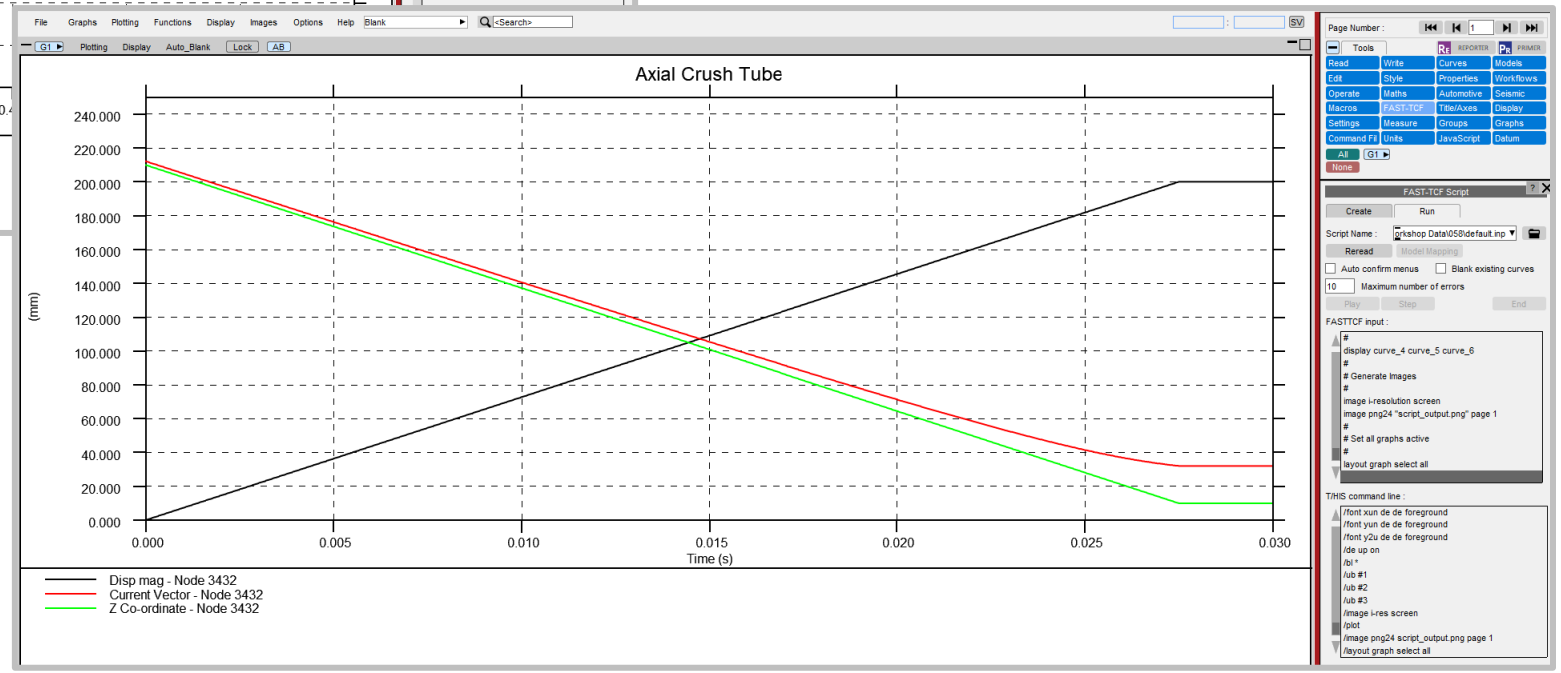
FAST-TCF Script.

Feedback in interpreter window.



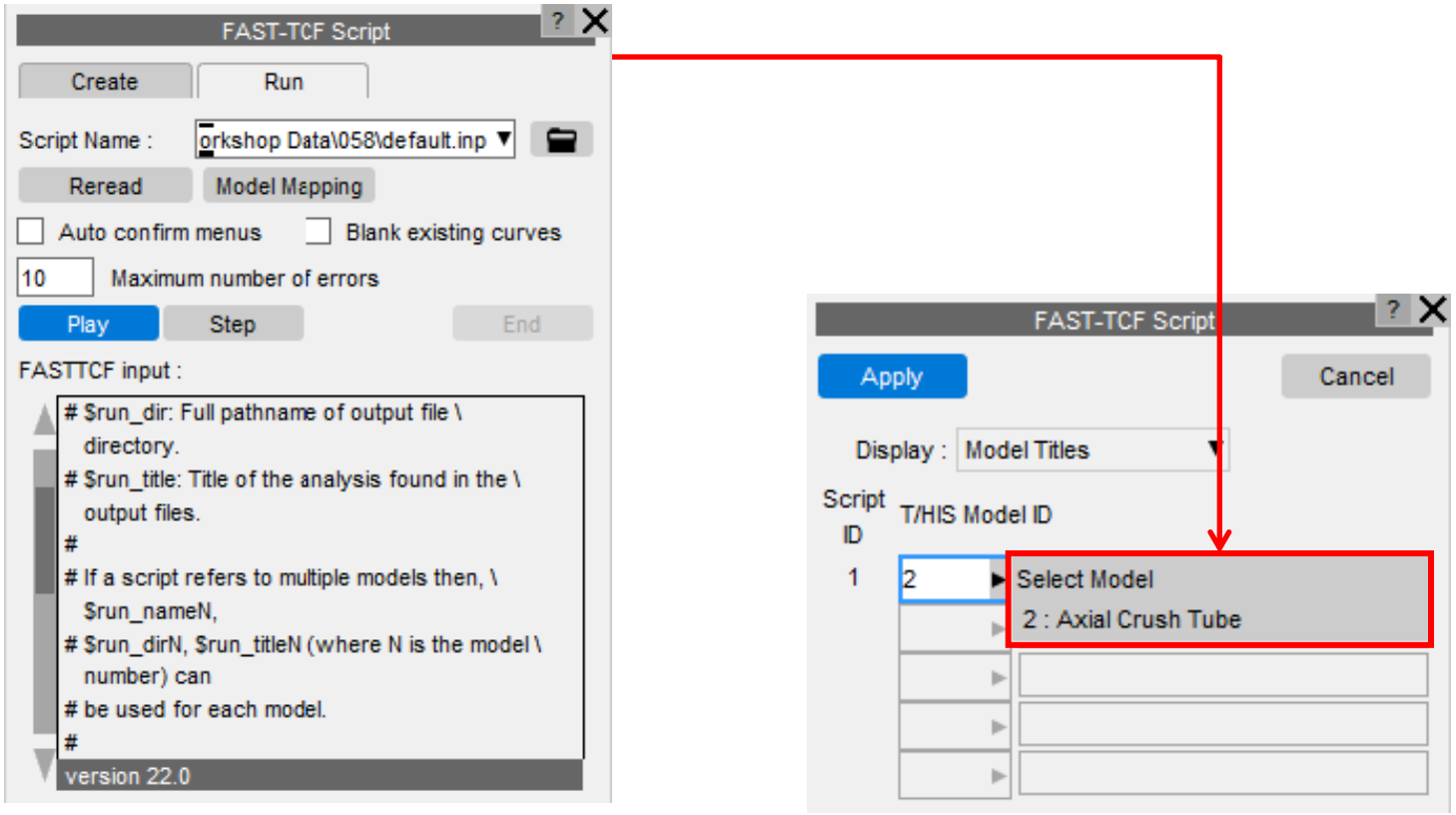
Play-back of Scripts





Play-back of Scripts – Model Mapping

- If the script is used to process multiple models, the ‘Model Mapping’ option can be used to define which model in T/HIS corresponds to which model in the script.



FAST-TCF Scripts

- FAST-TCF supports almost 100% of T/HIS commands. All of the available commands can be found in section 7 of the T/HIS manual. Below are some common ones.

- Multiple data selection by range including tags ‘first’, ‘last’ and ‘all’:

e.g. ***sect 100:last force z_dir***

- Read data from multiple models:

e.g. ***Model 1* or *Model all***

- Other examples of reading multiple entities:

Node 89,90,100000 accel z tag acc z

  - Nodes 89, 90 and 100000. Z acceleration, all curves tagged as ‘acc z’. Can be referred to in later slides.

Read & Operate on Multiple Curves

- Tags can be used to identify curves for operations. Example of curves with the same tag:

```
Sect   100:last   force   z_dir    tag sec_fz
```

The z-force on cross sections 100 to (last) will be extracted. All curves will be given the same tag, “sec_fz”.

```
Oper   mul  sec_fz  0.001   tag sec_fzkN
```

All curves with the tag “sec_fz” will be multiplied by 0.001; the resulting curves will all be given the same tag, “sec_fzkN”.

- Use of wild-card (*) to generate and identify tags:

```
Sect   100:last   force   z_dir    tag sec_fz*
```

The z-force on cross sections 100 to (last) will be extracted. Curves will be given tags “sec_fz1”, “sec_fz2”, etc.

```
Oper   mul  sec_fz*  0.001   tag sec_fzkN*
```

All curves with the tag “sec_fz*” (where * can be any alphanumeric characters) will be multiplied by 0.001; the resulting curves will be given tags “sec_fzkN1”, “sec_fzkN2”, etc.

- Using the entity ID in automatically-generated tags (## command):

```
Sect   100:last   force   z_dir    tag sec_fz##
```

Curves will be given tags “sec_fz100”, “sec_fz101”, etc, according to the ID of the entity whose data is shown in the curve.

```
Oper   mul  sec_fz*  0.001   tag sec_fzkN##
```

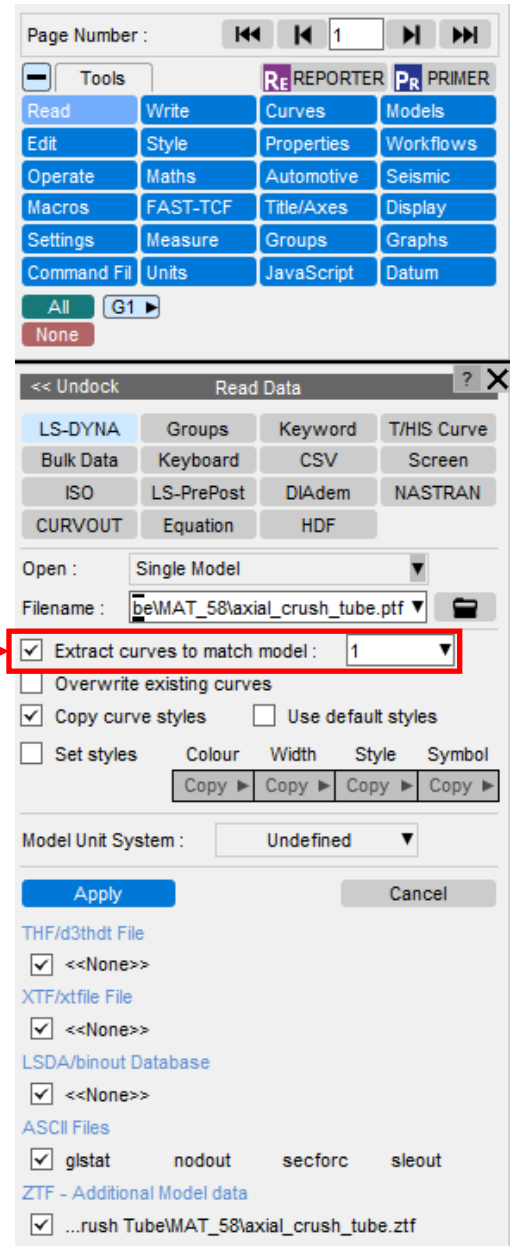
During the operation, the entity ID from the original curve (e.g. sec_fz100) will be used to form the tag of the output curve (e.g. sec_fzkN100)

Reading LS-DYNA Results

- If you have read in a model and created some curves, T/HIS allows the user to read a new model and repeat all previous commands without having to record a FAST-TCF script.

- This can be useful when quickly comparing different model results.

When reading in a new model, the **Extract curves to match model** option, effectively runs a FAST-TCF script on the new model.



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