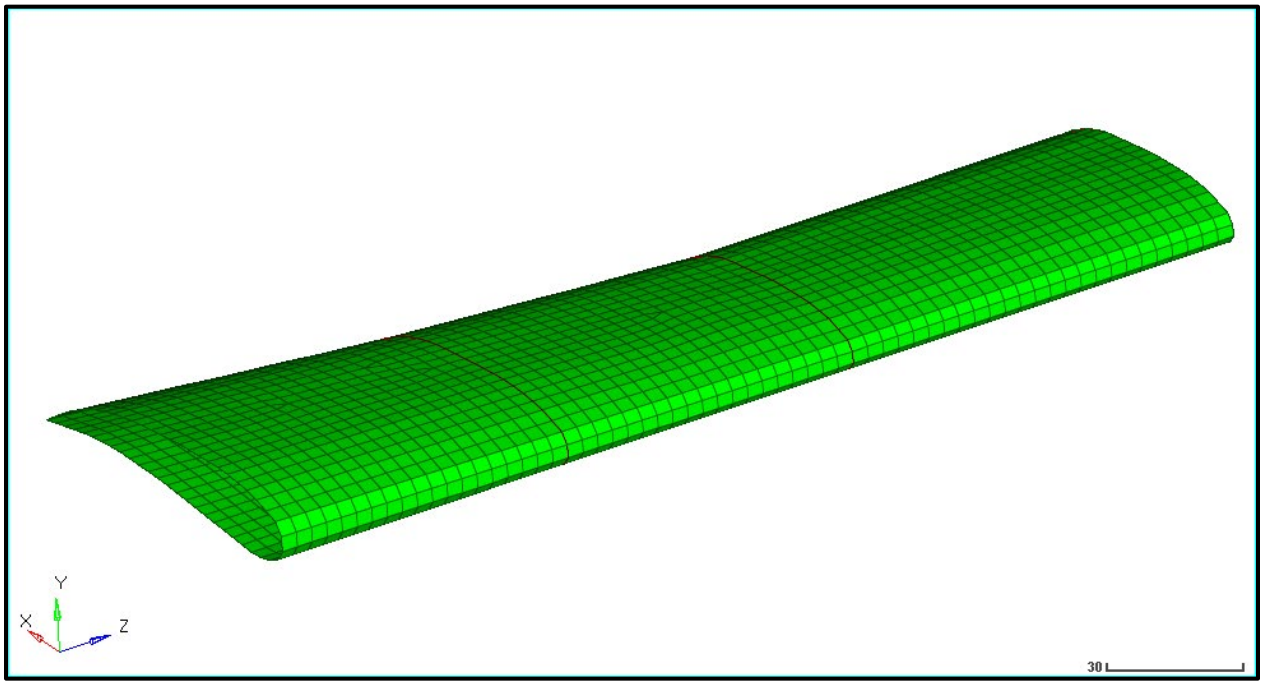
# Exercise 4B: Generating Failure Results from PCOMP

This exercise illustrates how to update composite models to generate failure data. The existing model is a wing structure modeled with PCOMP properties and three material types.



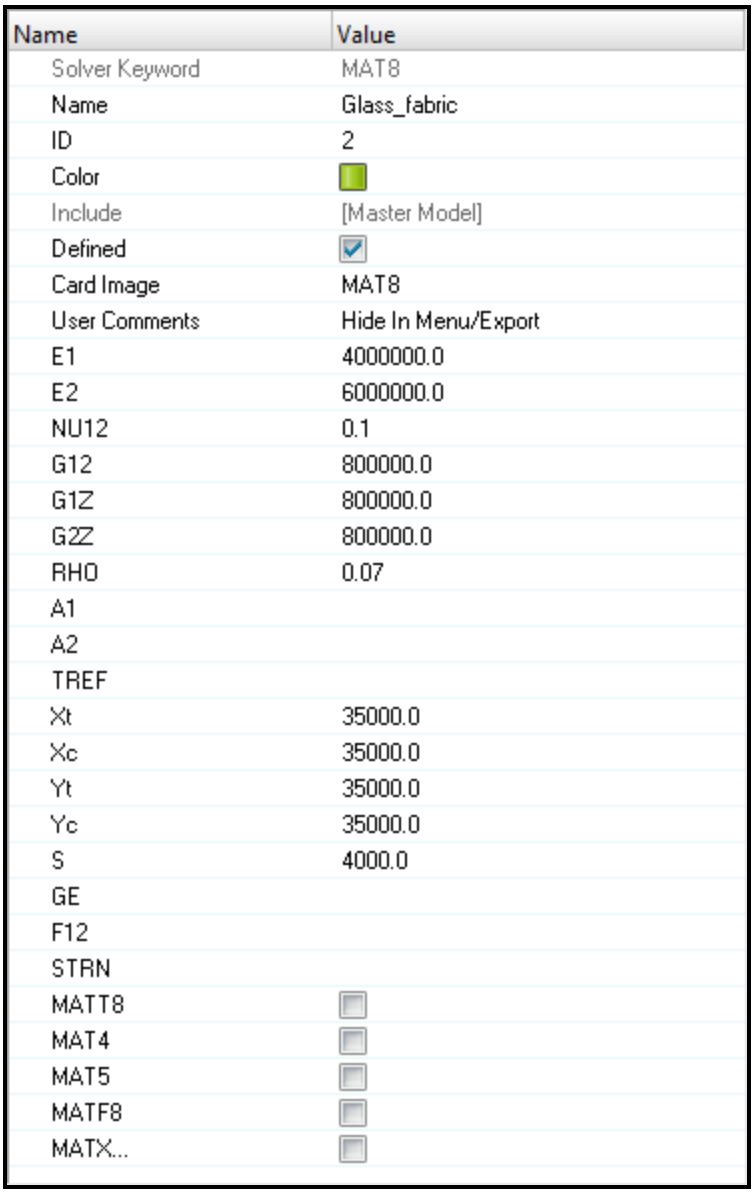

## Problem Setup

You should copy the file: `wing.hm`

## Step 1: Open the model in HyperMesh Desktop with the OptiStruct user profile

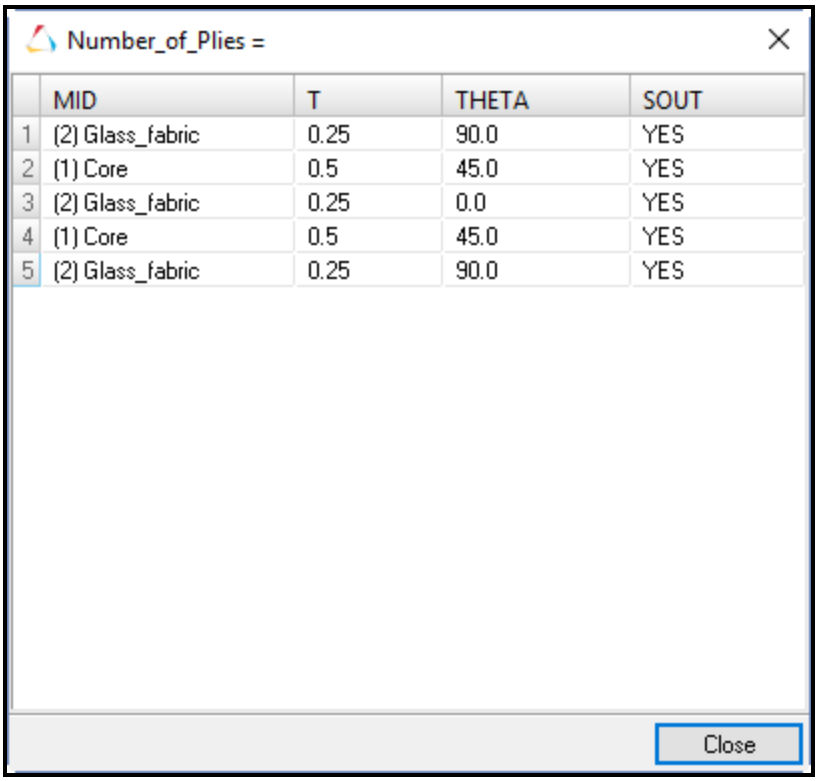
## Step 2: Update the glass fabric and core materials in the model to include failure values

| Name | Value |
|---|---|
| Solver Keyword | MAT8 |
| Name | Core |
| ID | 1 |
| Color | |
| Include | [Master Model] |
| Defined | ☑ |
| Card Image | MAT8 |
| User Comments | Hide In Menu/Export |
| E1 | 2000.0 |
| E2 | 4000.0 |
| NU12 | 0.1 |
| G12 | 3000.0 |
| G1Z | 4000.0 |
| G2Z | 4000.0 |
| RHO | 0.001074 |
| A1 | |
| A2 | |
| TREF | |
| Xt | 500.0 |
| Xc | 500.0 |
| Yt | 500.0 |
| Yc | 500.0 |
| S | 150.0 |
| GE | |
| F12 | |
| STRN | |
| MATT8 | ☐ |
| MAT4 | ☐ |
| MAT5 | ☐ |
| MATF8 | ☐ |
| MATX... | ☐ |



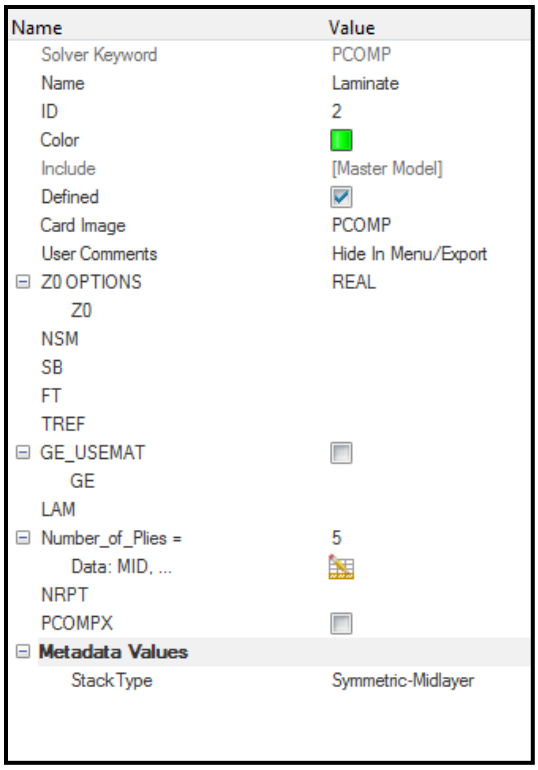
| Name | Value |
|---|---|
| Solver Keyword | MAT8 |
| Name | Glass_fabric |
| ID | 2 |
| Color | |
| Include | [Master Model] |
| Defined | ☑ |
| Card Image | MAT8 |
| User Comments | Hide In Menu/Export |
| E1 | 4000000.0 |
| E2 | 6000000.0 |
| NU12 | 0.1 |
| G12 | 800000.0 |
| G1Z | 800000.0 |
| G2Z | 800000.0 |
| RHO | 0.07 |
| A1 | |
| A2 | |
| TREF | |
| Xt | 35000.0 |
| Xc | 35000.0 |
| Yt | 35000.0 |
| Yc | 35000.0 |
| S | 4000.0 |
| GE | |
| F12 | |
| STRN | |
| MATT8 | ☐ |
| MAT4 | ☐ |
| MAT5 | ☐ |
| MATF8 | ☐ |
| MATX... | ☐ |

### Step 3: Set the stress output (SOUT) option to `YES` on the `Laminate` PCOMP property



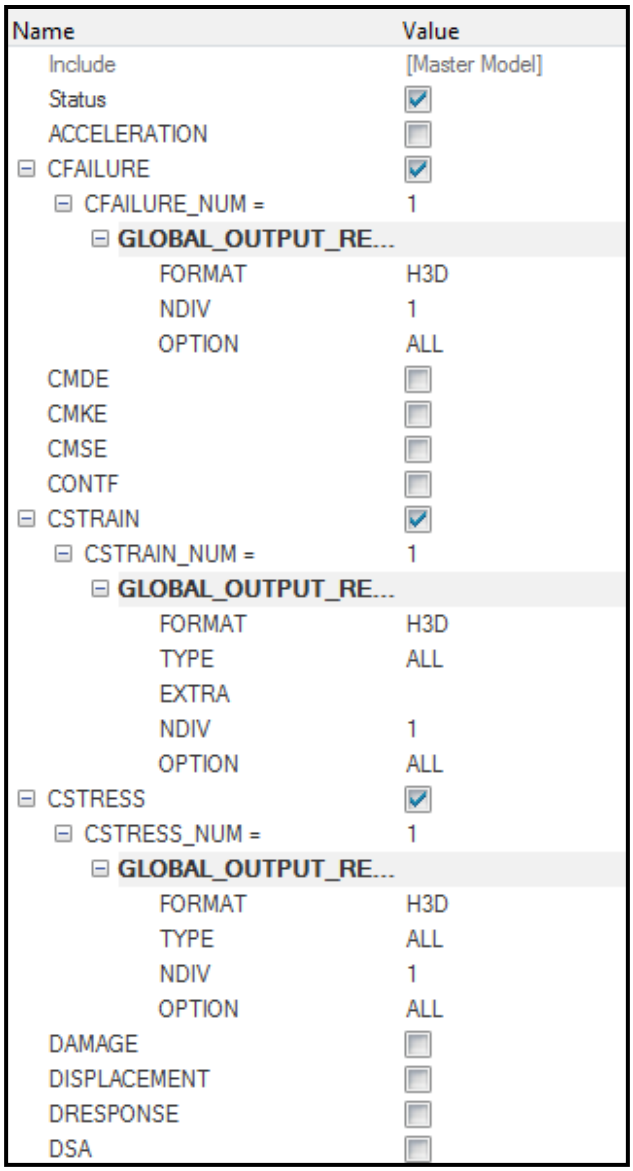

**Tip:** Use the **Data Table Editor** to access the SOUT property for the PCOMP card

### Step 4: Set the failure theory (FT) of the `Laminate` property to `HILL` and the allowable inter-lamina shear stress value SB to `11.6`

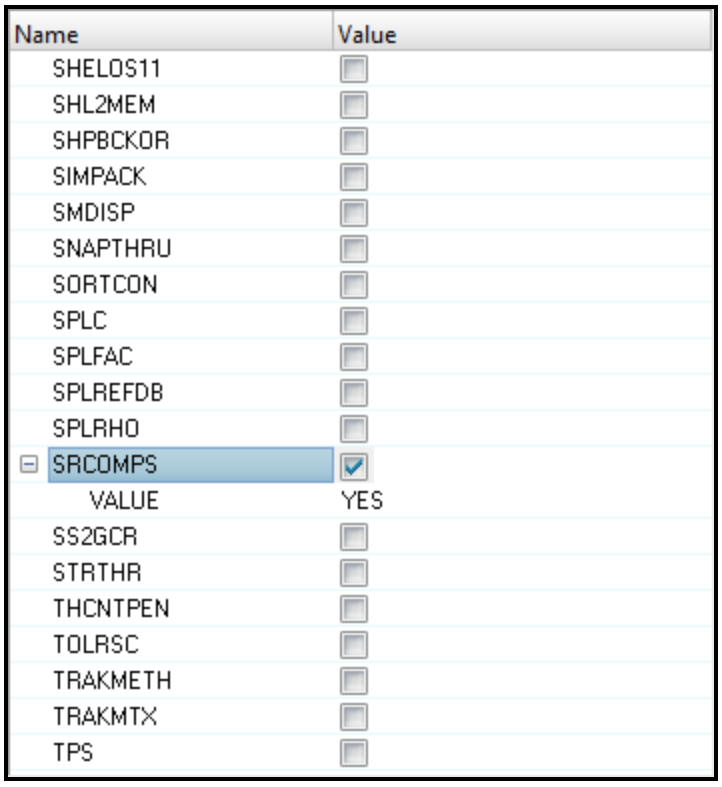



## Step 5: Add output request control cards and parameters

1. Set the CFAILURE, CSTRAIN, and CSTRESS output requests in the model as shown below.



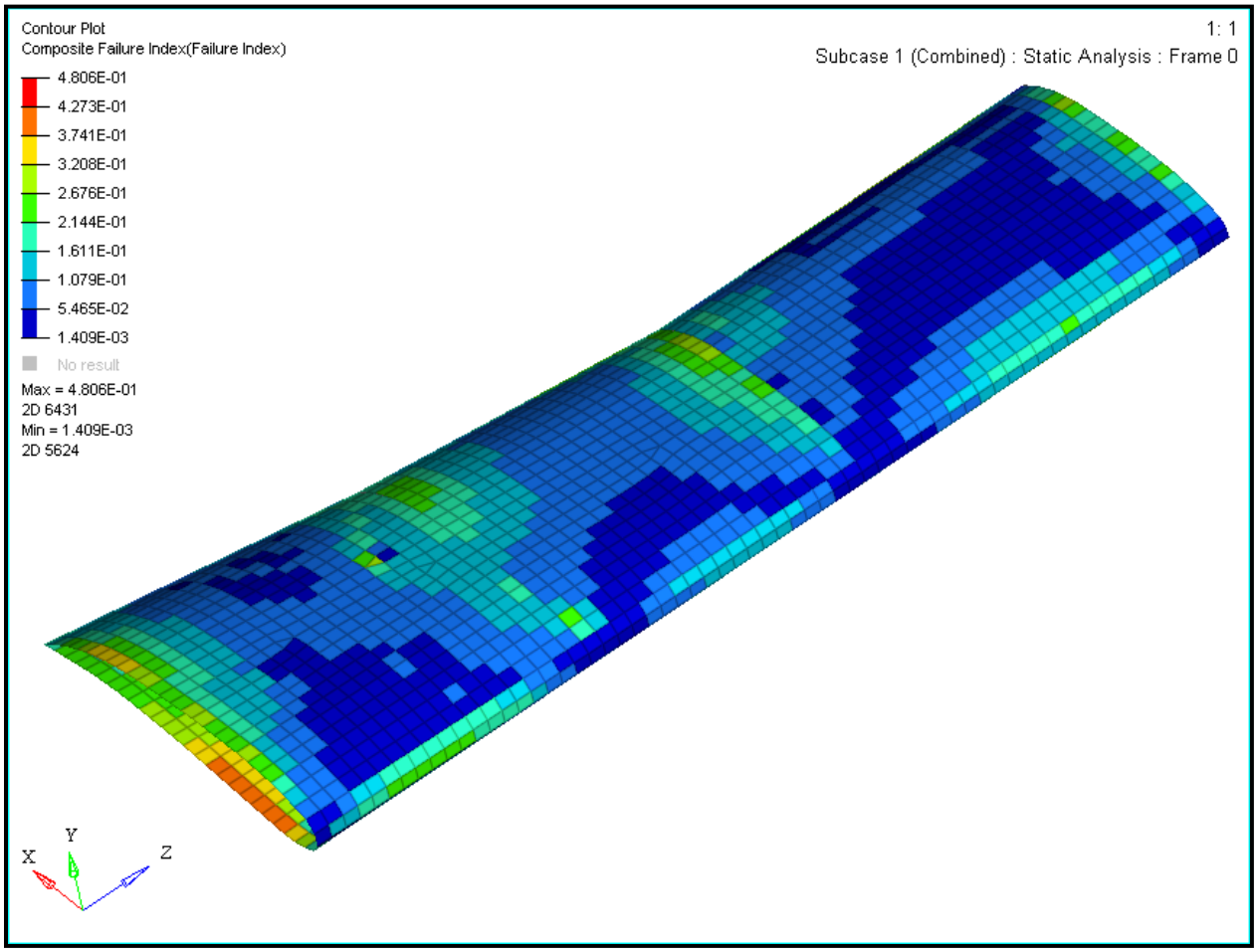

2. Activate the control card for ***PARAM***.
3. In the **Entity Editor**, check the box for ***SRCOMPS*** and set ***VALUE*** to `YES`.




### Step 6: Save the model as `wing_failure_output.hm`

### Step 7: Run the model in OptiStruct

## Step 8: Use HyperView to contour the `Composite Failure Index (s)` results



## EXERCISE RESULTS: `wing_failure_output.hm`