BENCHMARCK   MANUAL

CASE   B-111 : TENSILE TEST WITH TRUSS ELEMENT (ELASTIC MATERIAL)

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Summary

Model:

- Tensile test with a imposed load.
- TRUSS linear element.
- Elastic isotropic material

References

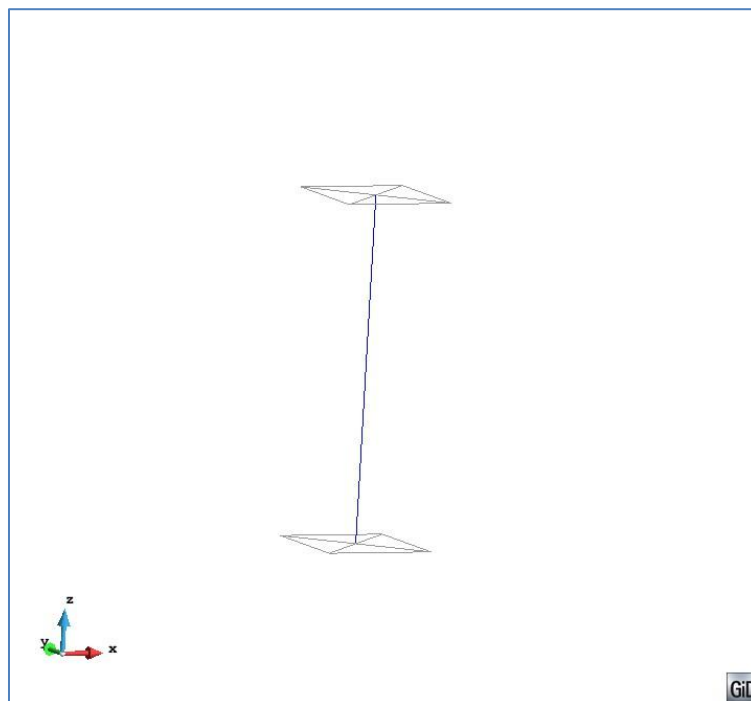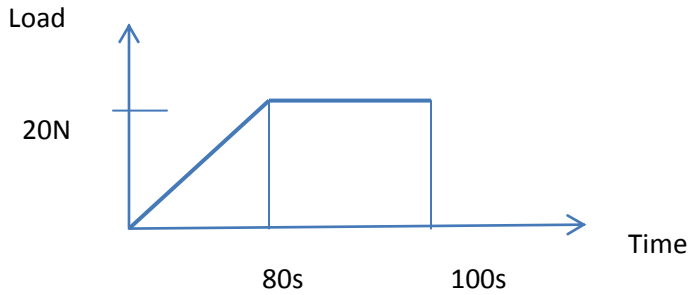See bibliography section and file.dat

Geometry definition

Fig1. Tensile test model with a TRUSS element

Curve load definition

Load

20N

80s   100s   Time

Material Properties	Geometric Properties	Imposed Load
Eyoung (YOUNG)=$2.1.10^{11}$Pa ν(POISS)=0.22 ρ(DENSI)=7800kg/m^3	Section(AREA)=2.85e-05m^2 Long.[L]= 0.31249m.	Max.Load= 20 N

Note: Between brackets () de name of variable in data file.

Table 1.

Theorical and Simulation results

Imposed load = 20 N

Theorical stress [σ] = Max load/ Section= 20 N/2.85e-05 m2 = 701754.39 Pa

Theorical elongation[ΔL]=Long *σ/Eyoung=0.31249m* 701754.39/$2.1.10^{11}$Pa=1.0442e-6m

Value	Element type	Theorical result	COMPACK result(Postprocess)	Relative Error
Stress	TRUSS	701754.39Pa	7.0176e+05 Pa	0.01%
Elongation	TRUSS	1.0442e-06m	1.0442e-06 m	0%

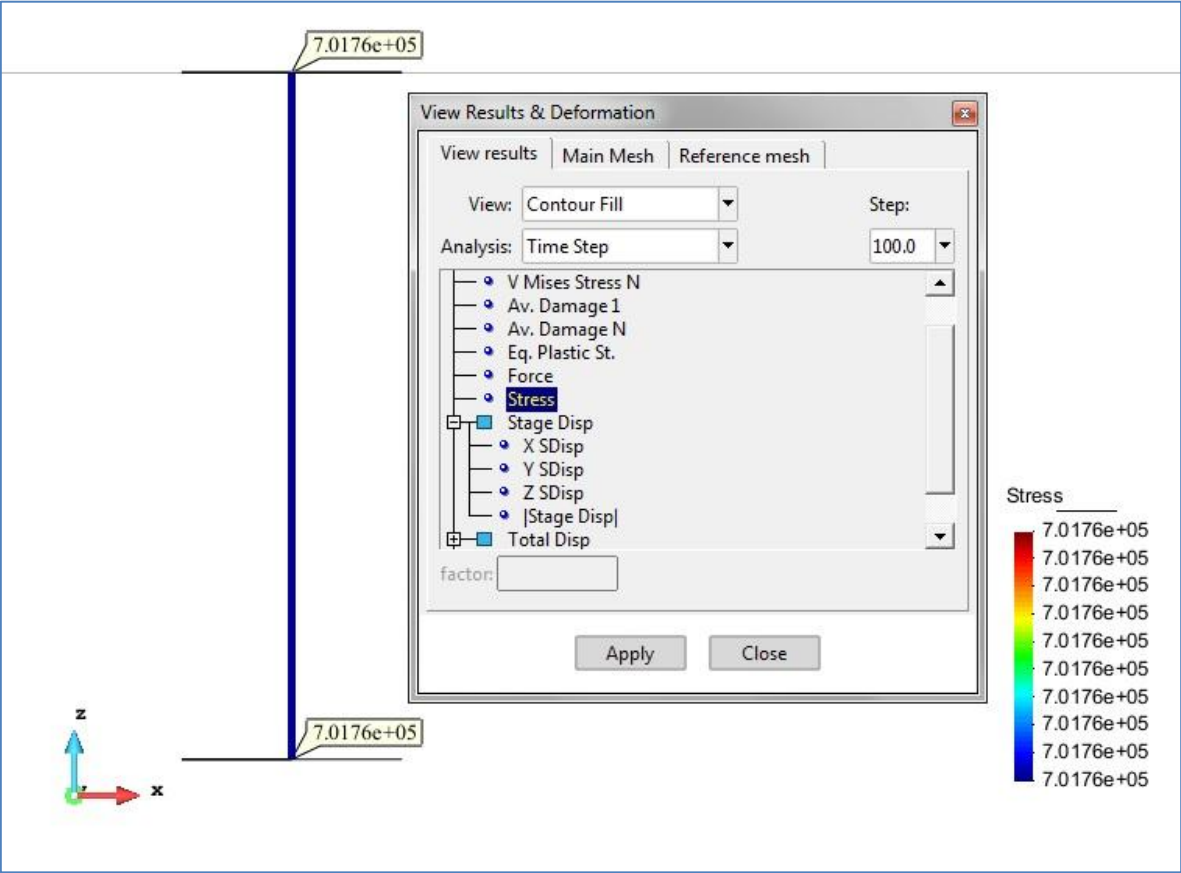**Table 2.**

Postprocess results :
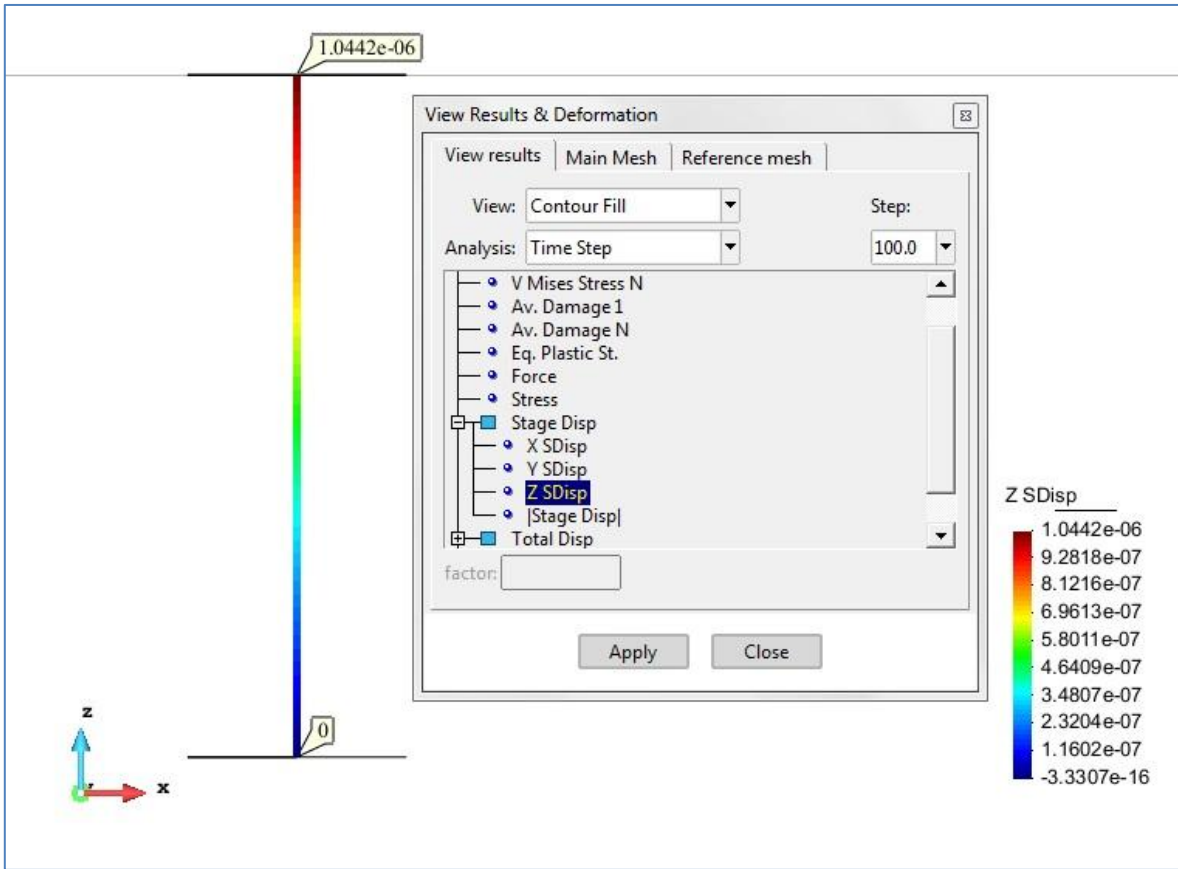

Fig.2. STRESS [Pa] (from COMPACK postprocess)

Fig.3.Displacements[m] (from COMPACK postprocess)

Bibliography:

- CompackV01 manual (available from superior menu of COMPACK: *Help/COMPACK explicit*)
- InputData_Stampack_v700 manual version 2012-05-14.