

Pile test with loading frame FE analyses

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with the collaboration of **De Cérenville Géotechnique SA**

Contents

- Pile test geometry and meshes
- 2D axisymmetric analysis
- 3D analysis with loading frame
- Comparison and issues

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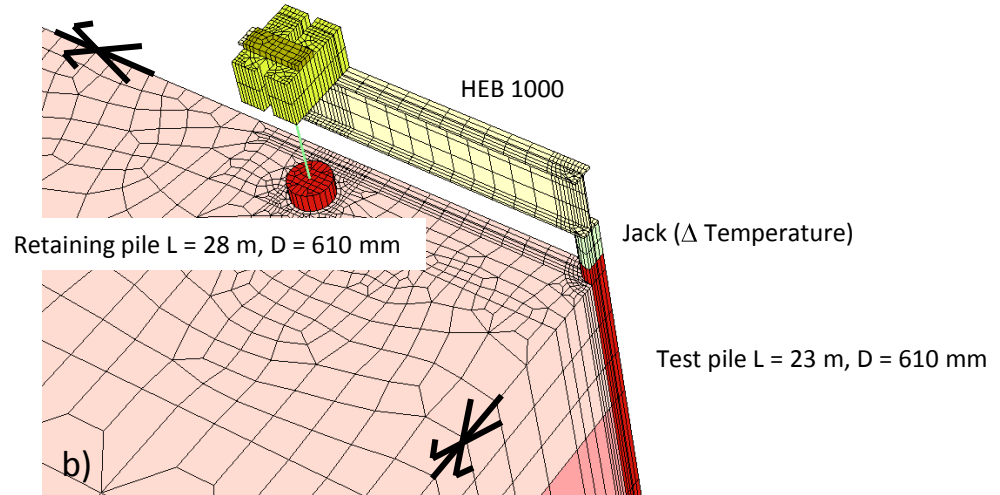
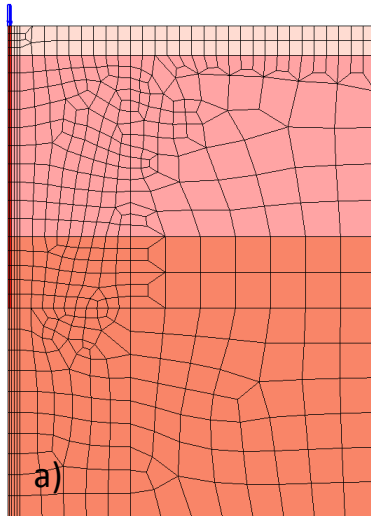


Hypotheses

- 2 different models

- a) 2D axisymmetric model, load control

- b) 3D model (1/4 due to symmetry), with an explicit model of loading frame



- Goal of model: prediction of

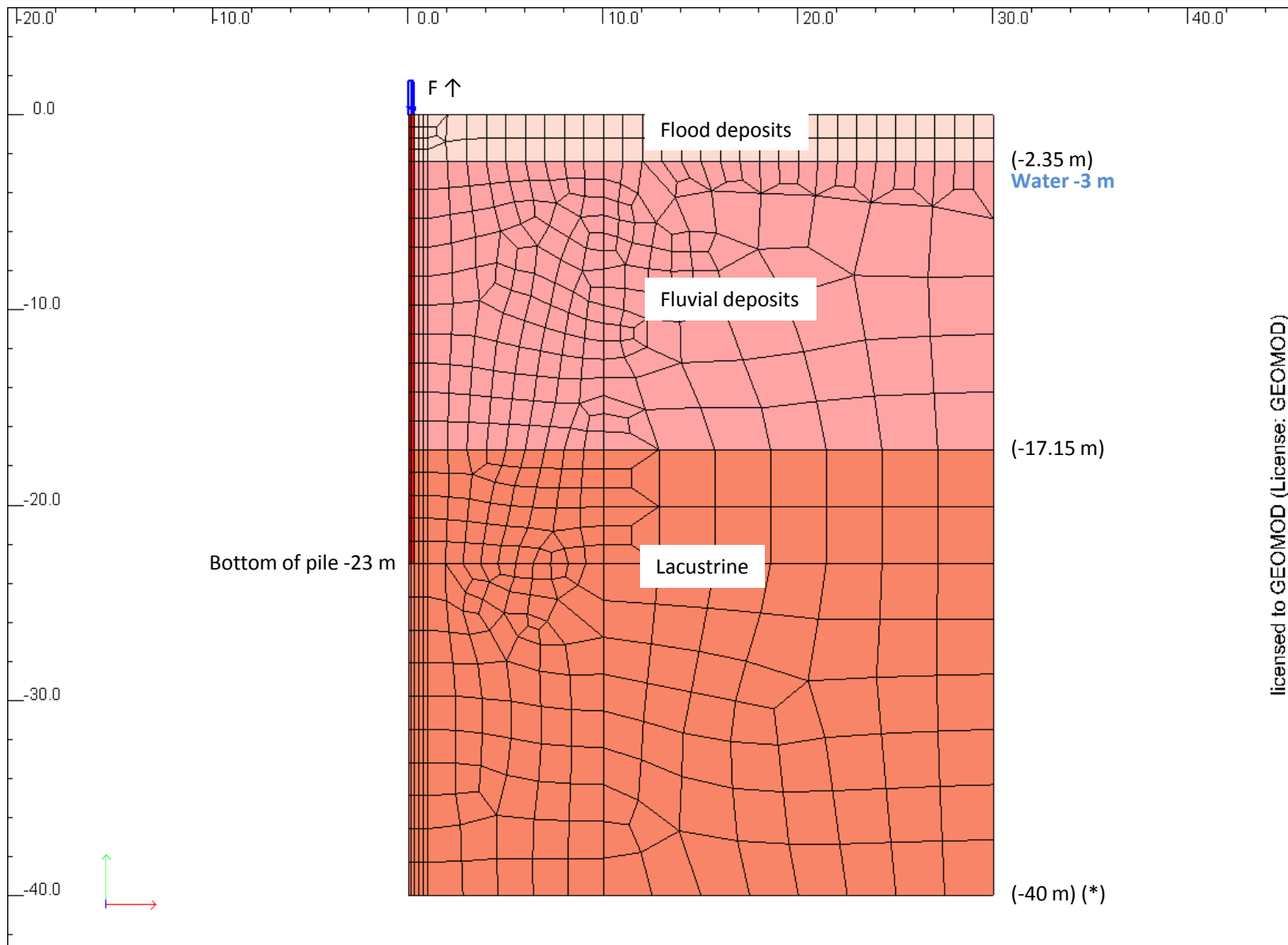
- load settlement curve (3 soil data sets: optimistic, realistic, pessimistic)

- plastic zones evolution during loading

	Modèle	Epress MPa	Emoyen MPa	Eopt MPa	γ kN/m ³	c kN/m ²	ϕ °
Dépôts d'inondation	Mohr-Coulomb	2	3.5	5	20	5	28
Dépôts fluviatiles	Mohr-Coulomb	25	50	75	21	1	36
Dépôts lacustres	Mohr-Coulomb	25	37.5	50	19	1	32
Contact sol-béton	Mohr-Coulomb	pas dans le modèle de base					
Béton	Elastique	20000		-	25	-	-

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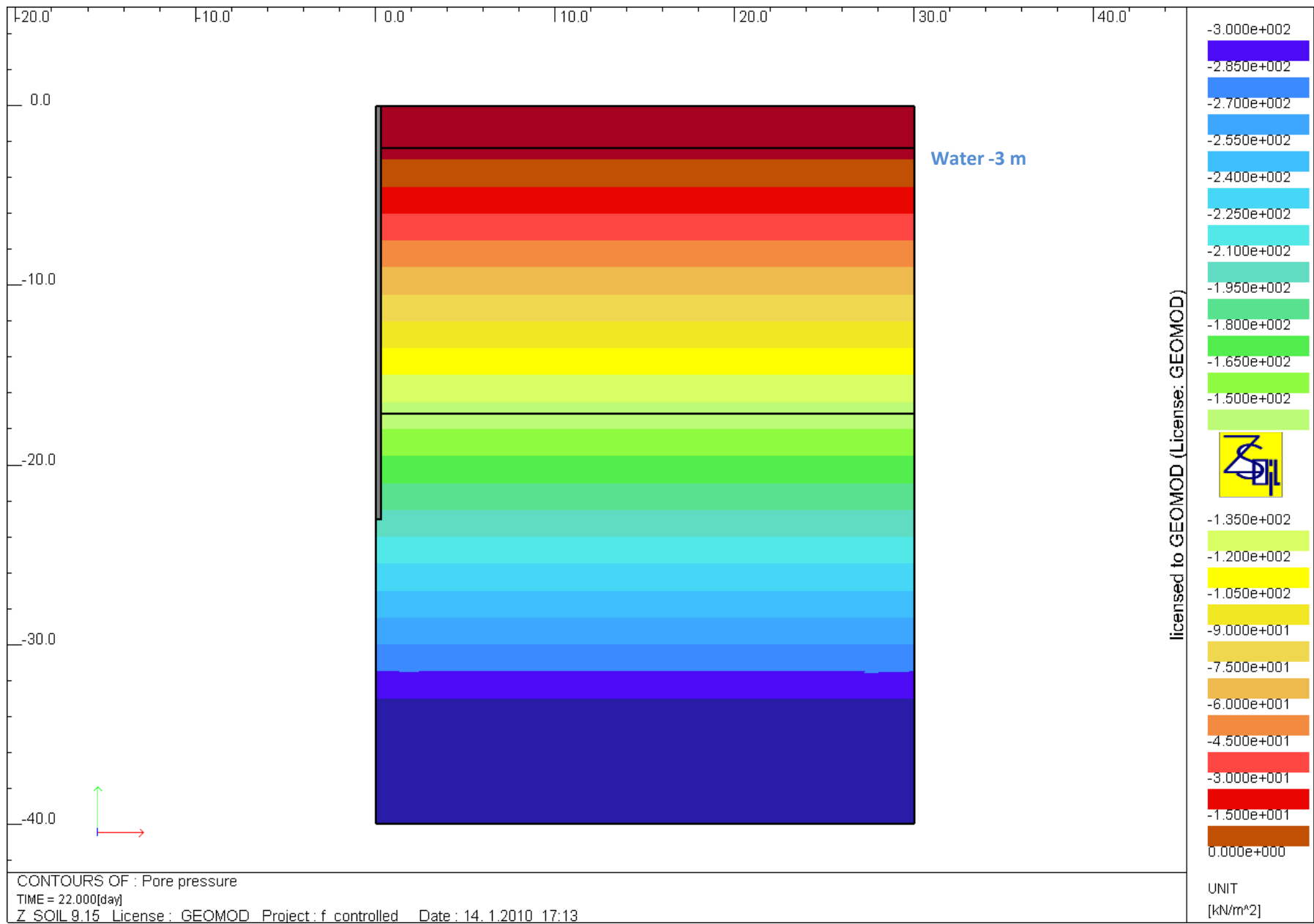
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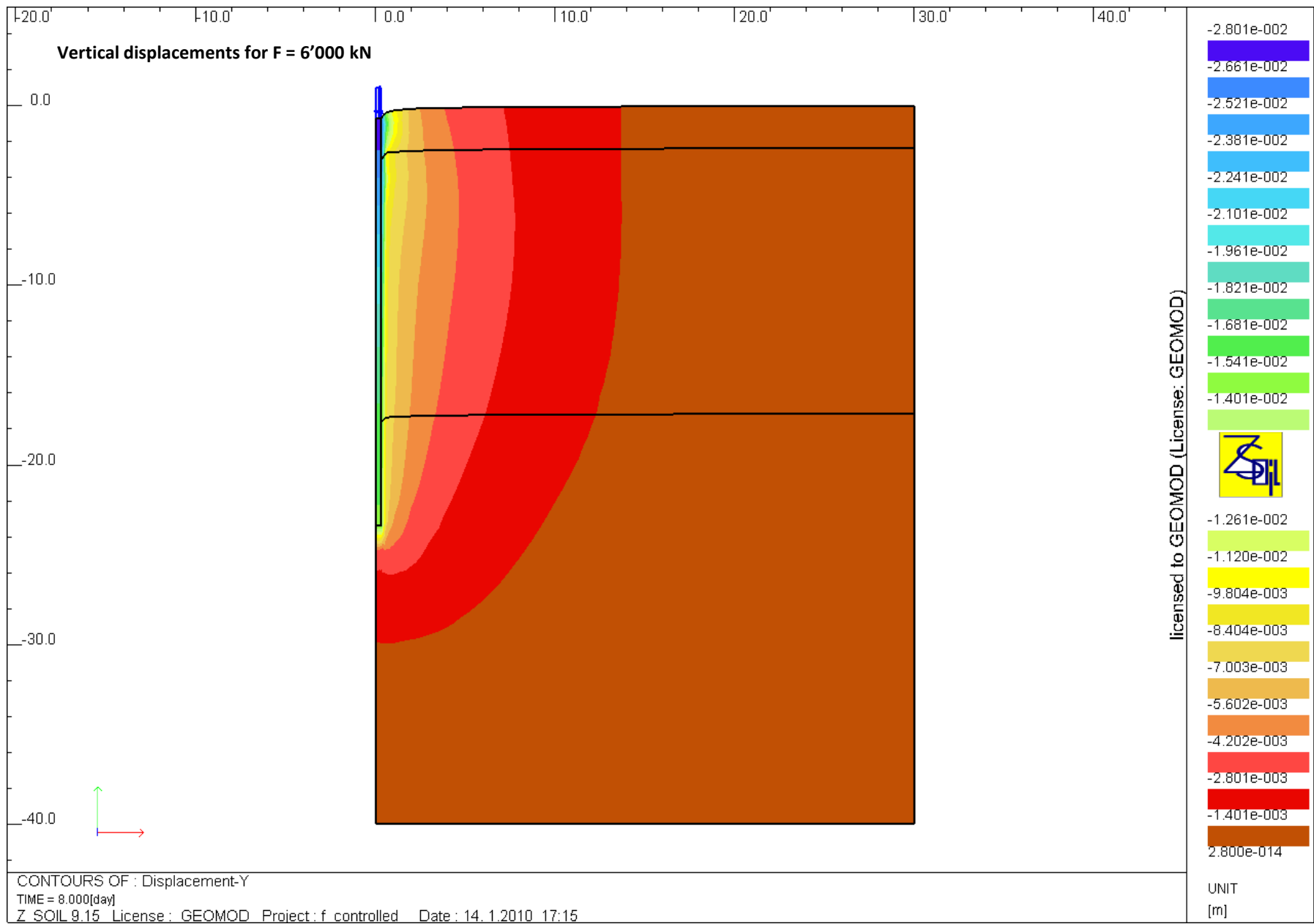


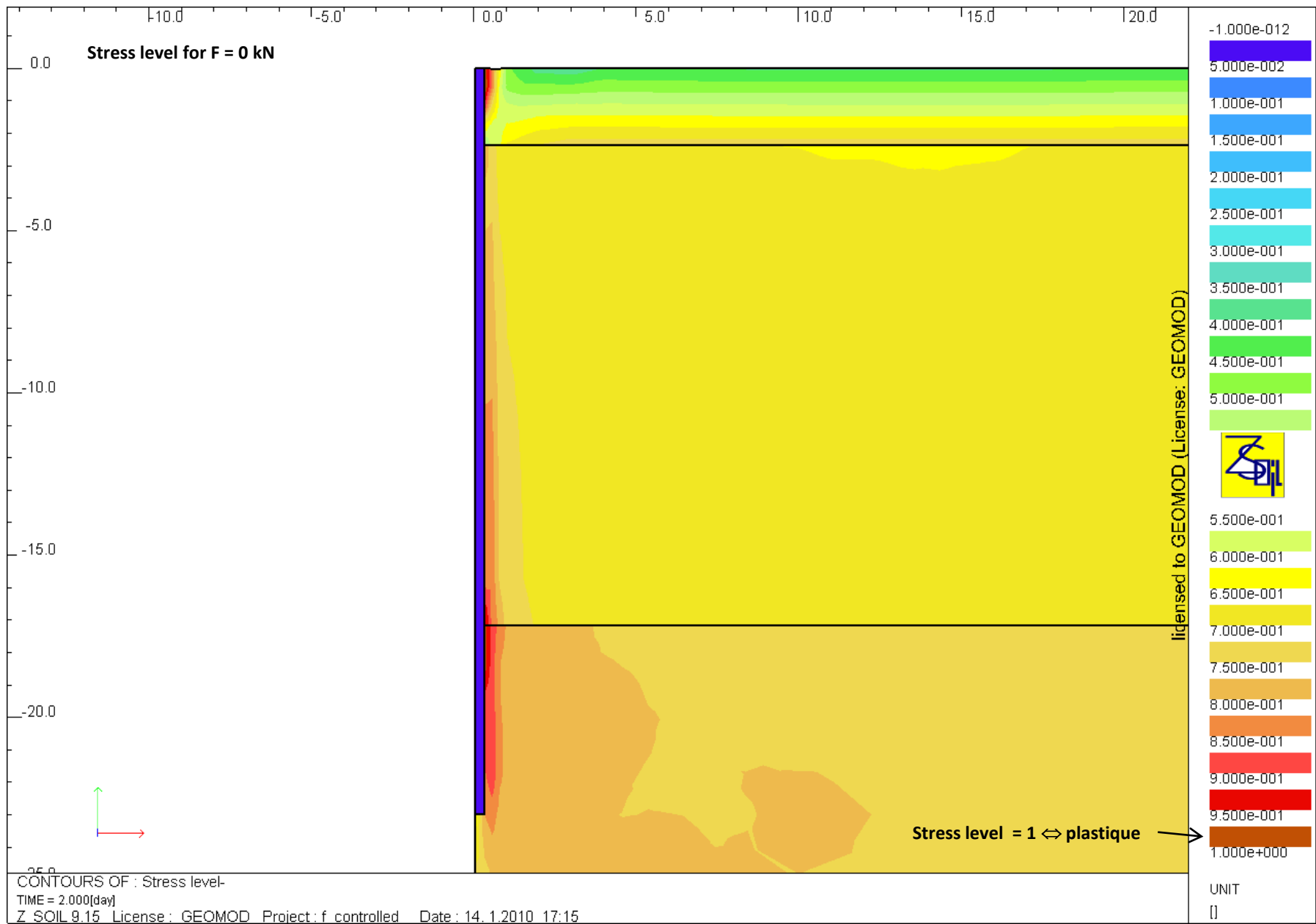
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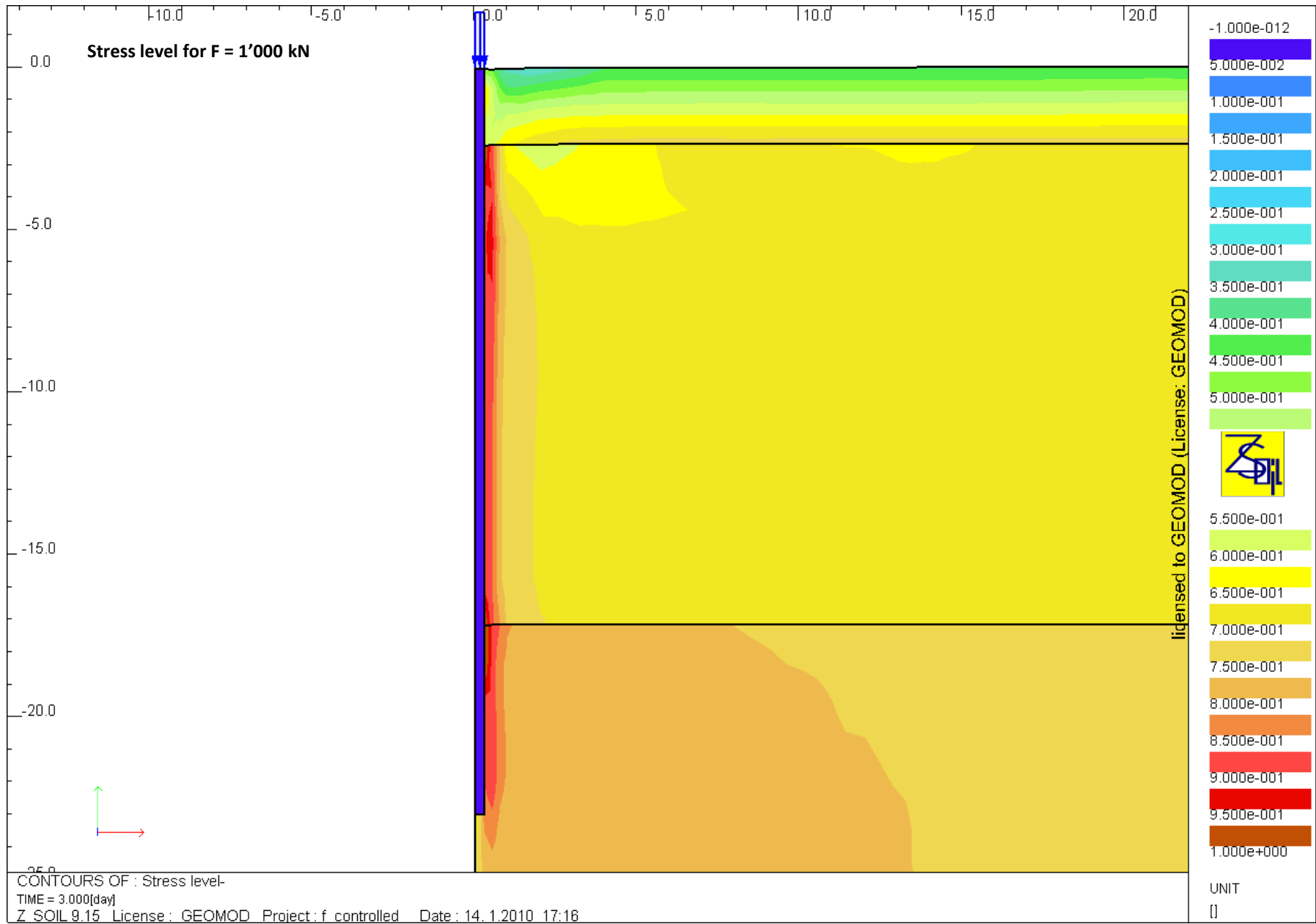
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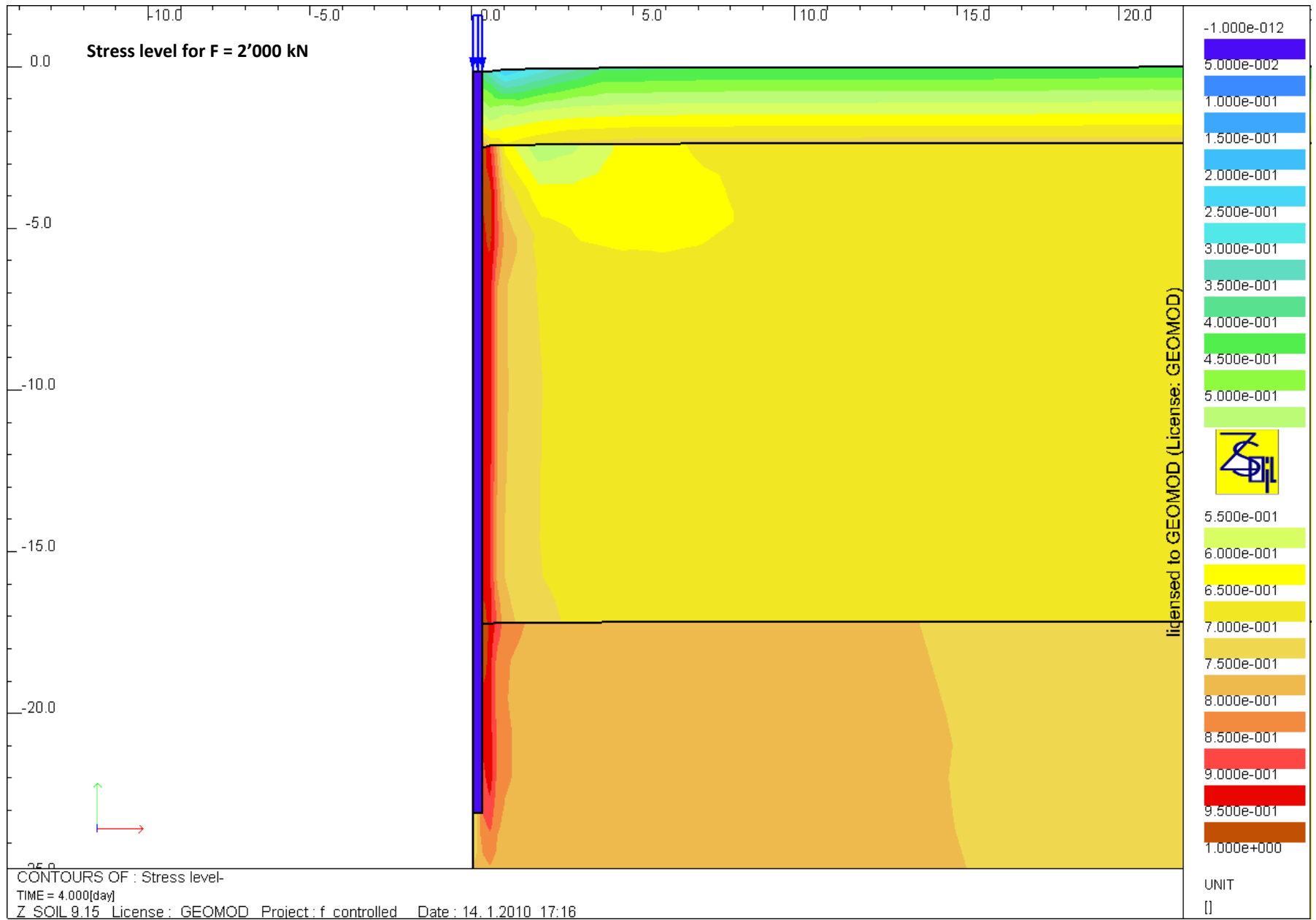








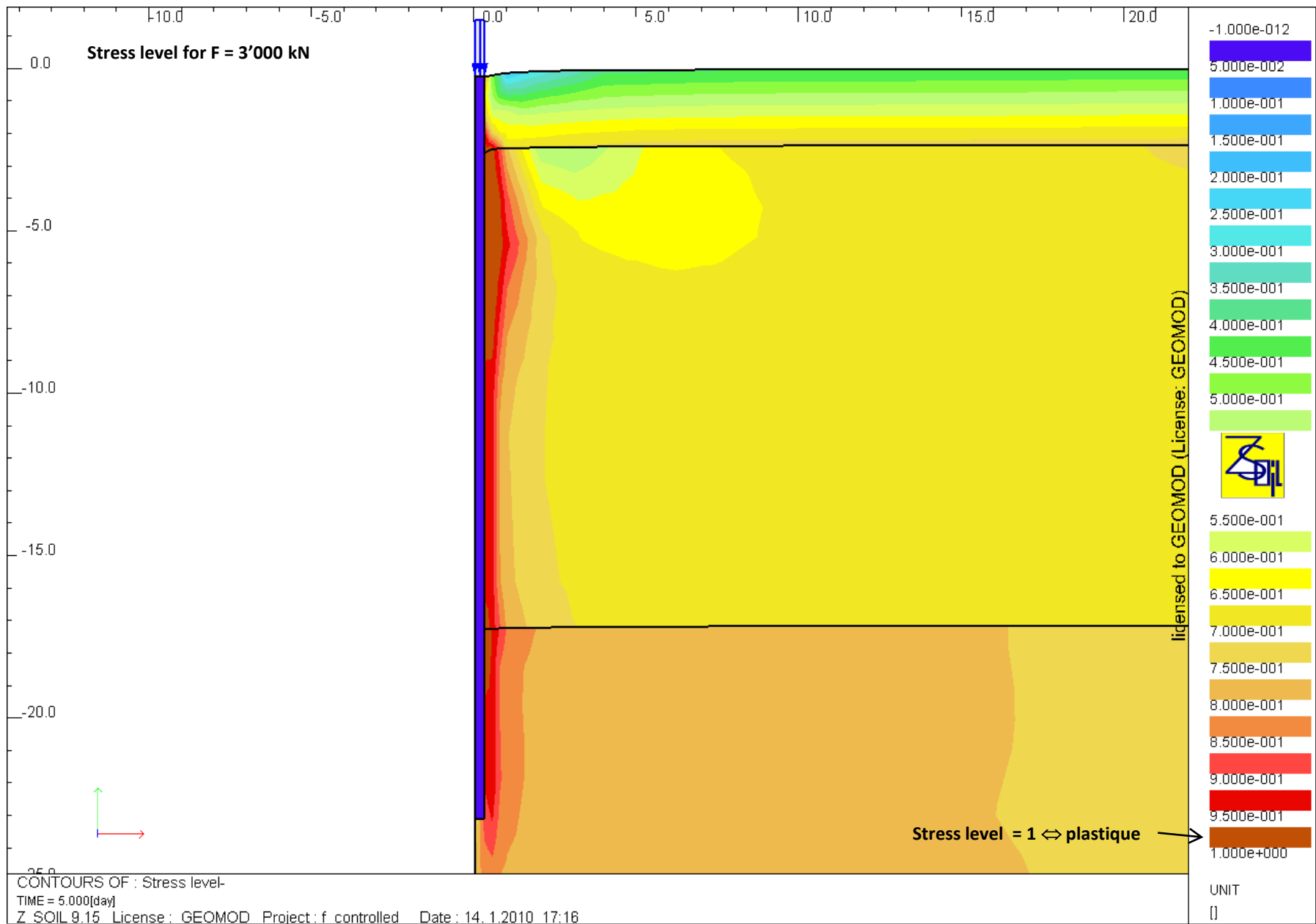


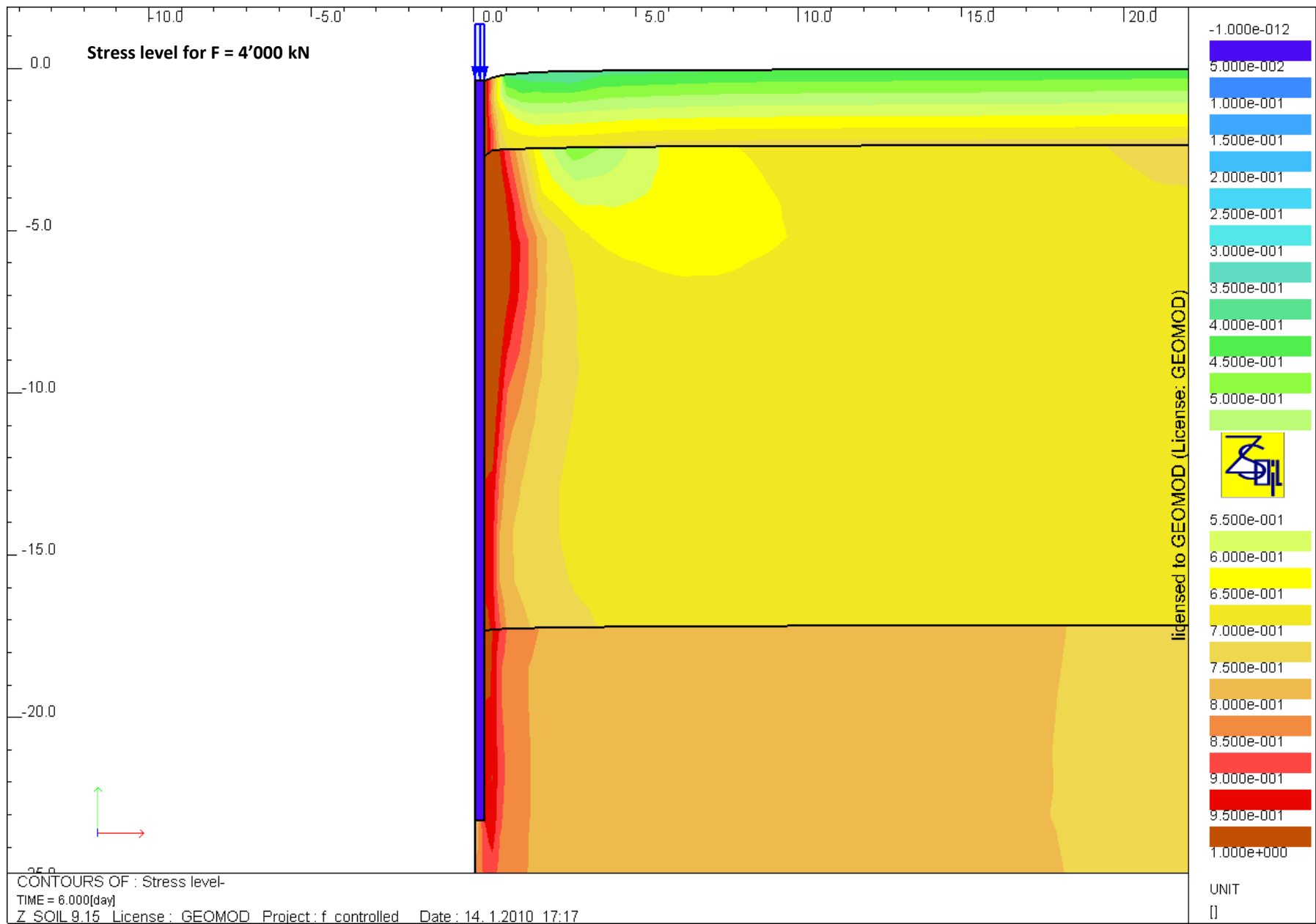


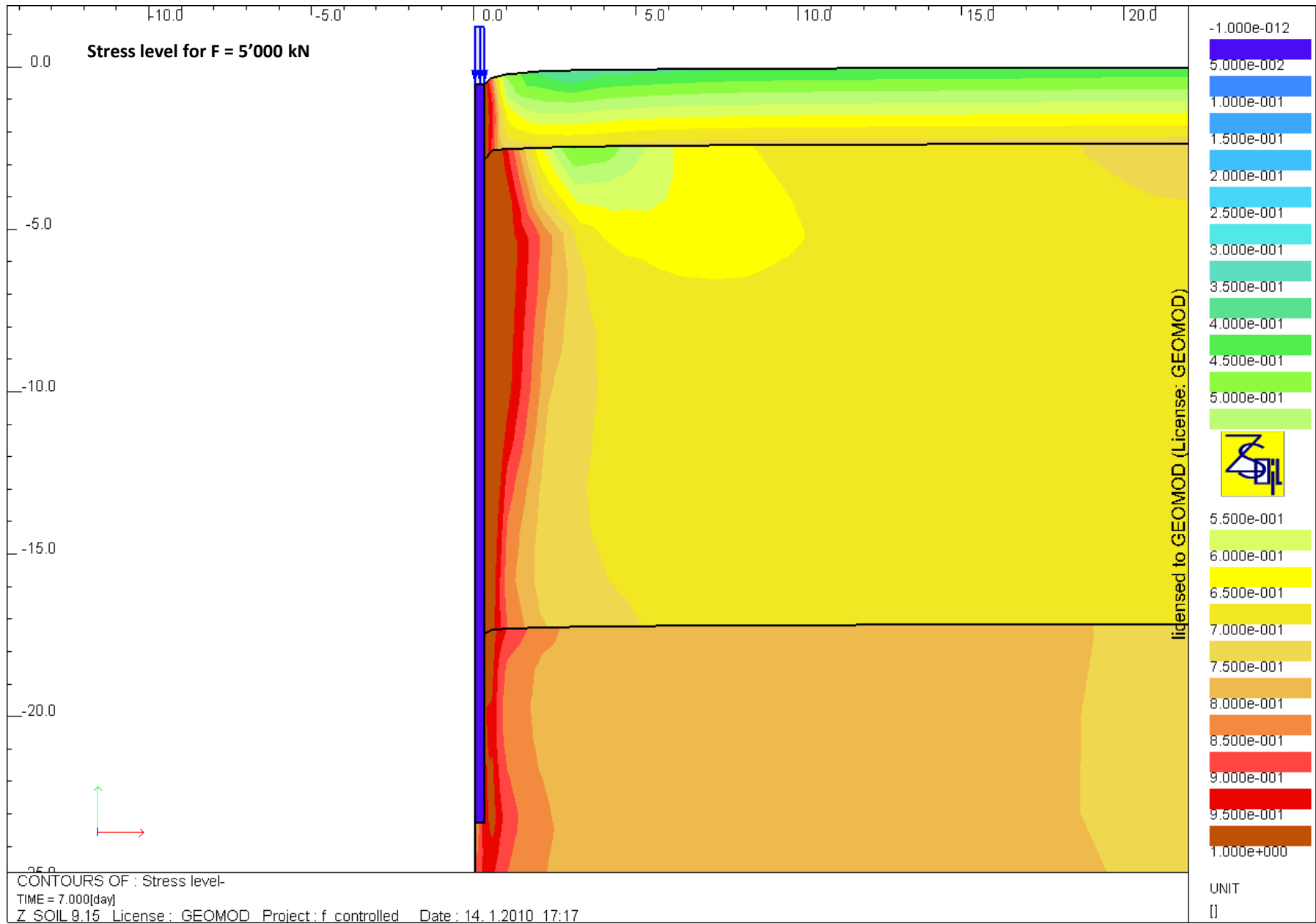
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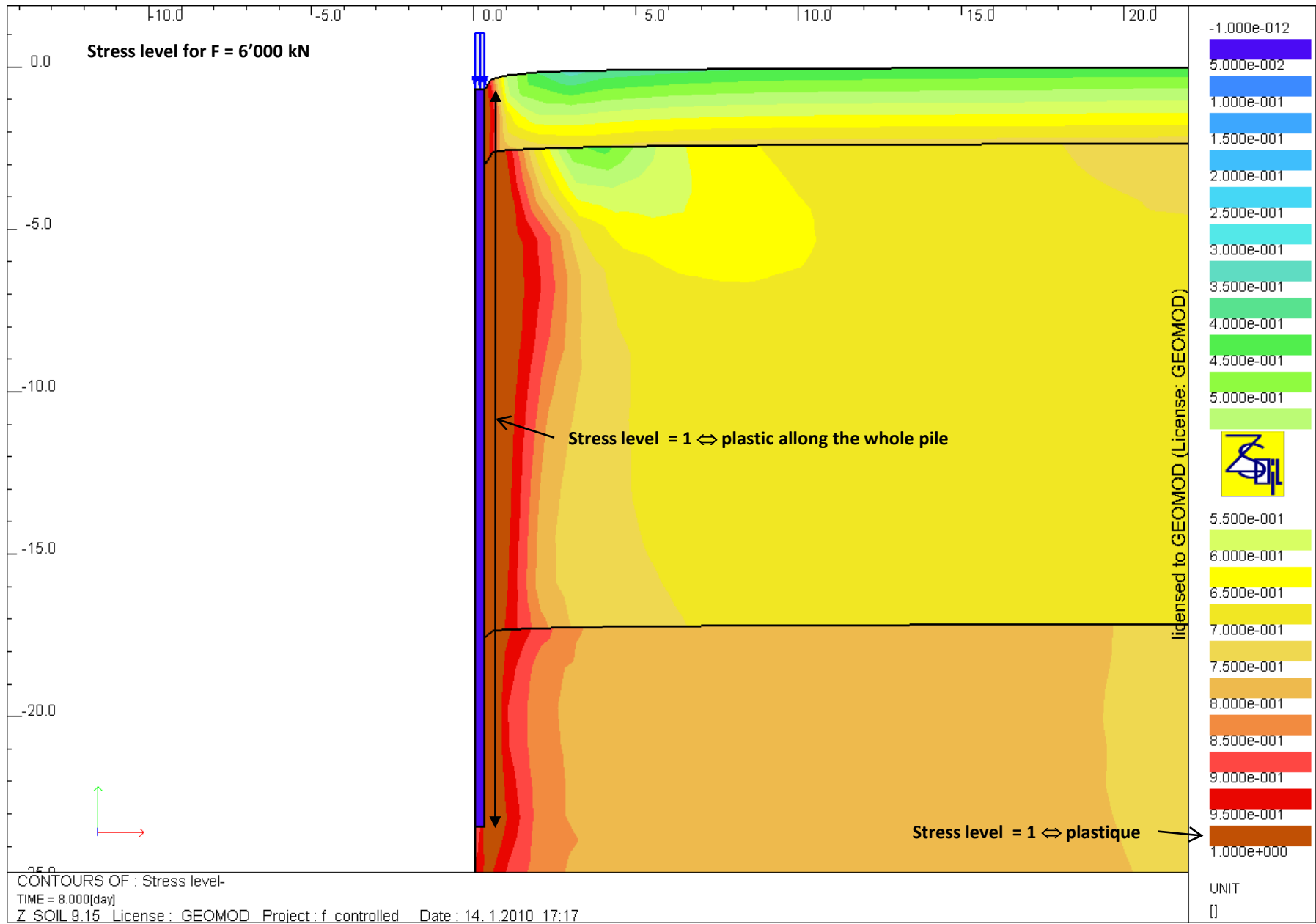
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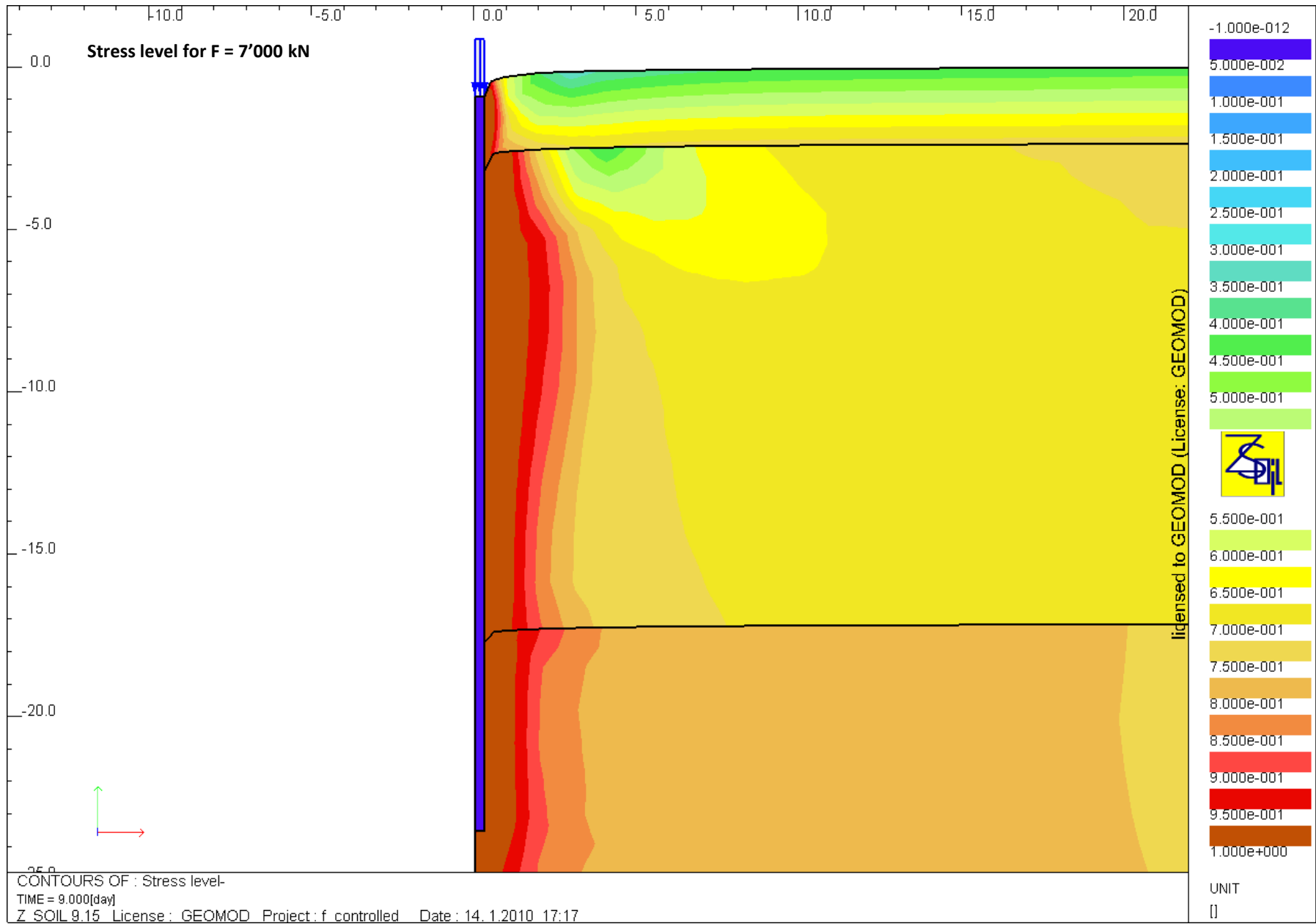


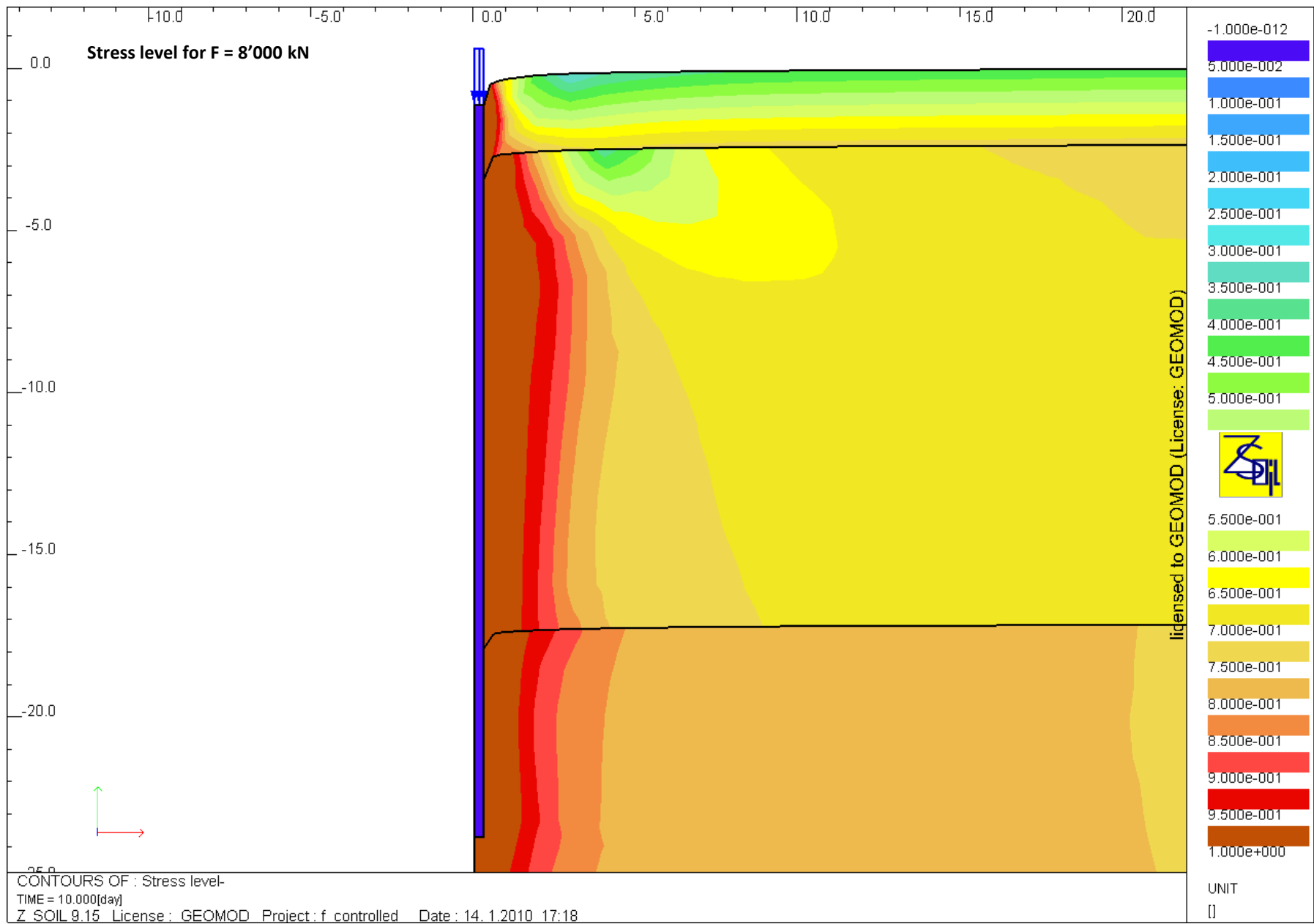






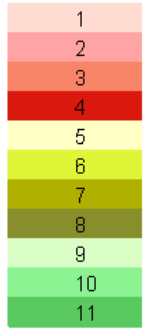
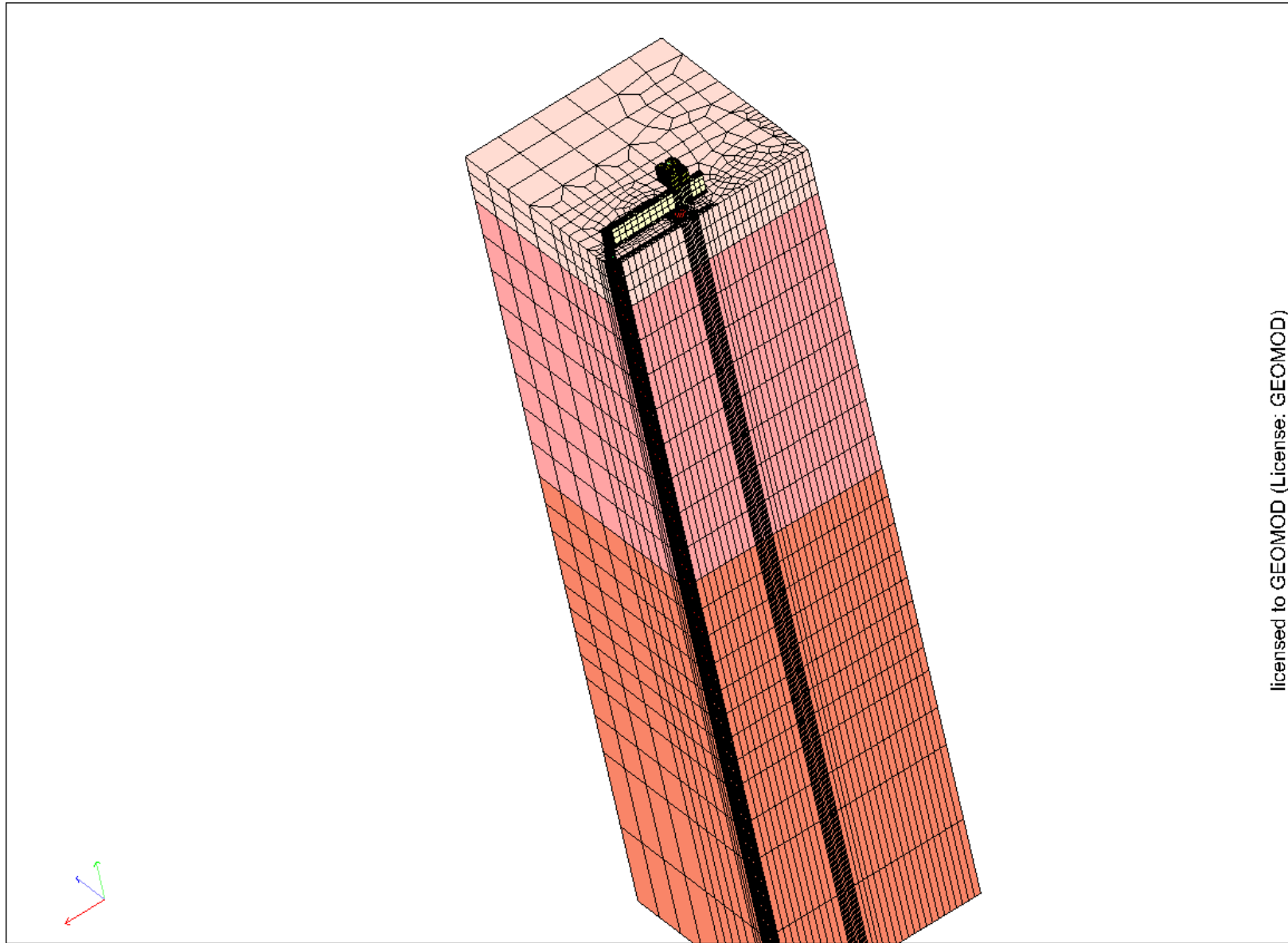






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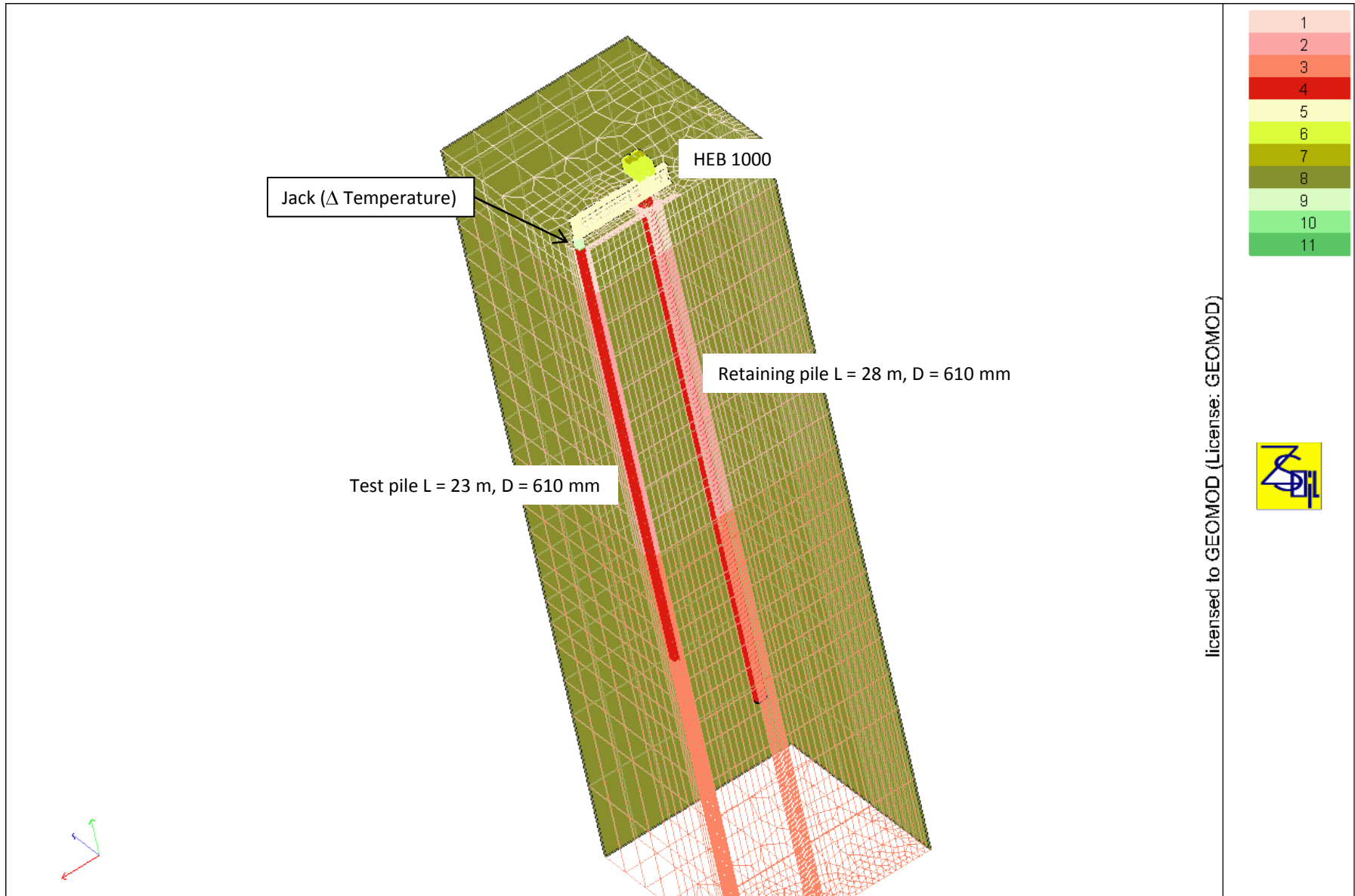
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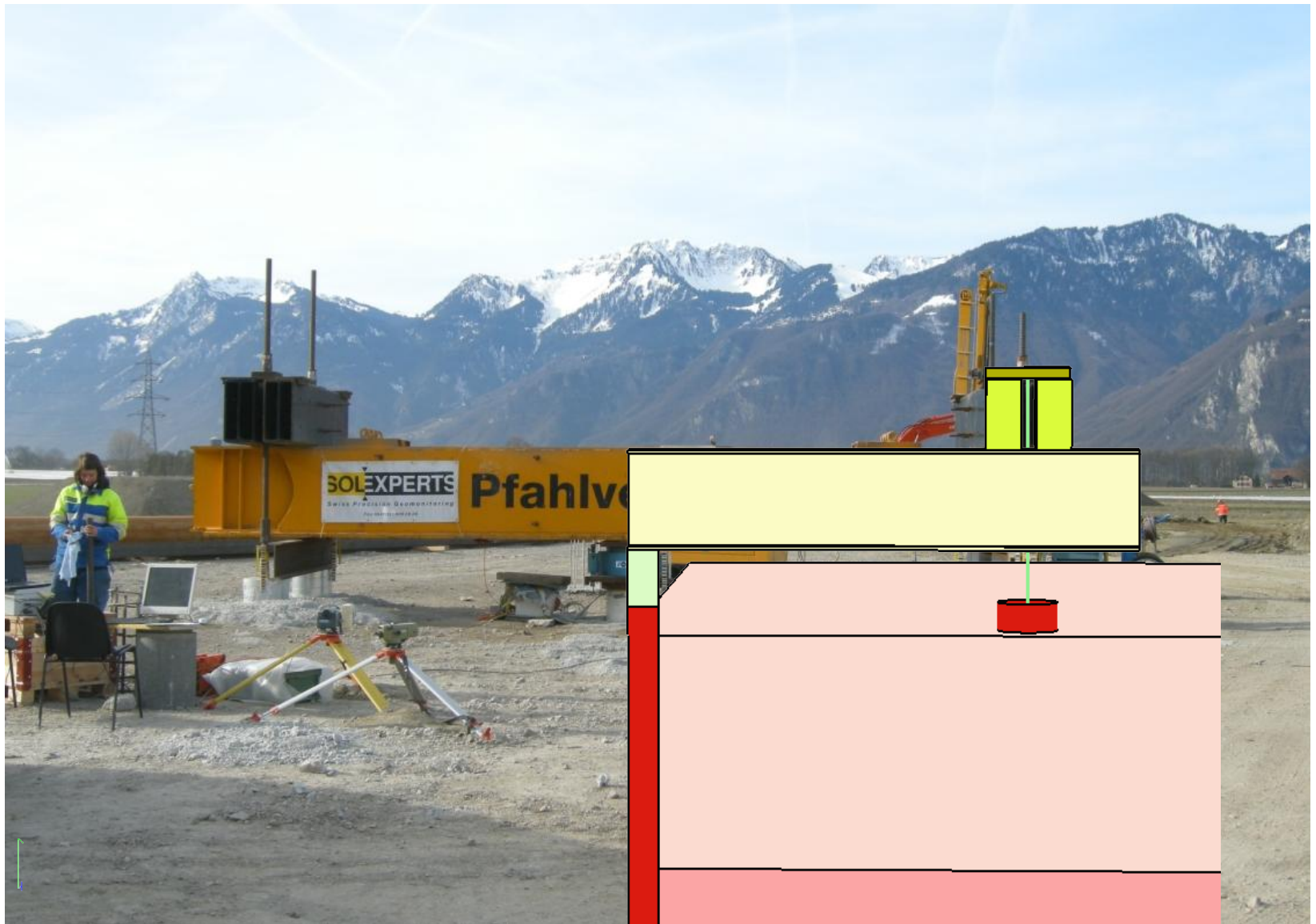
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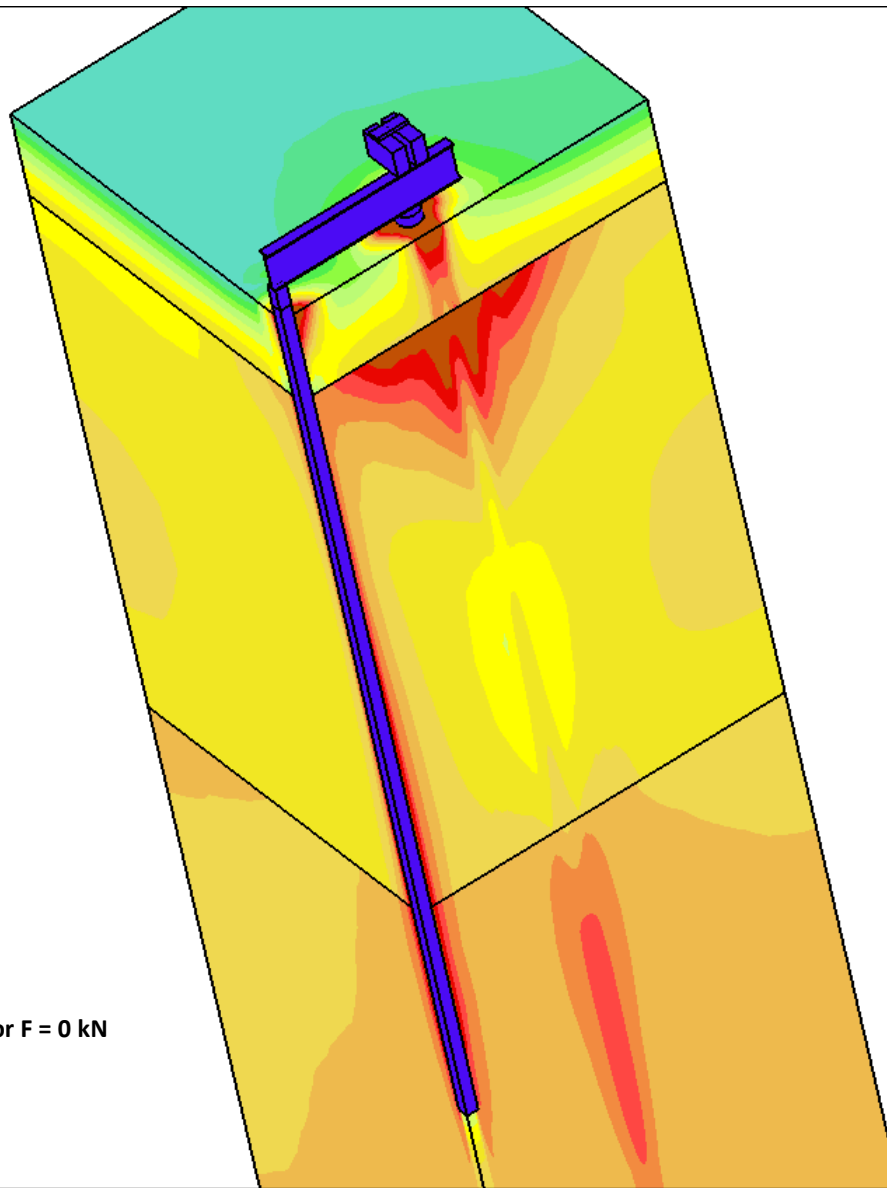


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Stress level and deformed mesh for F = 0 kN

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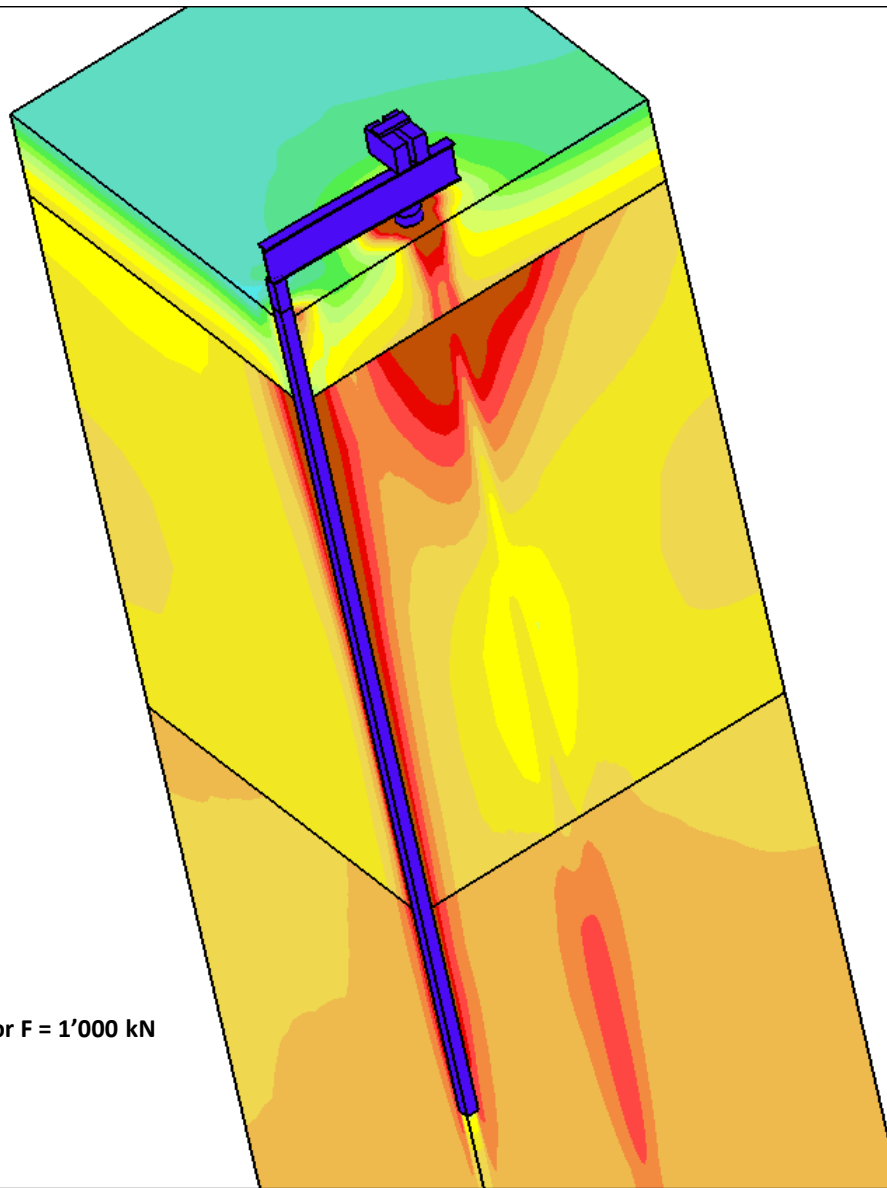


UNIT
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CONTOURS OF : Stress level-

TIME = 2.000(day)

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Stress level and deformed mesh for $F = 1'000 \text{ kN}$

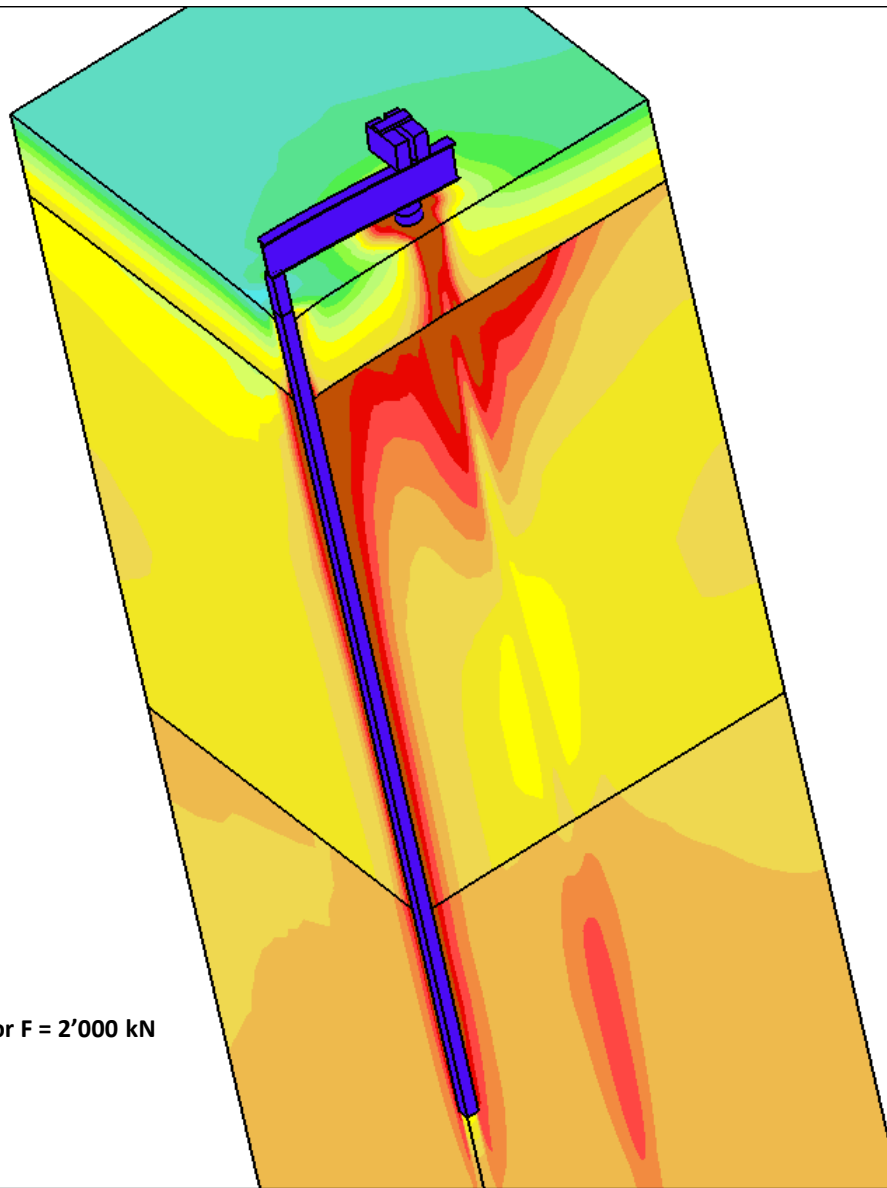


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UNIT
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CONTOURS OF : Stress level-
 TIME = 3.000[day]
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Stress level and deformed mesh for $F = 2'000 \text{ kN}$

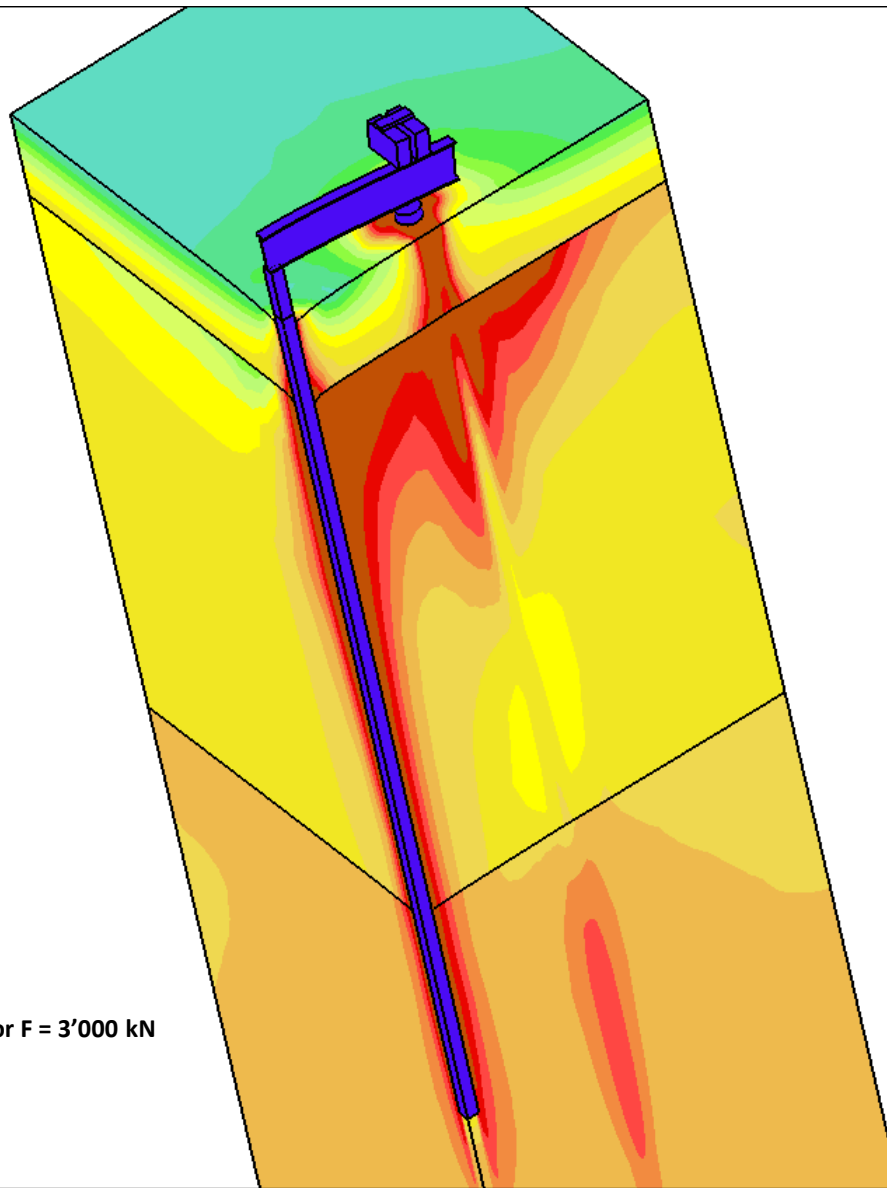


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UNIT
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CONTOURS OF : Stress level-
 TIME = 4.000[day]
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Stress level and deformed mesh for $F = 3'000 \text{ kN}$



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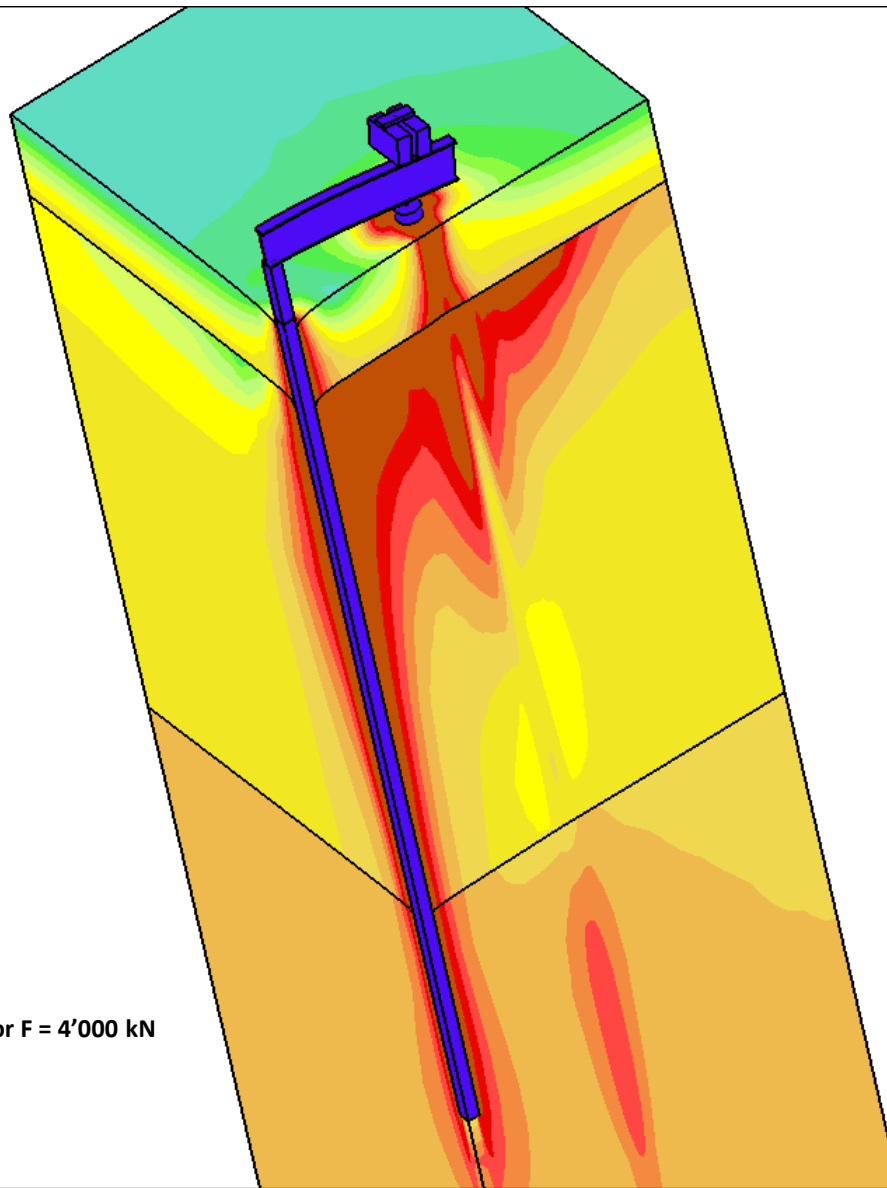


UNIT
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CONTOURS OF : Stress level-

TIME = 5.000(day)

Z SOIL 9.15 License : GEOMOD Project : pieu batiCnt tol1e-4 Date : 14. 1.2010 17: 0



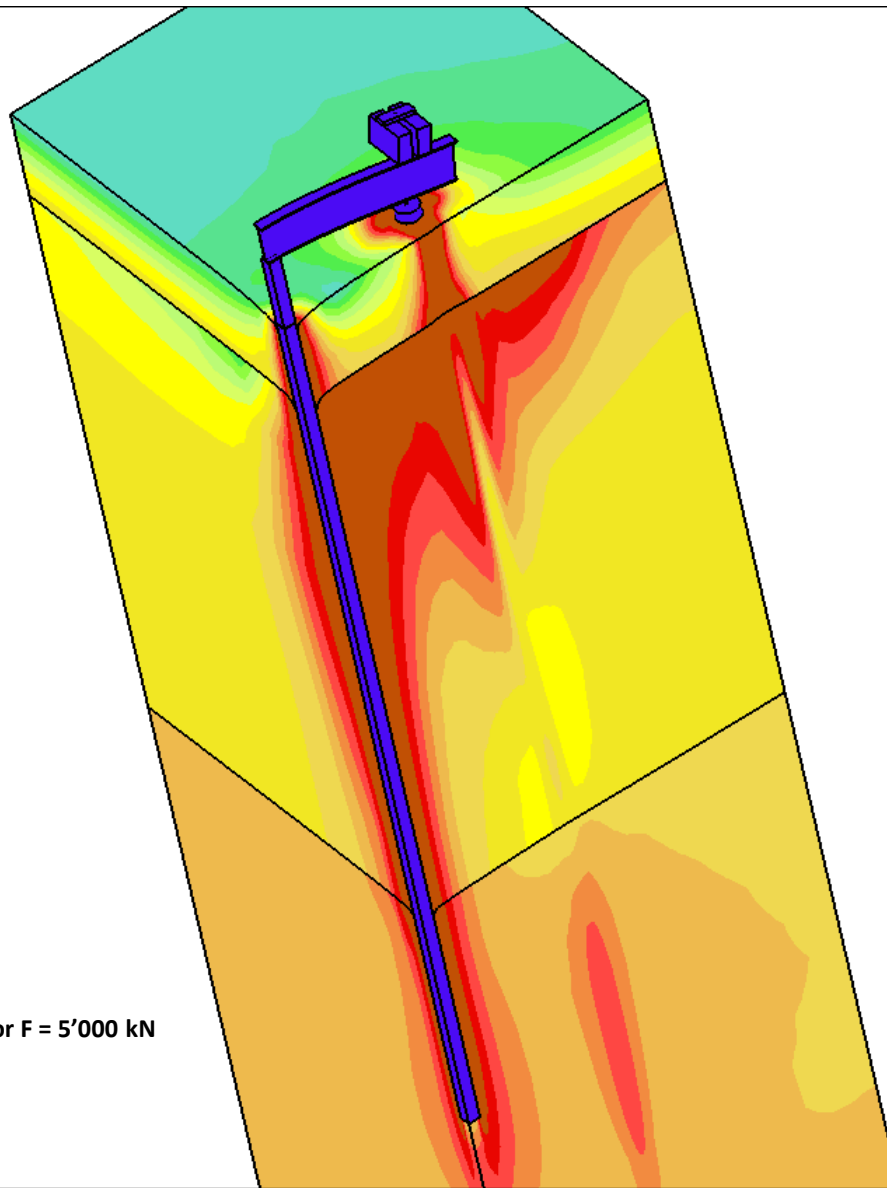
Stress level and deformed mesh for $F = 4'000$ kN

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UNIT
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CONTOURS OF : Stress level-
 TIME = 6.000(day)
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Stress level and deformed mesh for $F = 5'000 \text{ kN}$

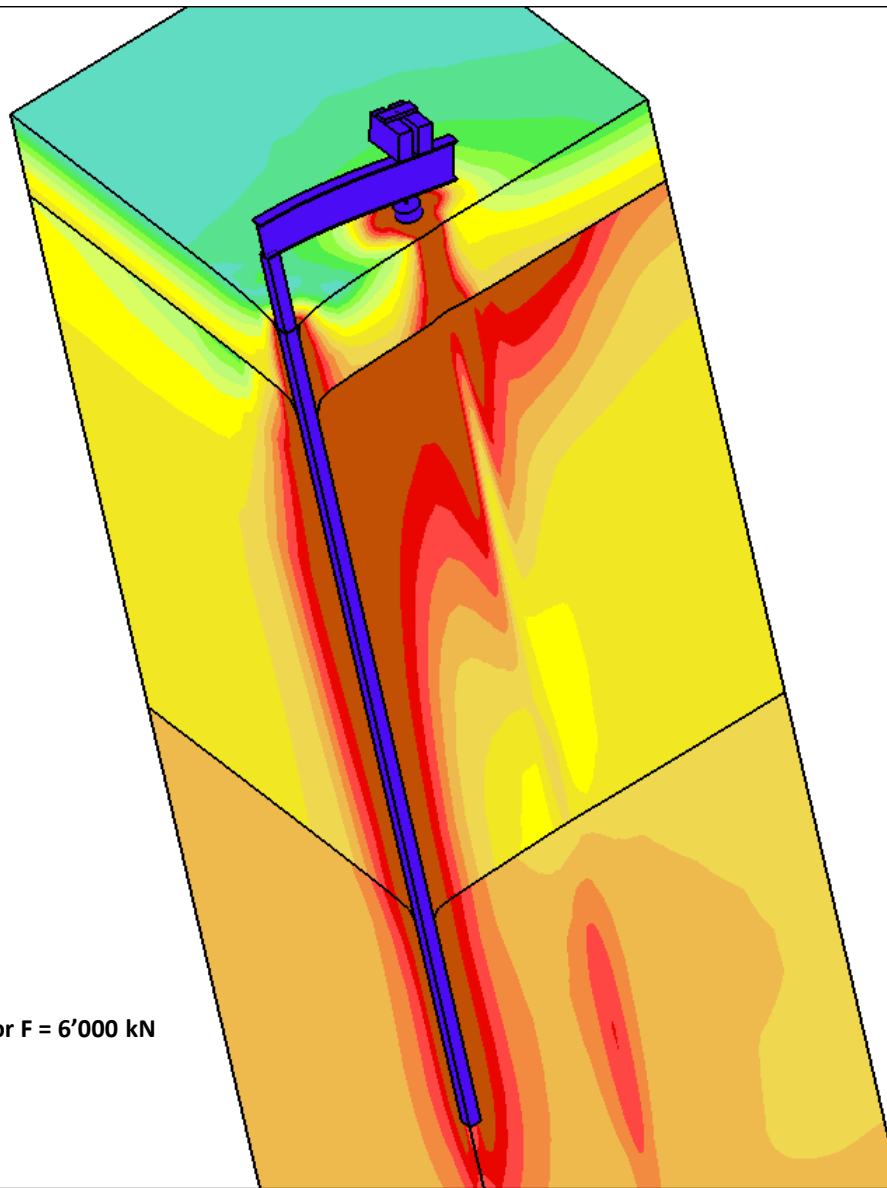


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UNIT
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CONTOURS OF : Stress level-
 TIME = 7.000[day]
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Stress level and deformed mesh for $F = 6'000 \text{ kN}$

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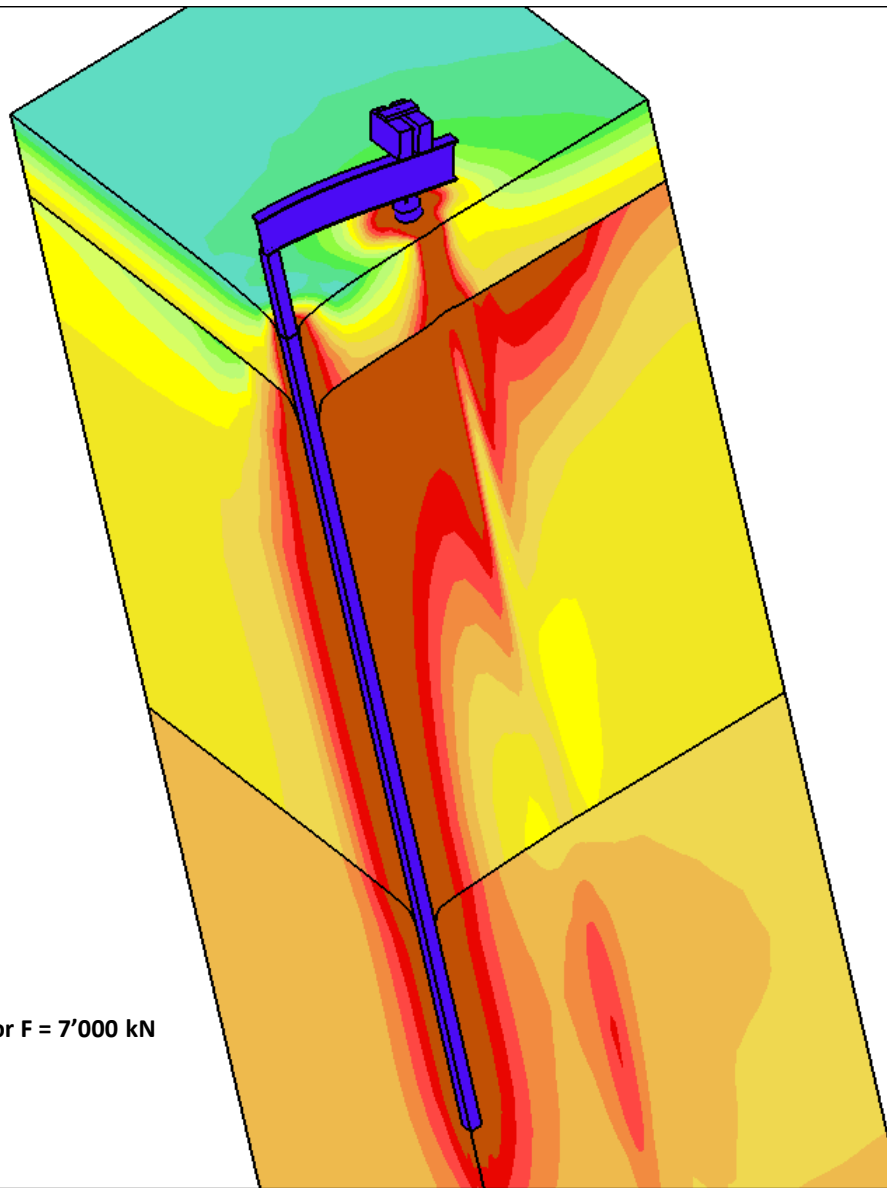


UNIT
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CONTOURS OF : Stress level-

TIME = 8.000[day]

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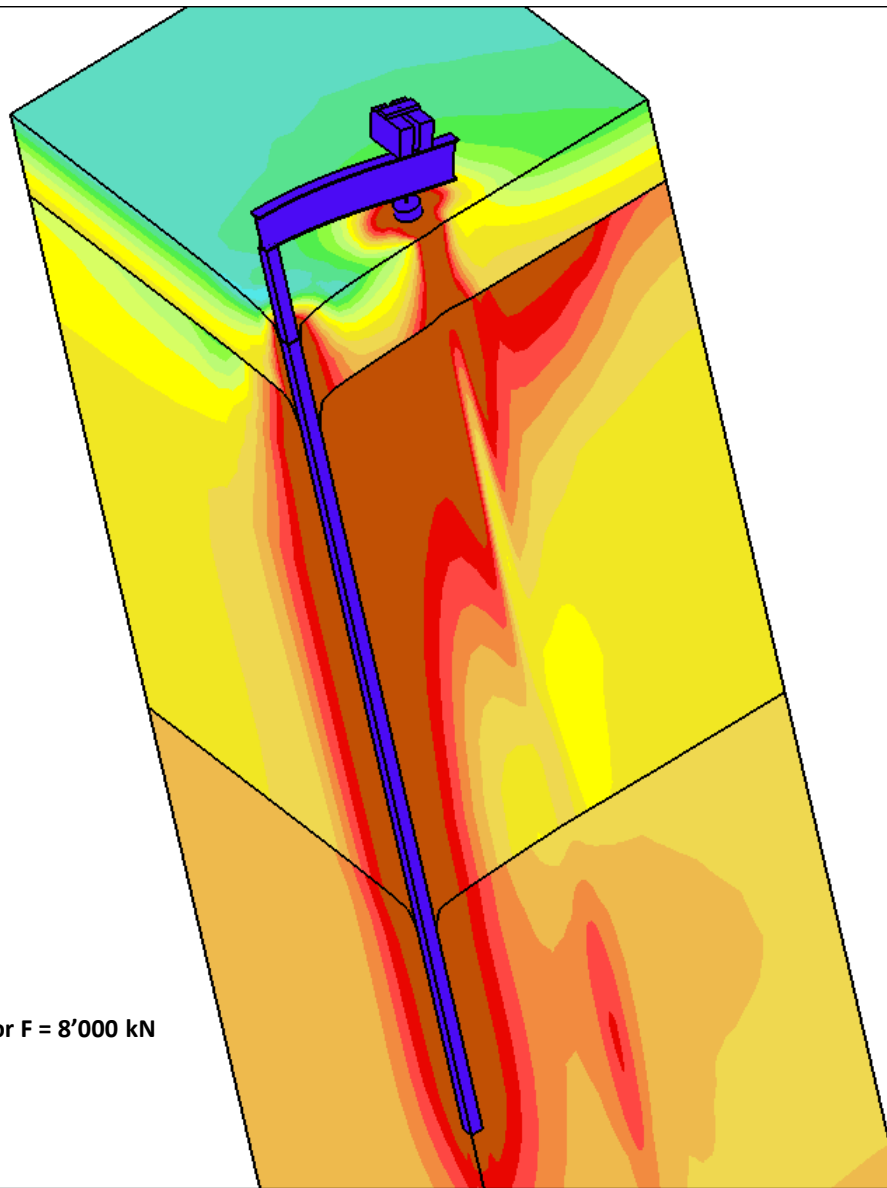
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Stress level and deformed mesh for F = 7'000 kN



CONTOURS OF : Stress level-
 TIME = 9.000(day)
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UNIT
 []



Stress level and deformed mesh for F = 8'000 kN



CONTOURS OF : Stress level-
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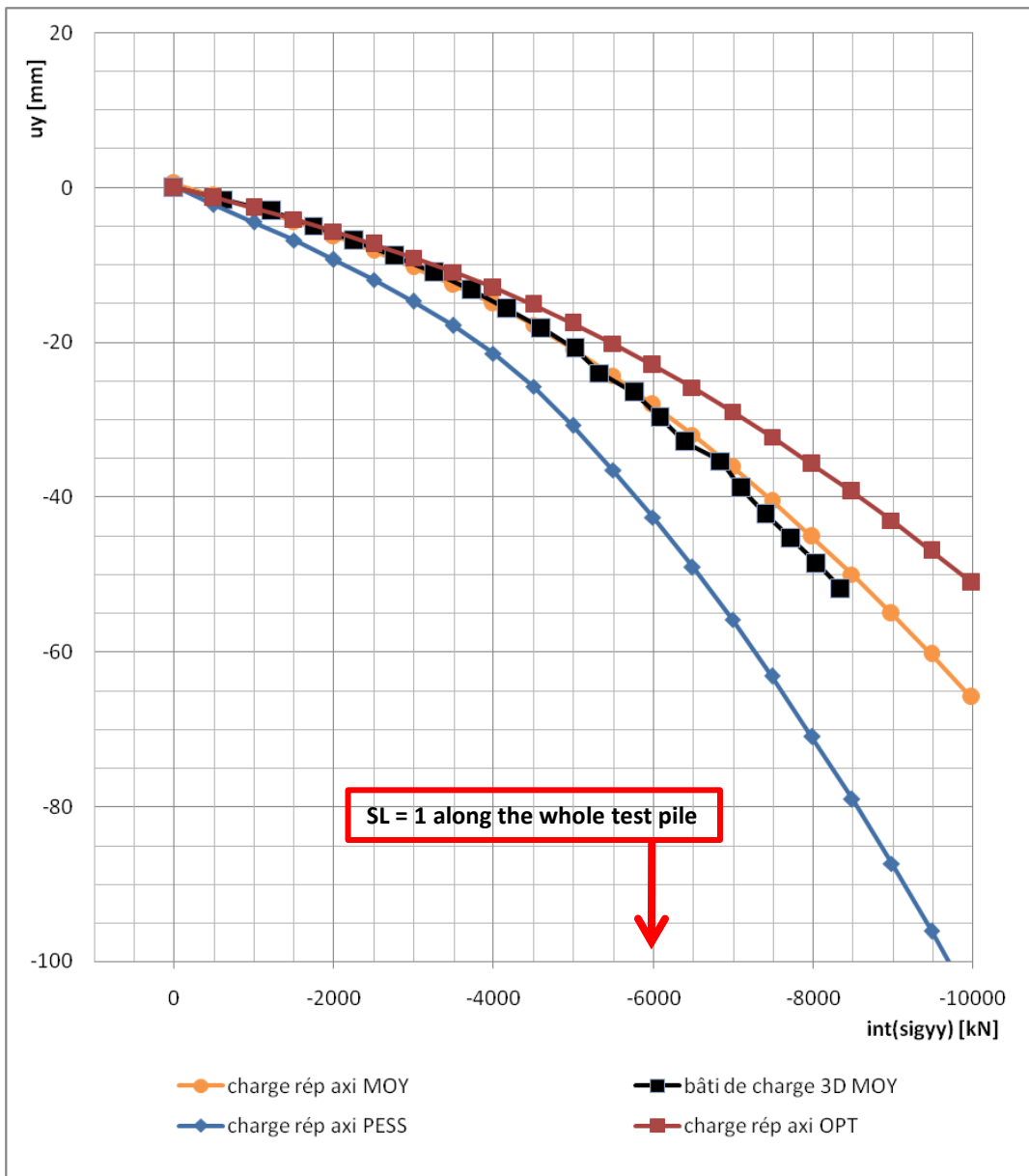
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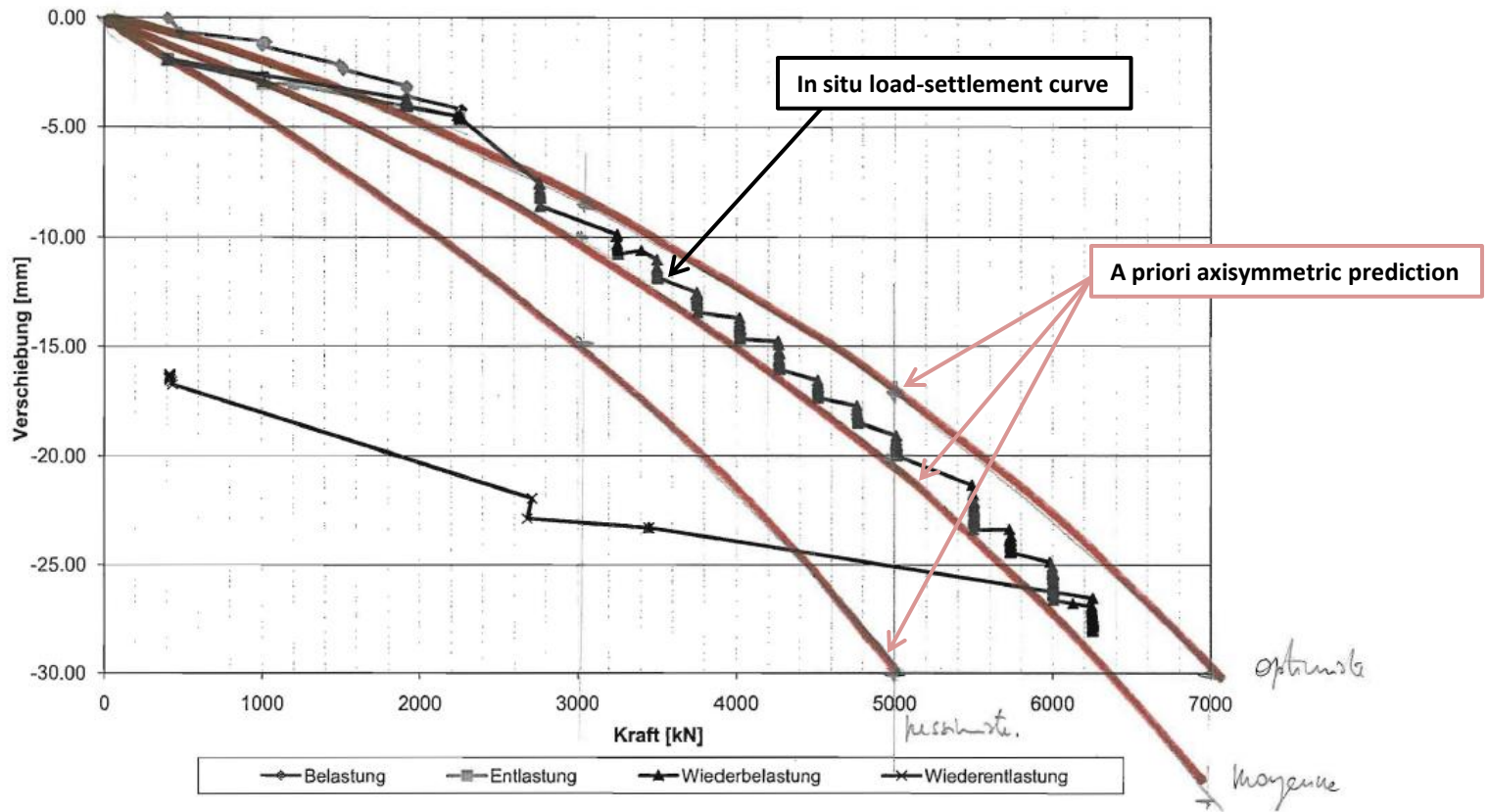


UNIT
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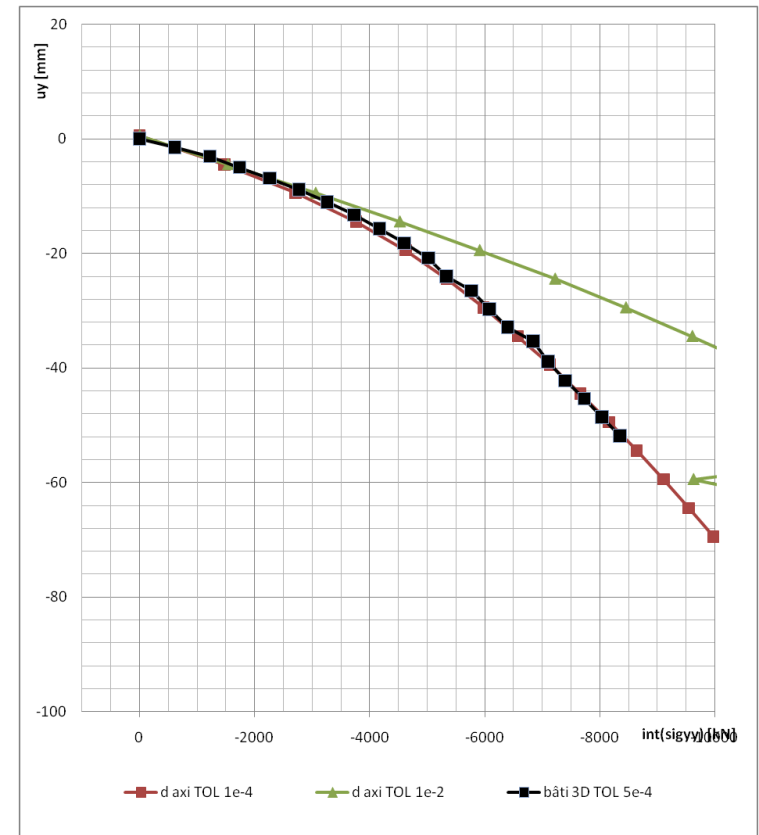
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Issues

- disp. controlled test => **TOL !!**



- model **without** contact elements !