



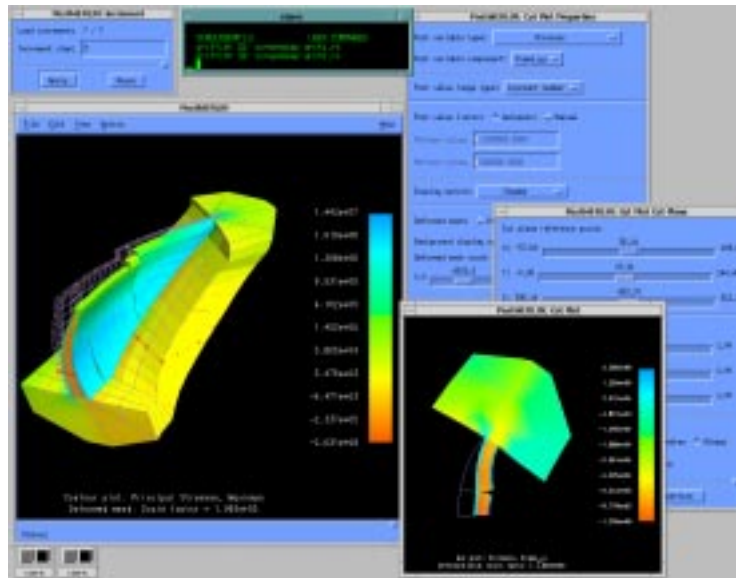
MERLIN

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An Engineering Tool for DAM SAFETY ASSESSMENT.

MERLIN is a finite element software package developed at the University of Colorado under contract from the Electric Power Research Institute. MERLIN was specifically written to facilitate the safety assessment of cracked concrete dams. In addition to numerous computational features (some of them unique) which assist and facilitate the task of the Engineer, it also embodies results of the related extensive experimental program undertaken in our laboratory.



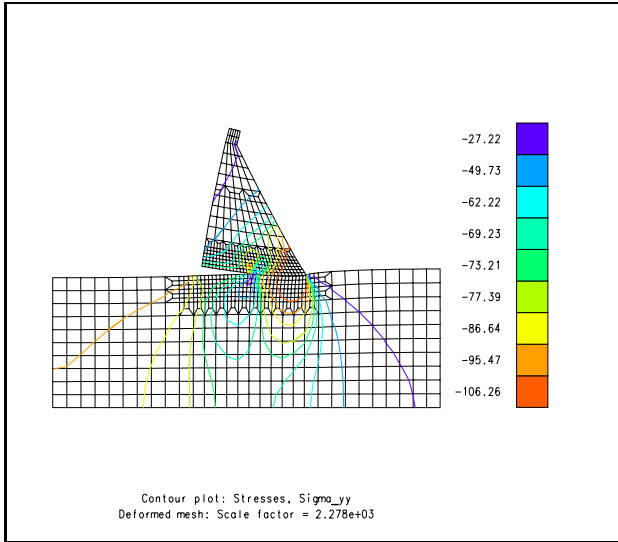
Contraction joint openings in 3D arch dam.

Capabilities

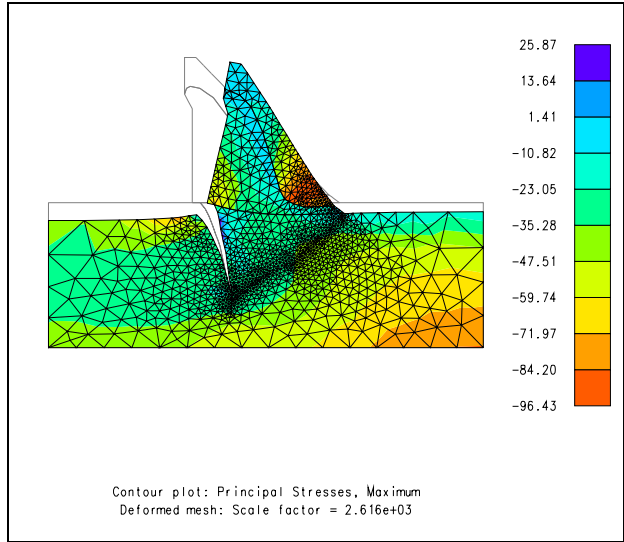
- Fully automated 2D/3D mesh generator.
- Extensive library of plane, solid, and interface elements, isotropic/anisotropic.
- Static and transient stress analysis.
- Uncoupled steady state and transient heat analysis.
- Uncoupled steady state seepage-flow analysis.
- Non-linear material models for concrete/rock interfaces, and rock joints.
- Powerful interactive graphical post-processor (deformed mesh, shading, contour lines/surfaces, vector plots, 2D/3D arbitrary cuts, carpet plots, pick node, hardcopy, crack surface tractions).
- Extensive documentation, user's, example and tutorial manuals.

Unique Features

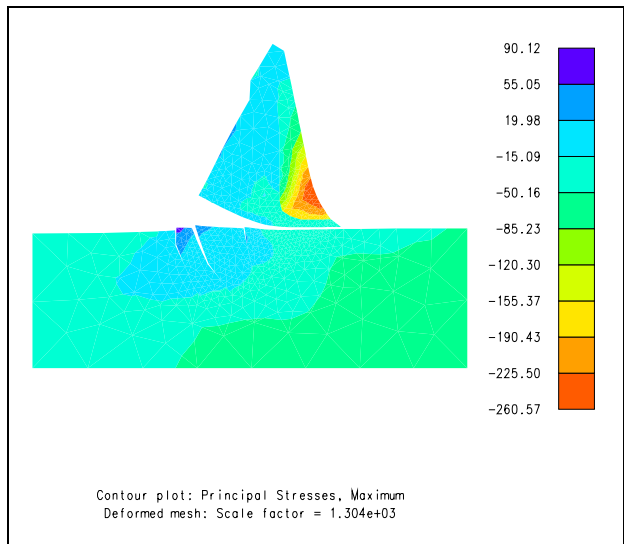
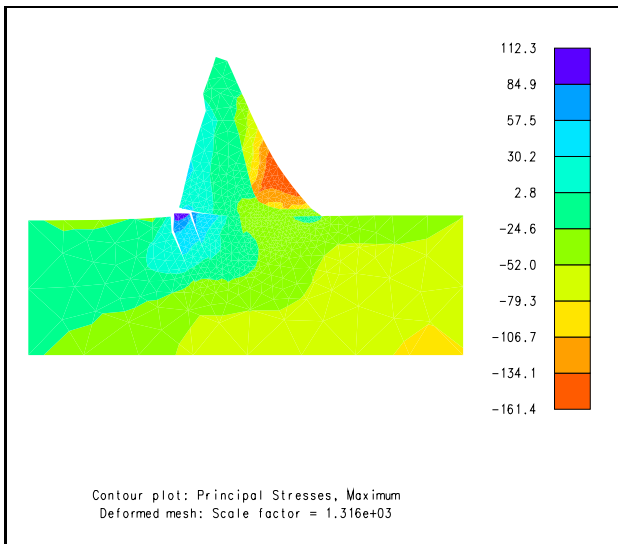
- Automated remeshing to simulate straight or dipping cracks (2D/3D).
- Various uplift models are implemented (including FERC's).
- Numerous fracture mechanics based capabilities to determine crack trajectory and length.
- Fully automated simulation of reservoir impounding up to the determination of the failure overtopping elevation. Crack length, and accompanying uplift pressure automatically updated.
- Determination of SFF for each water elevation increment.



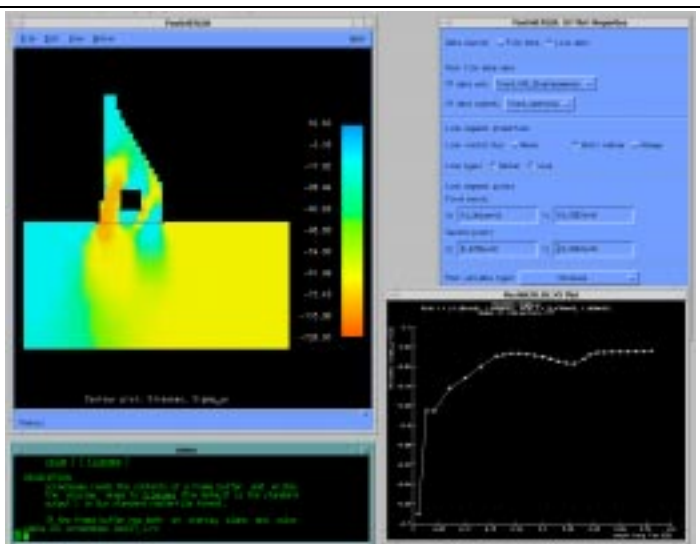
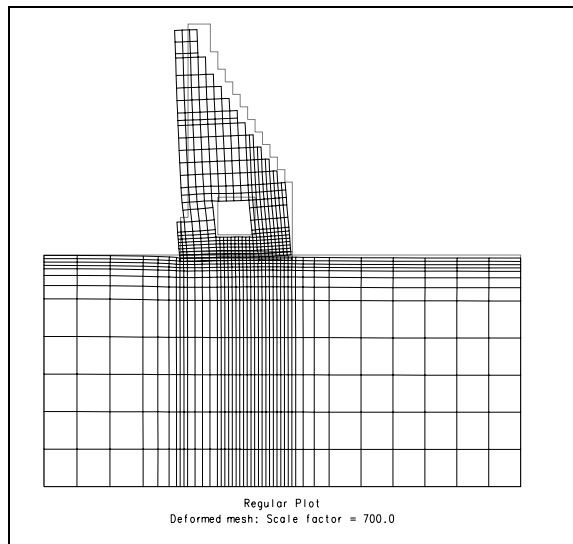
Crack propagation along interface.



Crack propagation in the foundation.



Fracture mechanics analysis of buttressed dam.



Lock analysis.