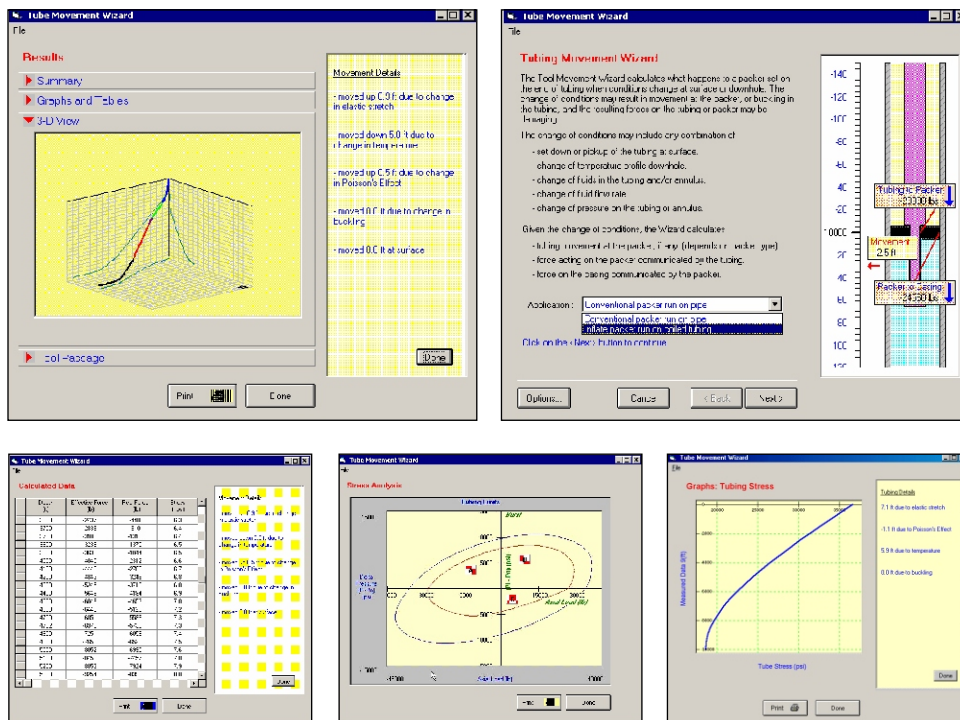


# Cerberus™ Packer and Completion Analysis

Cerberus, NOV CTES's award-winning modeling software, allows you to plan a well intervention or logging job on cable or pipe, to ensure that you can reach the target depth, do the job, and retrieve the tools back to surface safely and efficiently. This software has been field-proven by numerous service companies and operators to predict surface and downhole conditions with remarkable accuracy. Cerberus takes the guesswork out of operations in highly deviated or horizontal wells.



Cerberus™ Packer and Completion Analysis



In response to our customers' needs, the **Packer and Completion Analysis Module** is now an integral part of Cerberus.

- What effects do changes in the wellbore conditions have on the forces acting on the tubing and packer?
- Do the triaxial stresses exerted on the tubing over the life of the well exceed its operating envelope for tension, compression, collapse and burst?
- Is the movement provided for in the seal assembly adequate to meet my design objectives?
- What effect will well deviation and metal-to-metal friction coefficient have on the forces on my tubing and packer?
- What is the differential pressure across my packer during production or stimulation treatments?
- Will the tubing-to-packer force exceed a treating packer's shear release rating while a stimulation treatment is performed? Can I run

a wireline conveyed tool both in and out my tubing even though helical buckling is present? If not, could it be run on coiled tubing?

- How much does my tubing move at the packer in response to pickup or slack off force changes at surface in a deviated well?

This important feature in Cerberus allows the user to analyze the forces acting on a downhole packer caused by pipe movement and the effect of temperature, pressure, fluid density, and flowrate as these parameters vary as conditions in the wellbore change. The purpose is to predict movement and force at the packer and in the tubing to determine if the packer will be unset or if the pipe will exceed yield limits.

#### FEATURES:

- User-friendly interface
- Full support for deviated and horizontal wells
- Allows specification of allowable upward or downward movement, with or without no-go's

- Allows simultaneous analysis of multiple scenarios in sequence such as production, injection, pressure testing, and surface subsidence
- Buckling results can be passed to the Orpheus torque and drag program for detailed analysis of various well intervention options
- Triaxial stress operating envelope for multiple scenarios
- Force and stress calculations from surface to packer

The program also models whether buckling may prevent a wireline or coiled tubing conveyed tool string from passing through the completion in either direction. Unlike existing tubing-movement spreadsheet applications, Cerberus takes into account the deviation of the well in all calculations and is capable of handling complex well geometries.

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