Weatherford®

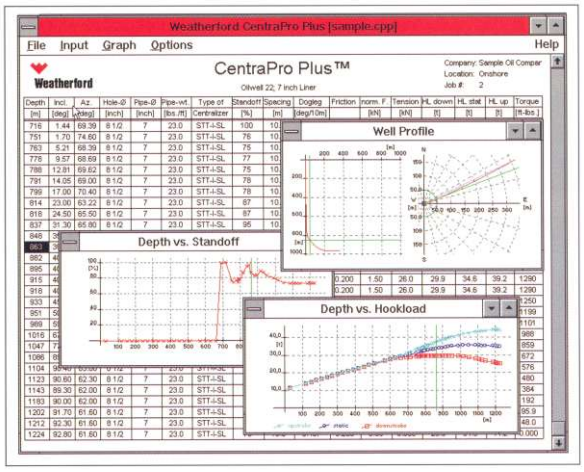
# CentraPro Plus®

## Centralizer Placement System

Careful planning and engineering are critical for the success of the cementing job with proper centralization necessary for good mud removal. The optimum placement of centralizers establishes the achievable standoff.

Additionally, in highly inclined and horizontal well situations, optimum placement minimizes friction forces and thereby ensures a casing can be run safely to bottom.

The all new *CentraPro Plus* centralizer placement software of Weatherford contains a completely revised mathematical simulation model. *CentraPro Plus* software calculates the optimum standoff, as well as precise torque and drag simulation.




## Torque and Drag

The revised mathematical model incorporates a torque and drag analysis that accounts for the known running forces of the centralizers, as well as the friction factors which depend on the mud type. This analysis is imperative to evaluate whether the desired centralizer spacing can be run or rotated without delays, problems due to high drag forces or damaging the pipe connections. The equations on which these models are based were completely developed by Weatherford.

## Mathematical Model

A new mathematical simulation model based on revised API-10D formulas is used to calculate the optimum spacing of centralizers to obtain the best standoff at a given borehole depth.

The latest model takes into account relevant factors such as:

- The lateral force at any given location based on borehole geometry, buoyed string weights and tension forces
- The reaction of the centralizer exposed to these forces, based on actual test data for each pipe size/hole size combination
- The sag between centralizers based on the elasticity of the pipe and a three-dimensional vector analysis of the weight and tension components

# CentraPro Plus®
## Centralizer Placement System

## Model Variations

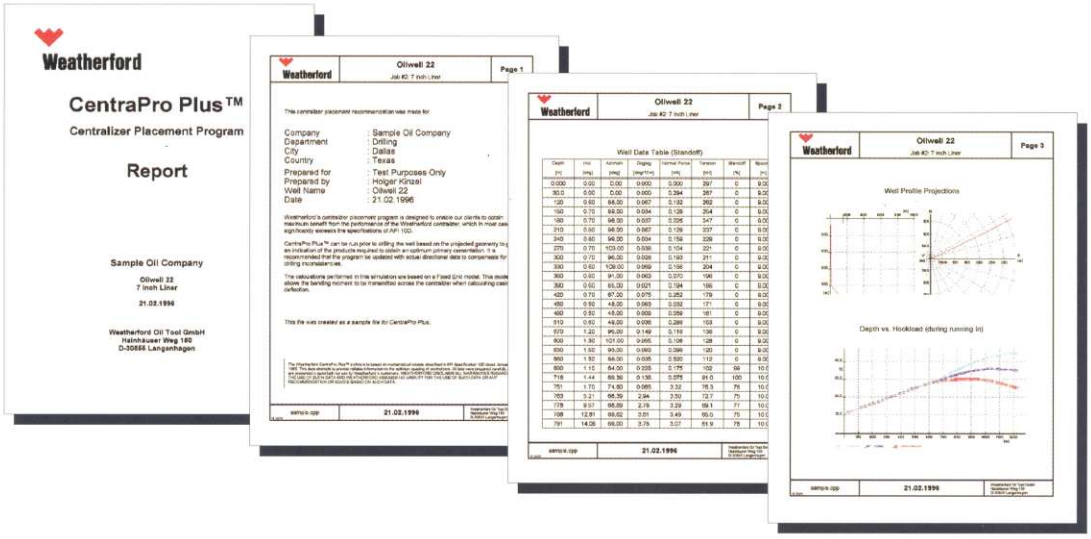
The new software allows several variations to simulate different borehole situations. The buyoed weight of the string, for example, can be based on the cement slurry weight, the mud weight or a combination of both.

The model can be run either in the “fixed standoff” mode, which results in a spacing required to obtain a particular standoff, or in the “fixed spacing” mode, which results in a standoff at each centralizer location.

## Databases

All relevant centralizer data and pipe information are stored in databases. This minimizes the possibility of human input errors. Each wellfile  contains relevant data on each casing or liner string (called ‘jobs’).

Each job may be divided into sections that allow the variation of parameters such as hole size, centralizer type and spacing, friction factors and pipe data.




## Presentation of Data

Results of the simulation are presented in a way which can easily be read and interpreted. A complete overview of the standoff, required number of centralizers and stop collars, as well as the torque and drag figures are printed in tabular as well as graphical form.

## Technical Support

*CentraPro Plus* software installations are based strategically in technical support centers around the globe. Experienced personnel are ready to assist you in the optimum placement of centralizers for all kinds of situations. For more information, please contact your nearest Weatherford representative.

Weatherford®

515 Post Oak Blvd.
Suite 600
Houston, Texas 77027 USA
Tel: 713-693-4000
weatherford.com

 Brochure **81.02**