

Load case - drill ahead

Oliasoft

Abstract

In this document we describe the load case *Drill ahead* available in the Oliasoft™ application.

Introduction

Drill ahead is a burst/collapse load case, where the unknown is the internal pressure profile of the tubing¹. This load case represents the hydrostatic pressure from mud and *Equivalent Circulating Density* (ECD) for drilling a new section.

Inputs The following inputs define the drill ahead load case

- 1) The true vertical depth (TVD) along the wellbore as a function of measured depth. Alternatively, the wellbore described by a set of survey stations, with complete information about measured depth, inclination, and azimuth.
- 2) The true vertical depth/TVD of
 - a) The hanger of the tubing, TVD_{hanger} .
 - b) The shoe of the tubing, TVD_{shoe} .
- 3) The mud weight/density, ρ_m , for drilling the next section.
- 4) Equivalent Circulating Density, ρ_{ECD} .

Calculations The internal pressure profile from hanger to shoe, parametrized by TVD, of the tubing is then given by

$$p_i = (\rho_m + \rho_{\text{ECD}}) g \text{TVD}, \quad (1)$$

where g is the gravitational constant.

¹We denote any tubular by tubing. All calculations encompass both tubings and casings.