# **Task #1**

Your task to compute **pump pressure** and **ECD as the circulation rate varies from 100 to 650gpm.** For the hydraulics modelling, you are going to use two models provided in page 2, which are:

1. Newtonian
2. Non-Newtonian (Bingham model)

***What is the condition of the well? Is the well be fractured? Is the well be collapsed? If yes, what is the appropriate flow rates to avoid well collapse and well fracturing?***

**Ans:** From the plot, we have collapsed well conditions. In this case we may also have kick in the well. Appropriate flow models for the Bingham Model and Newtonian are respectively 1230 and 1520.

# **Task #2**

Your task here is to plot the **Reynolds number** vs flow rate for the flow in the annulus and pipe using Bingham hydraulics model. Based on the figures, please indicate the flow regimes with respect to respect to flow rate.

Ans: Drill pipe: Laminar (Flow Rate: from 100 to 230), Turbulent (Flow Rate: More than 230)

Annulus: Laminar (Flow Rate: from 100 to 850)