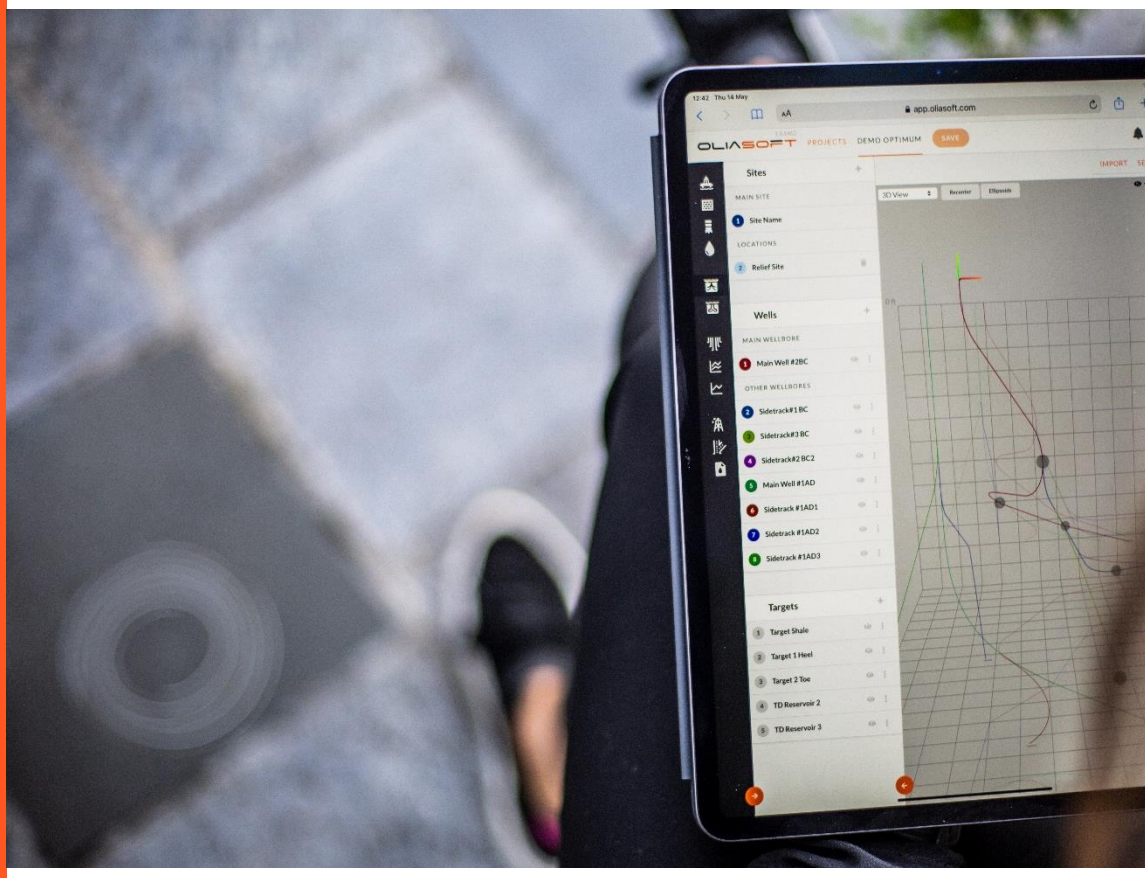
OLIASOFT



Oliasoft WellDesign®

Technical Validation Casing Design

Oct 2020

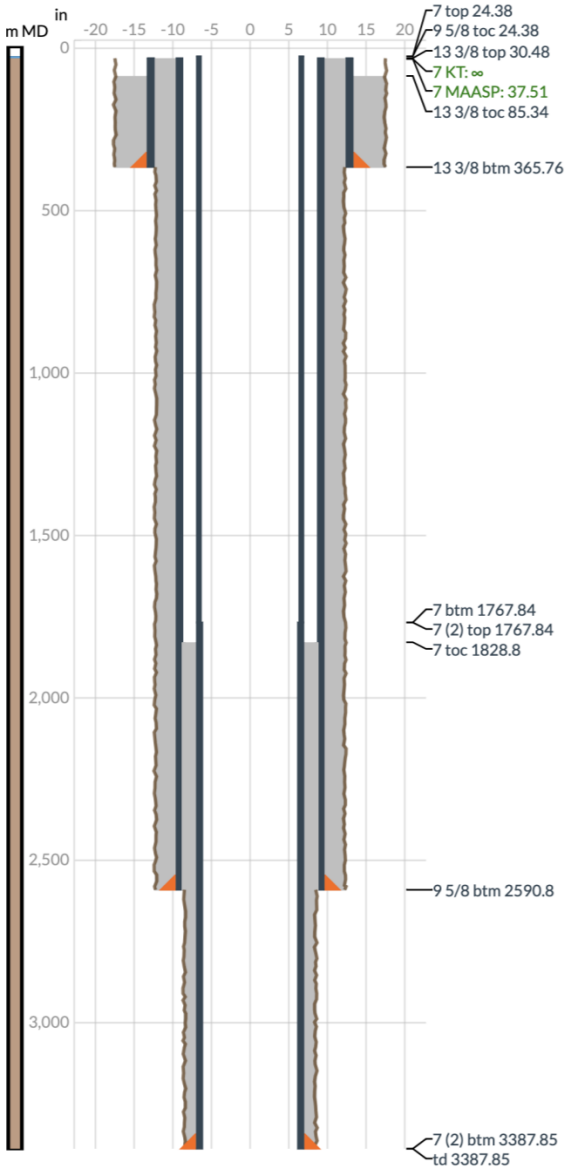
Content

1 Test data

This verification project was conducted in cooperation with a major global operator.

3 sections

- 13 3/8" Conductor
- 9 5/8" Surface Casing
- 7" Production Casing



Design parameters

For this test, results generated from StressCheck when you tick off "all" boxesunder "Analysis Options". Including Bucklin, Temperature Deration and the so-called "Use Burst Wall Thickness in Triaxial" is used.

Oliasoft operates with 6 "Critical dimensions" and can replicate any StressCheck/WellCat result by changing these. For this test we have used the defaults

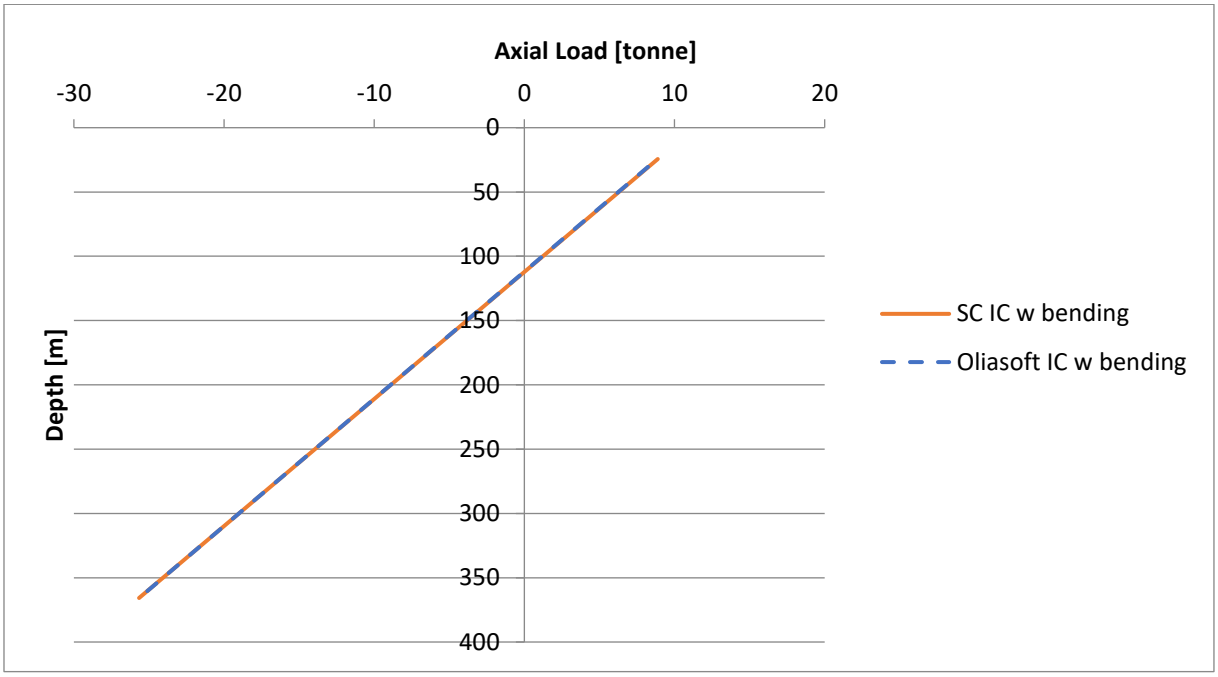
- Burst (default 0.875)
- Collapse (default 1.0)
- Axial (default 1.0)
- Triaxial Longitudal (default 0.875)
- Triaxial Hoop (default 0.875)
- Triaxial Radial (default 1.0)

Comparison have been made without connections in this paper.

In this report StressCheck is denoted as SC

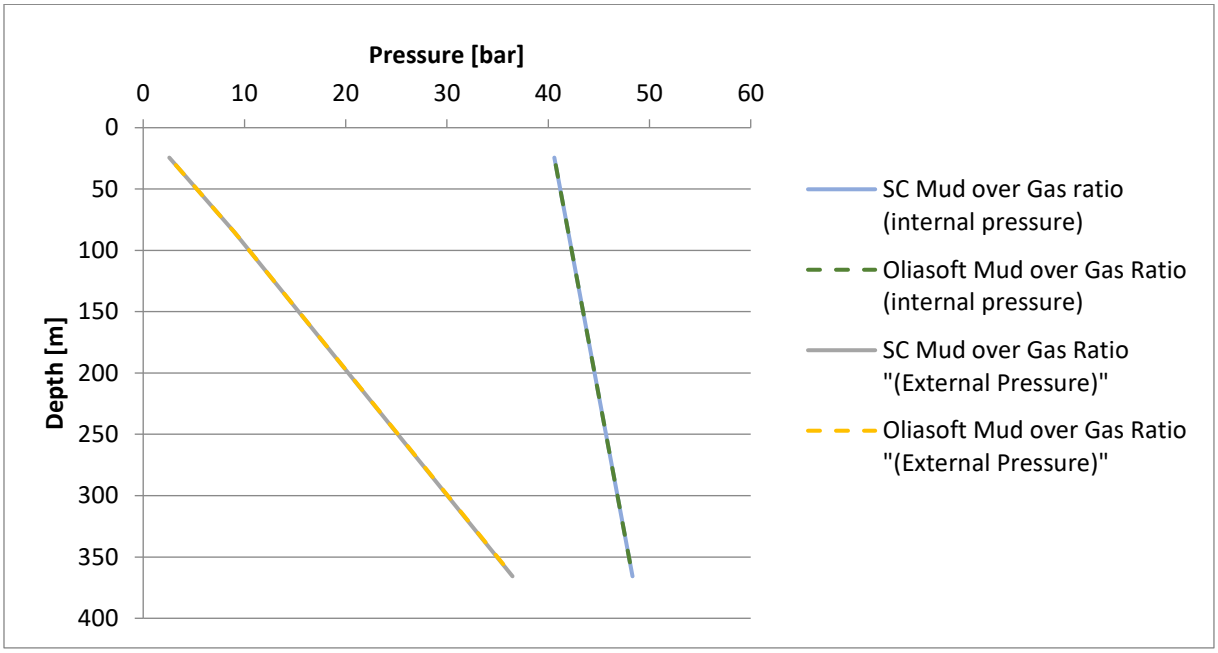
2 13 3/8” conductor section

2.1 Initial conditions

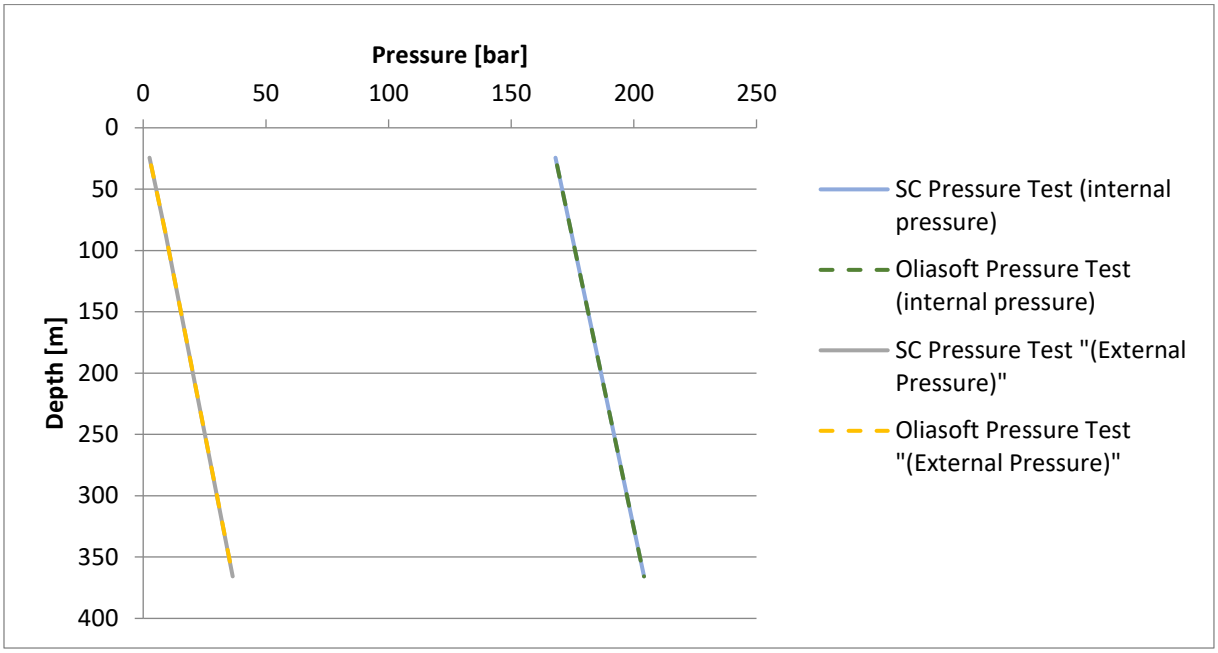


2.2 Load Case Pressure

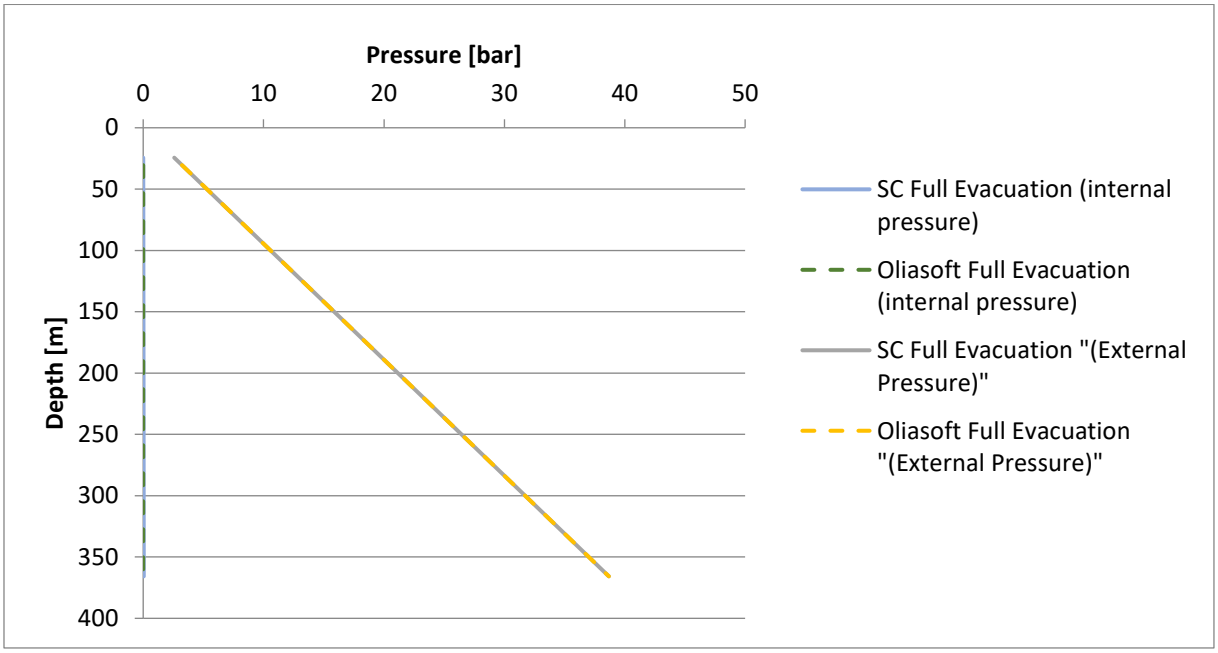
2.2.1 Mud over Gas Ratio



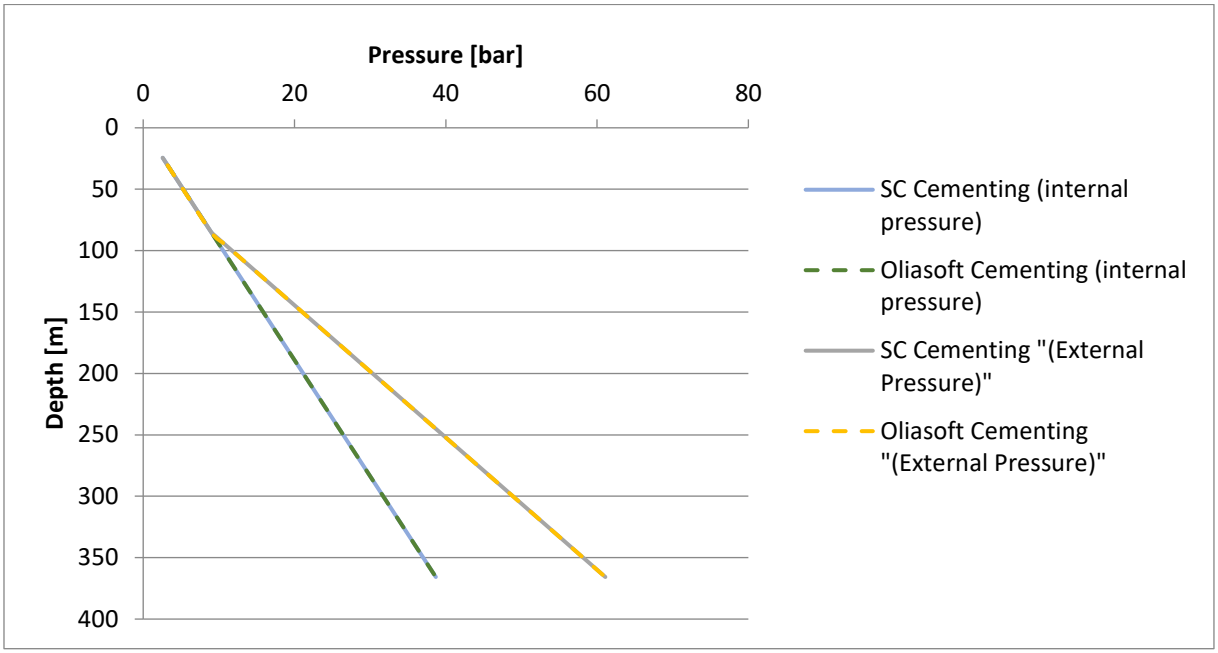
2.2.2 Pressure Test



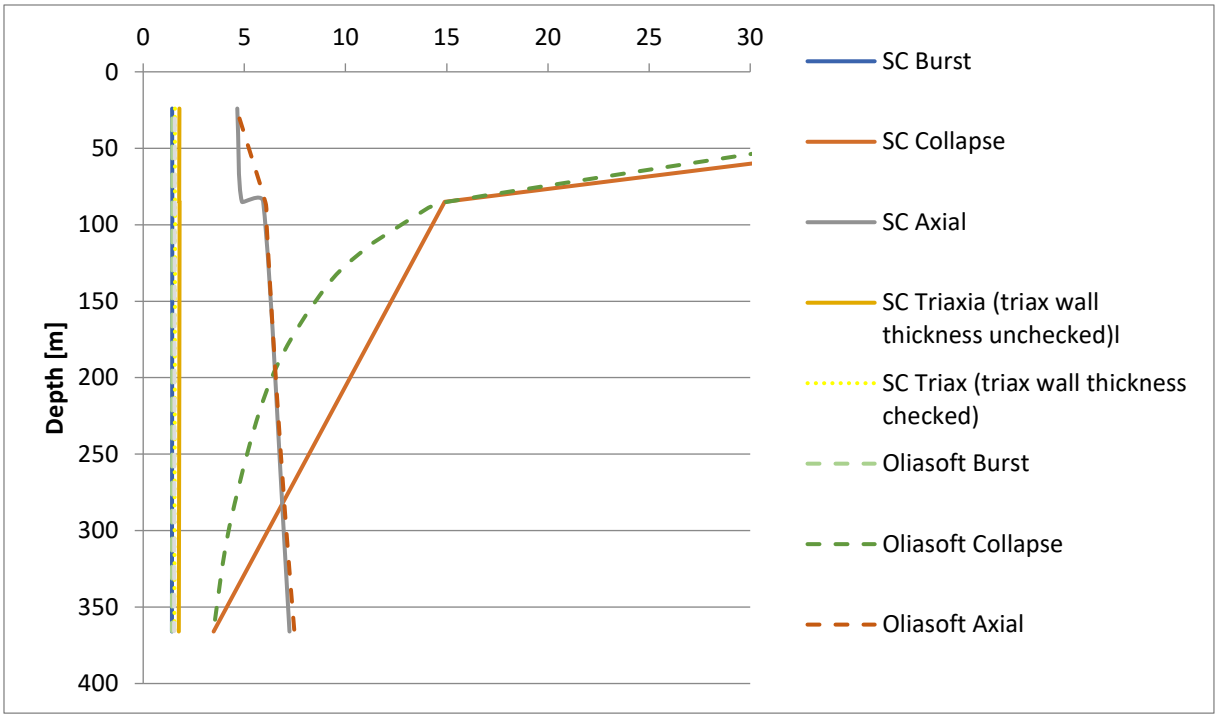
2.2.3 Full Evacuation



2.2.4 Cementing

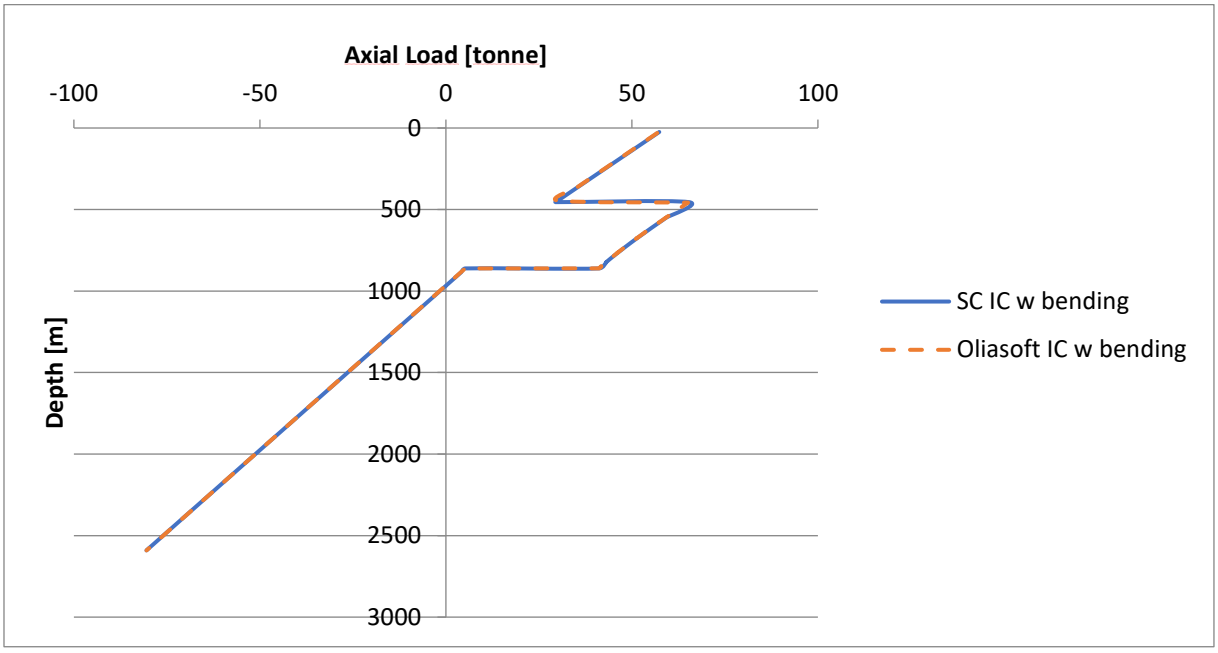


2.3 Minimum Safety Factor



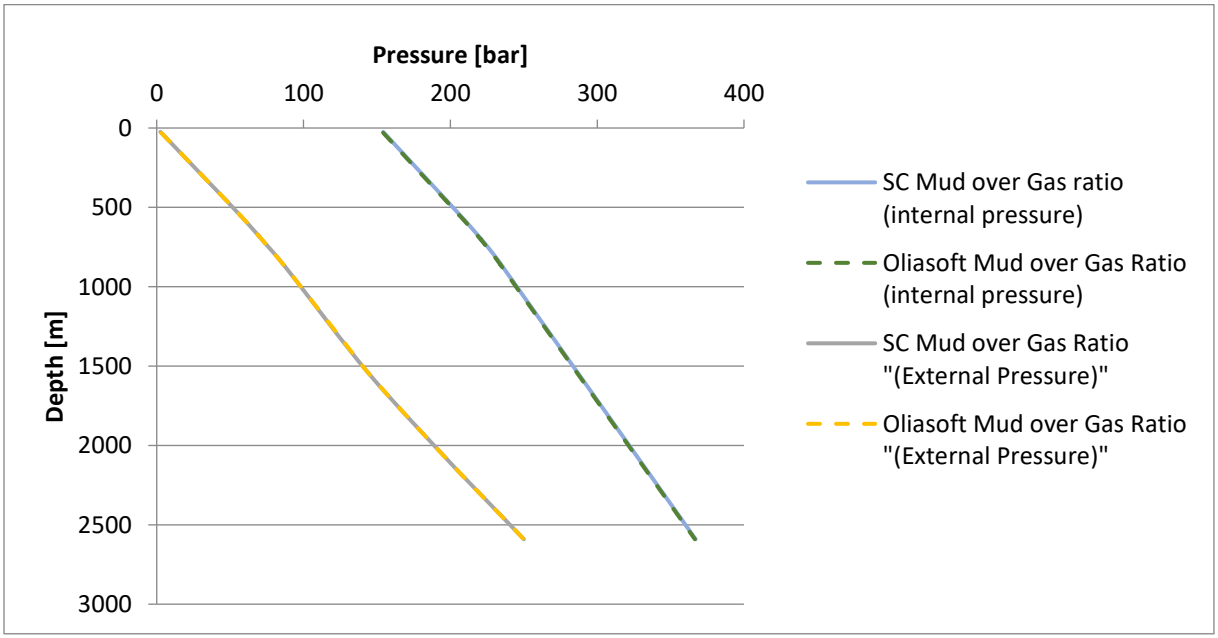
3 9 5/8” surface casing

3.1 Initial conditions

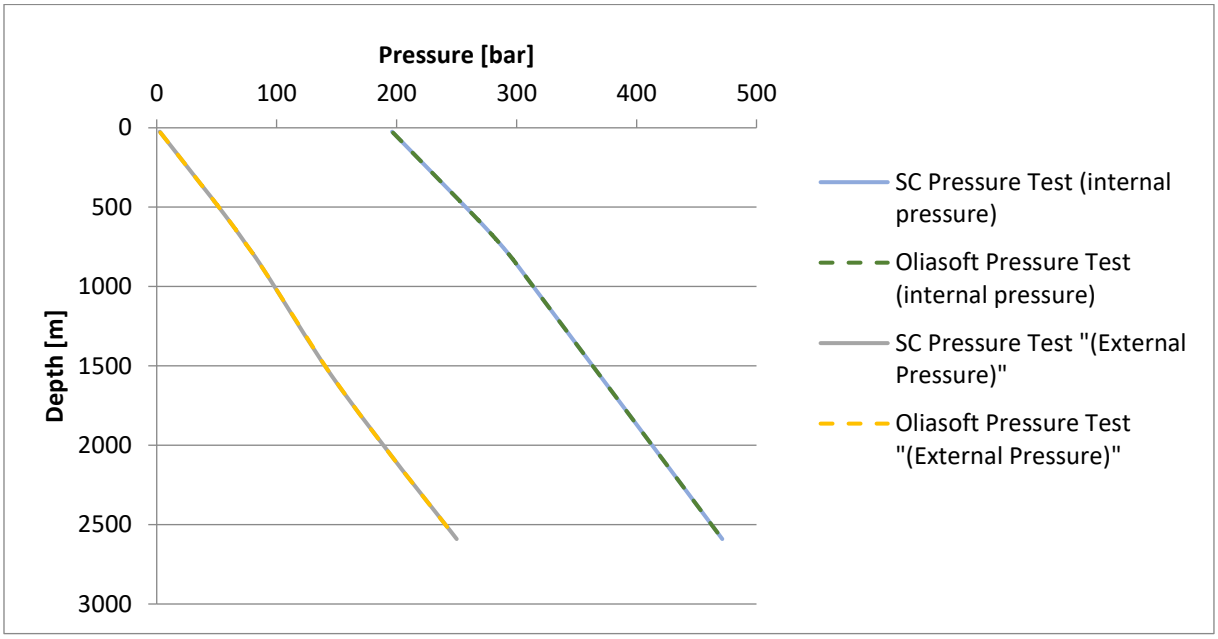


3.2 Load Case Pressures

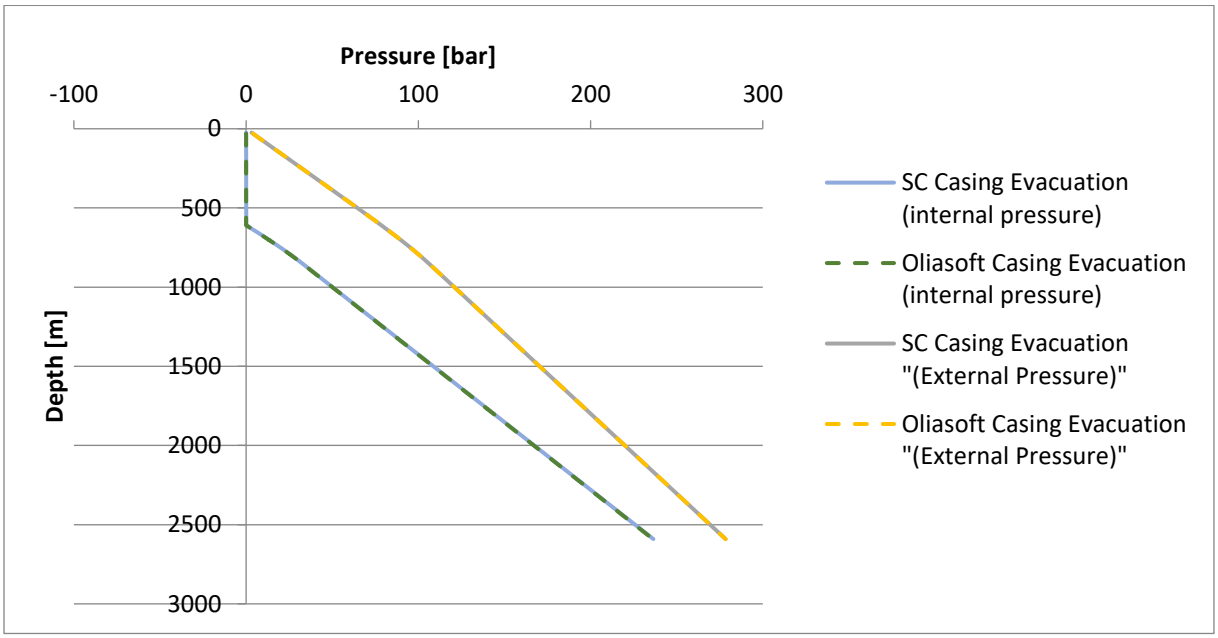
3.2.1 Mud over Gas Ratio



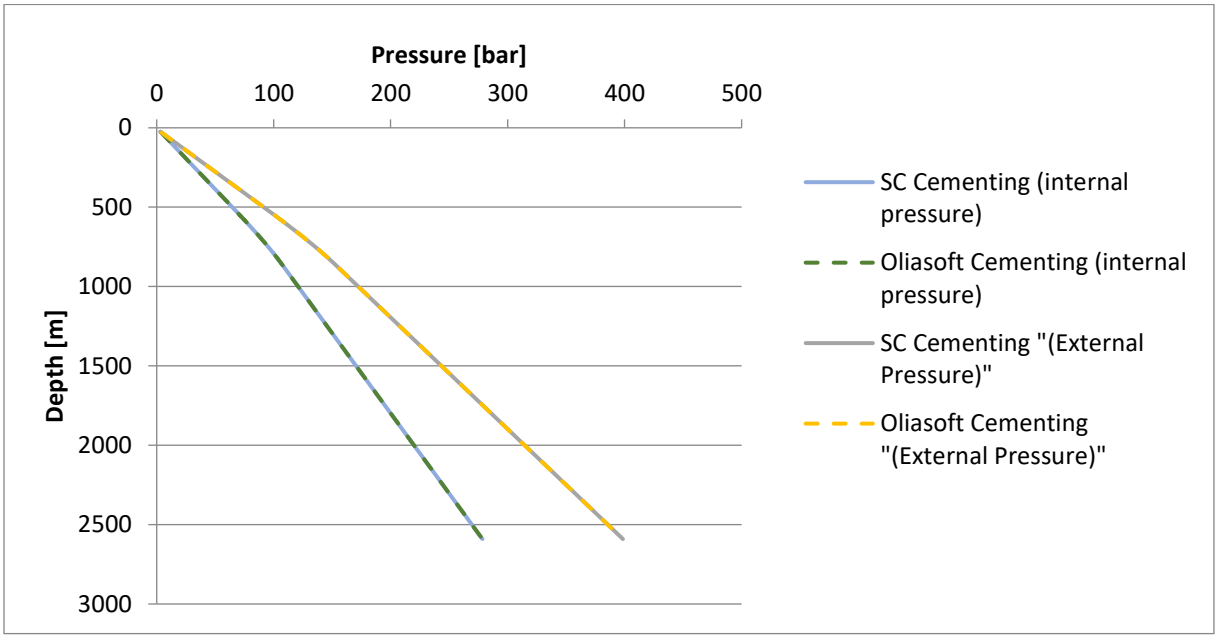
3.2.2 Pressure Test



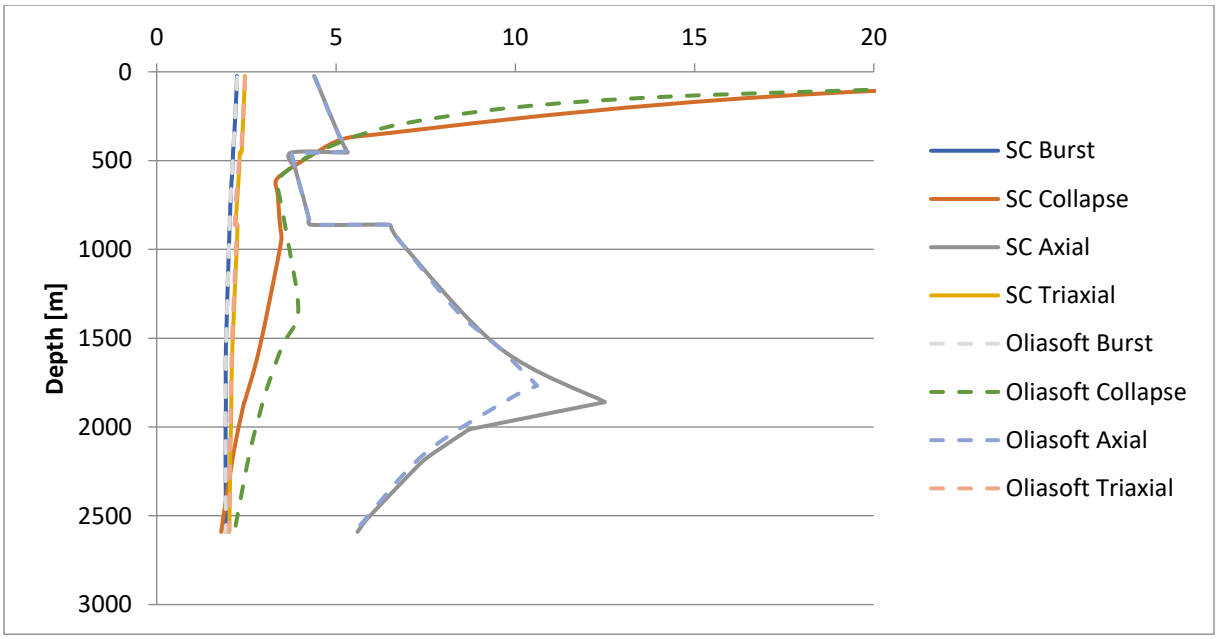
3.2.3 Full/Partial Evacuation



3.2.4 Cementing

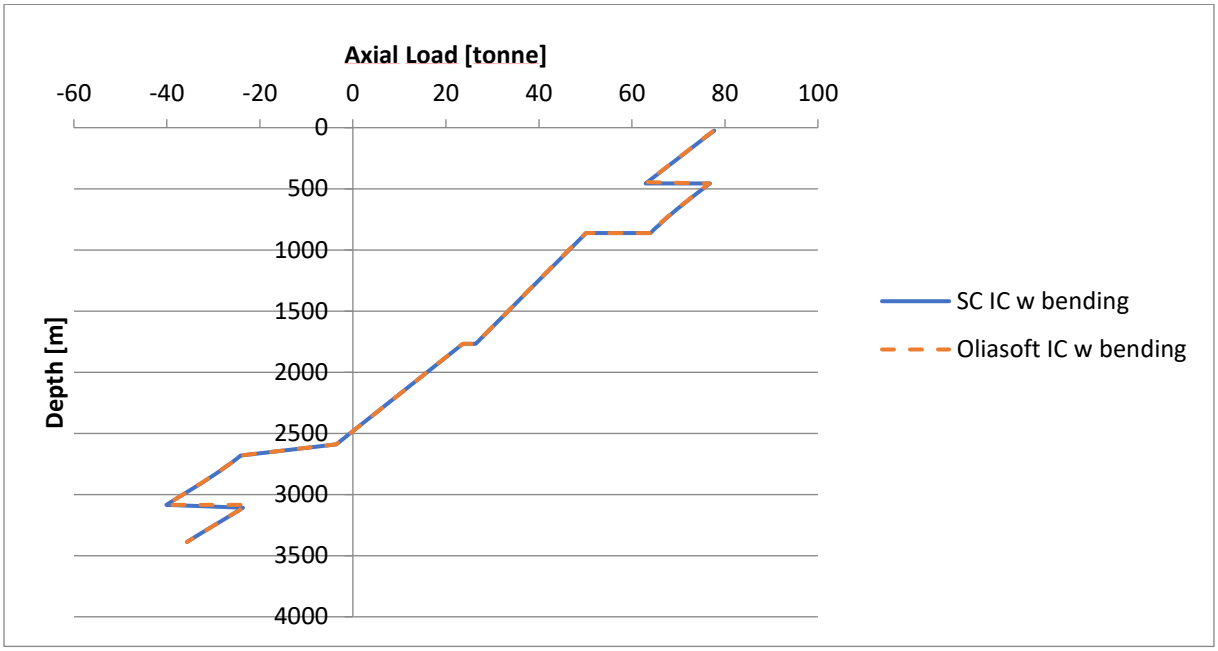


3.3 Minimum Safety Factors



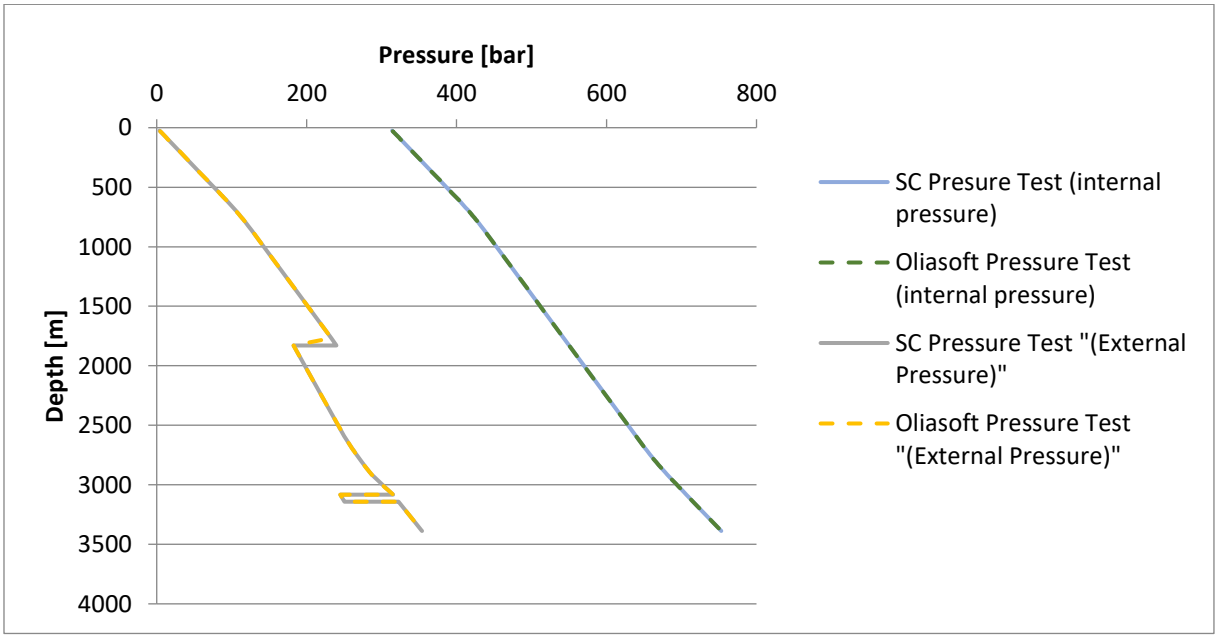
4 7” Production Casing

4.1 Initial Conditions

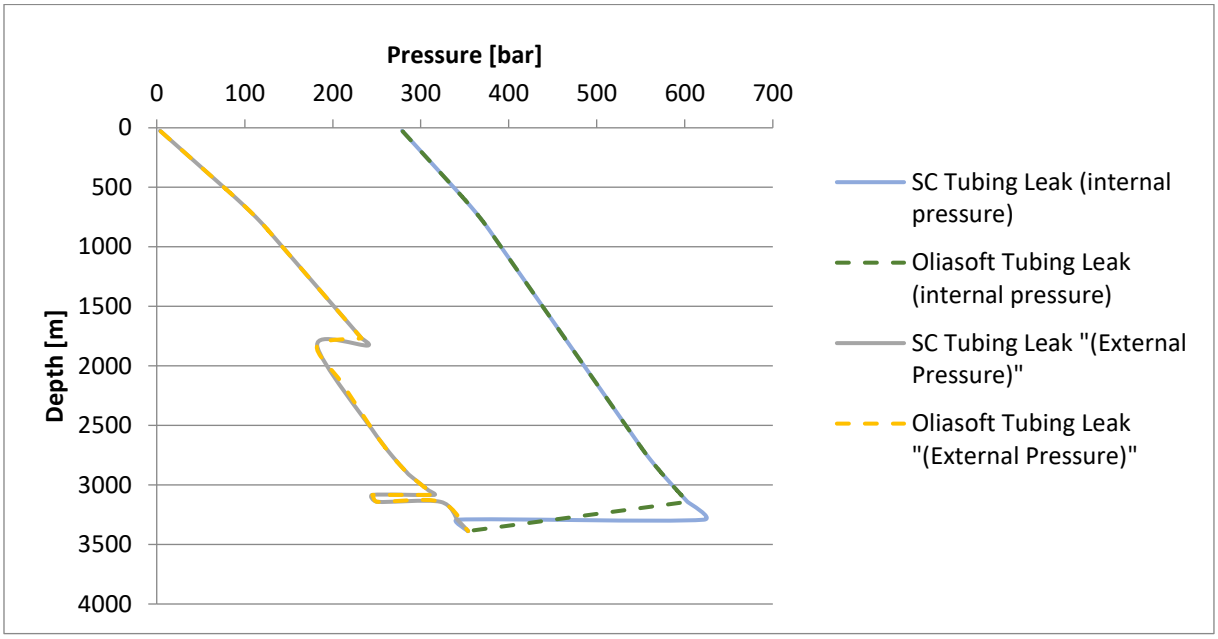


4.2 Load Case Pressures

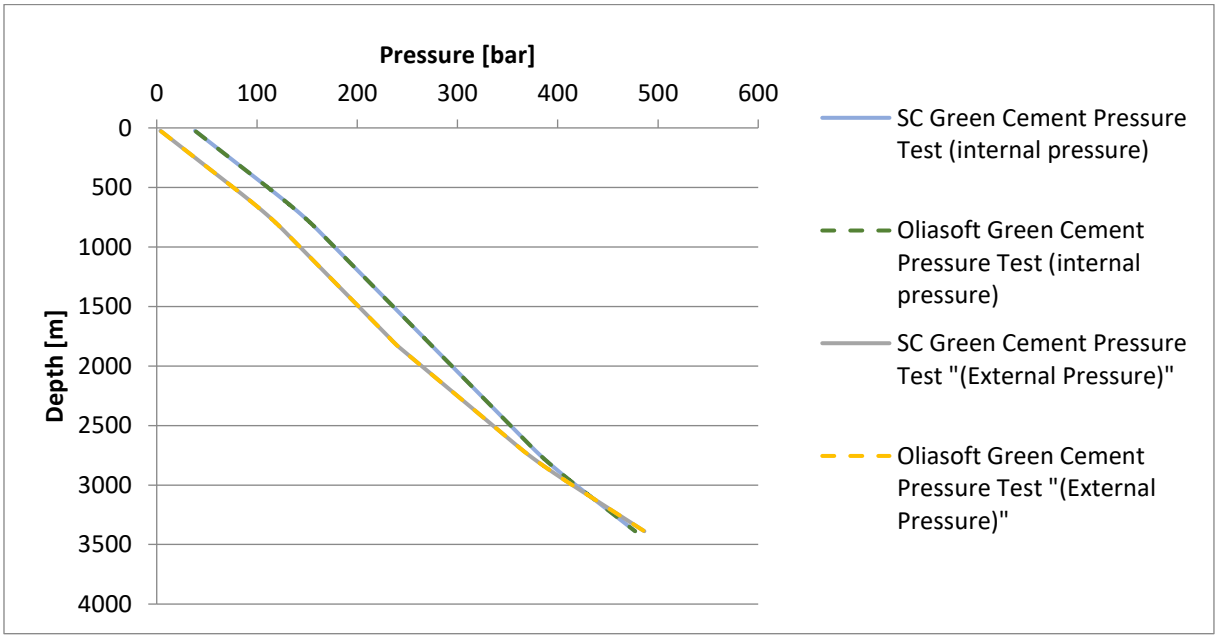
4.2.1 Pressure Test



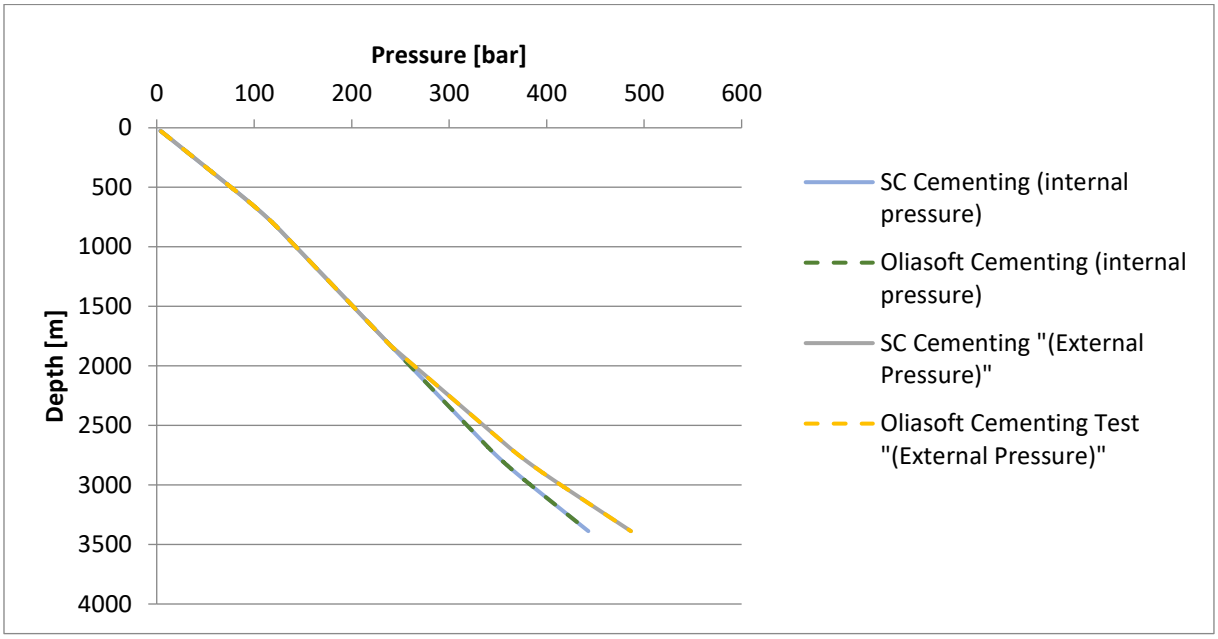
4.2.2 Tubing Leak



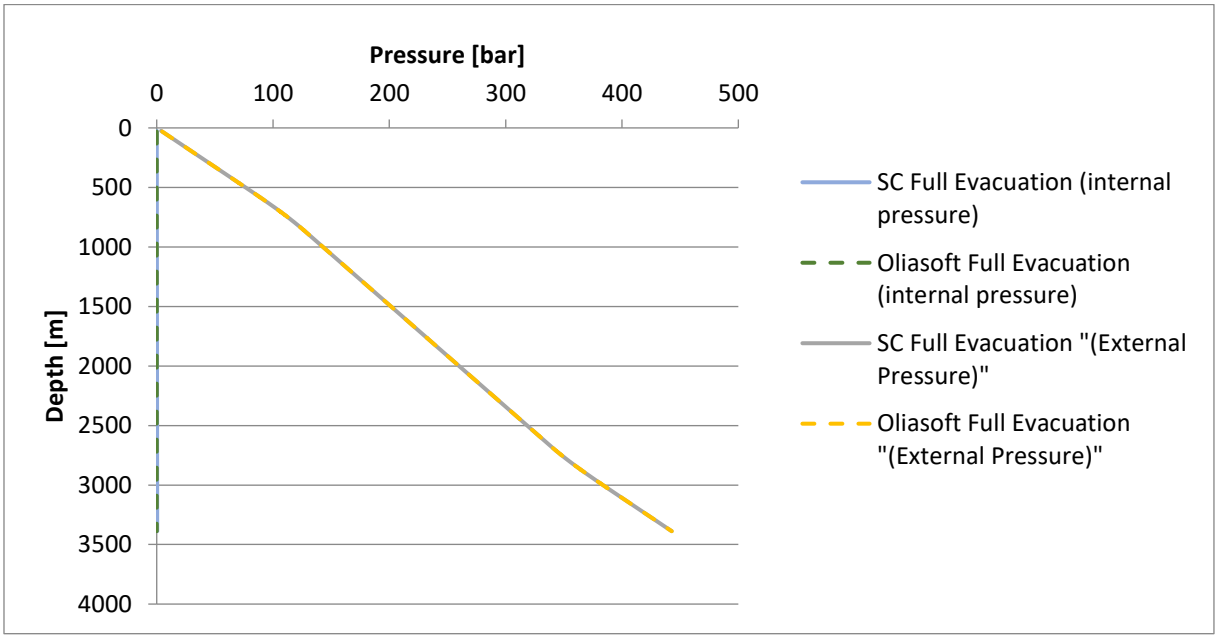
4.2.3 Green Cement Pressure Test



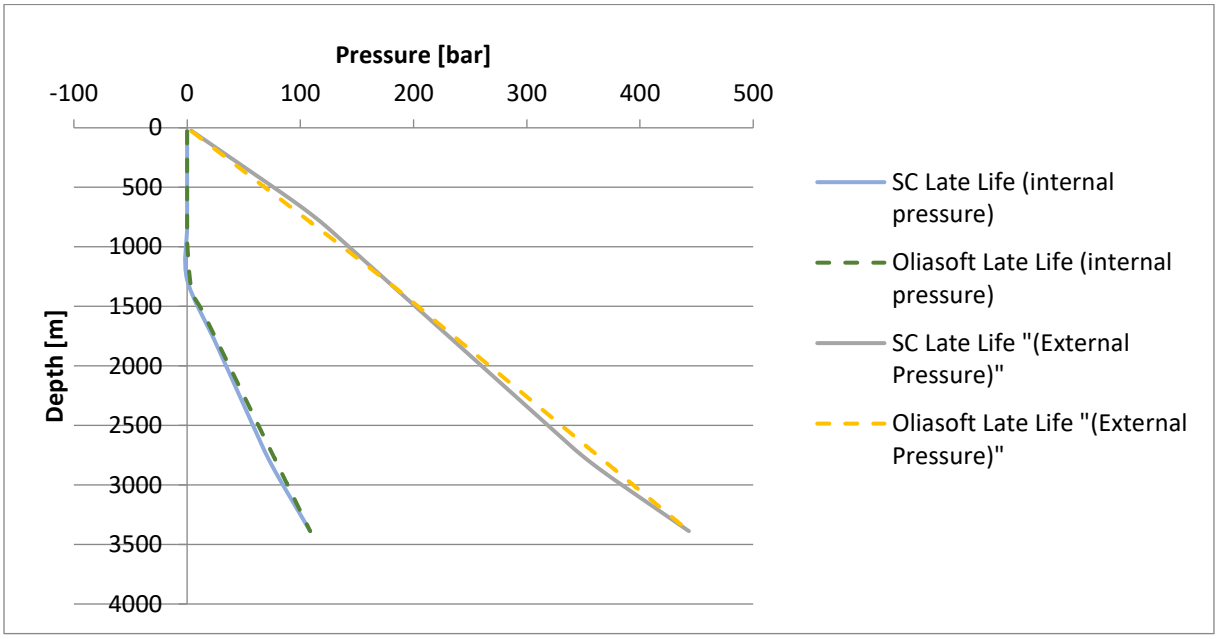
4.2.4 Cementing



4.2.5 Full Evacuation



4.2.6 Late Life



4.3 Minimum Safety Factors