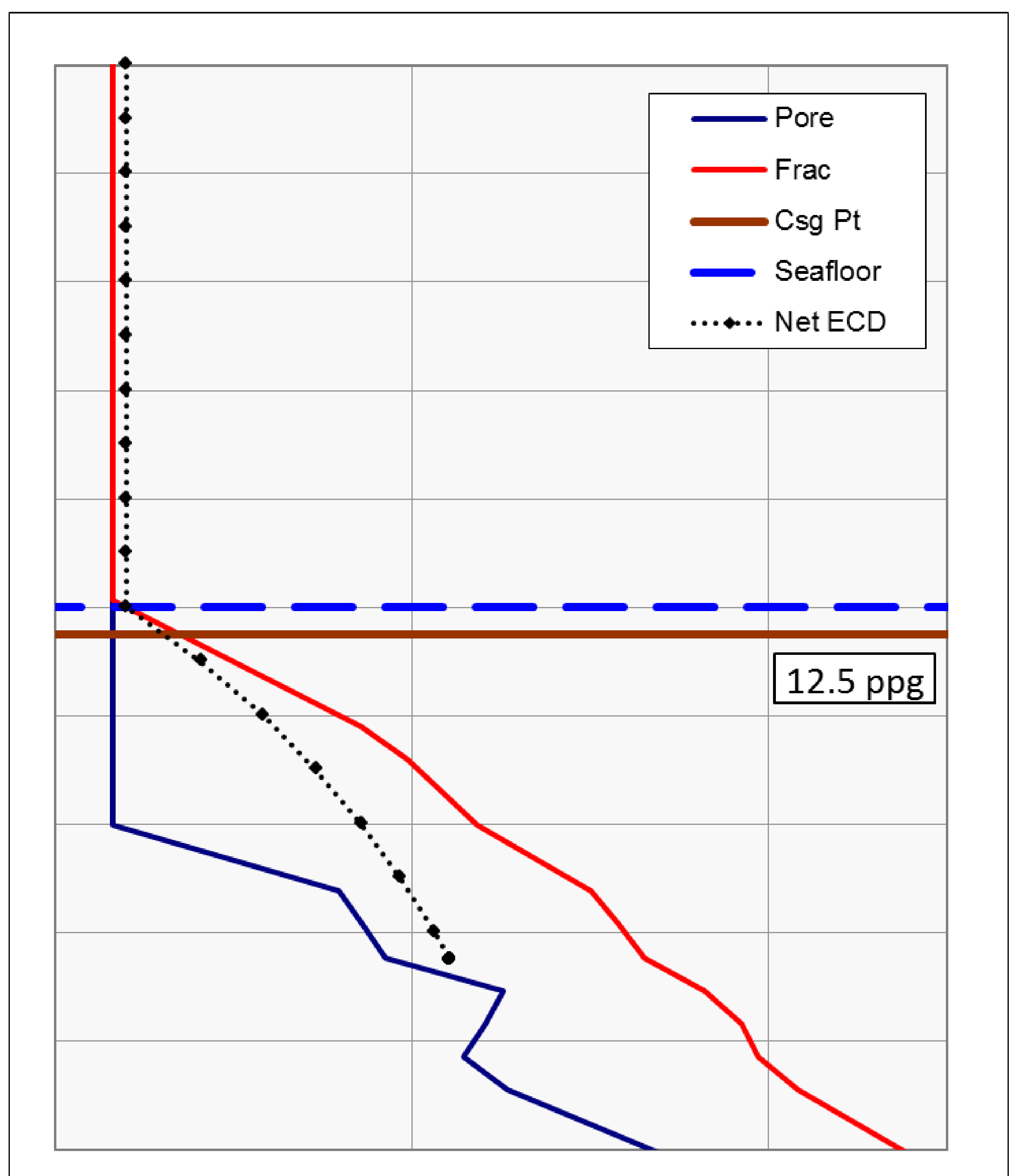
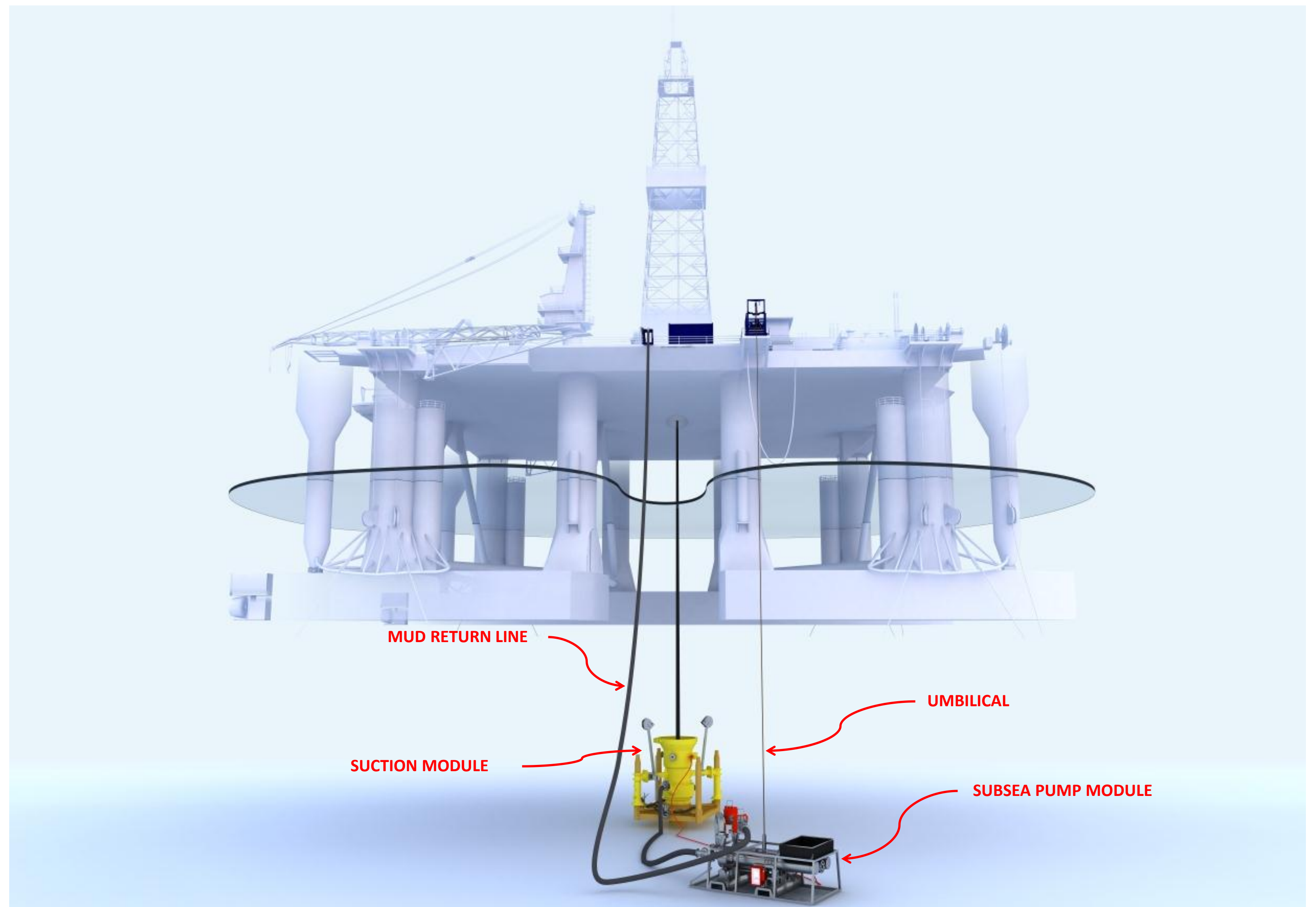
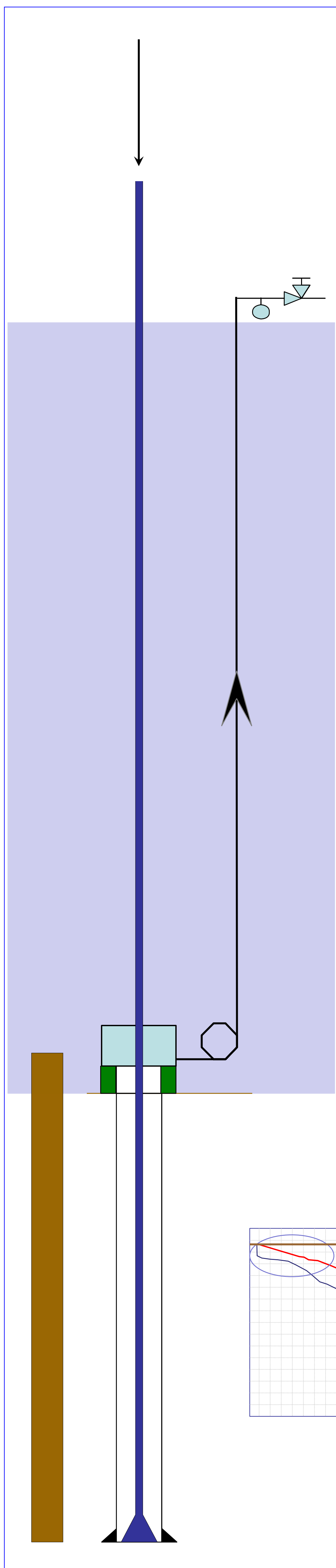




Pre-BOP: Mud Line Pumping (Riserless)

- Used for top-hole drilling before the rig BOP and marine riser are run
- Subsea pumps return the mud and cuttings from the wellhead to the rig through a separate riser
- Allows engineered mud to be used in the top section(s), improve safety, and provide operational advantages (shallow hazards mitigation)
- Deeper top-hole potential – better able to reach desired surface depth and improved post-BOP casing program
- Earlier detection of influx or loss
- Currently, water depth limit of 2,000 to 5,000-ft based mud return design



From IADC MPD Selection Tool