

Drilling of High Temperature Wells Cost Analysis

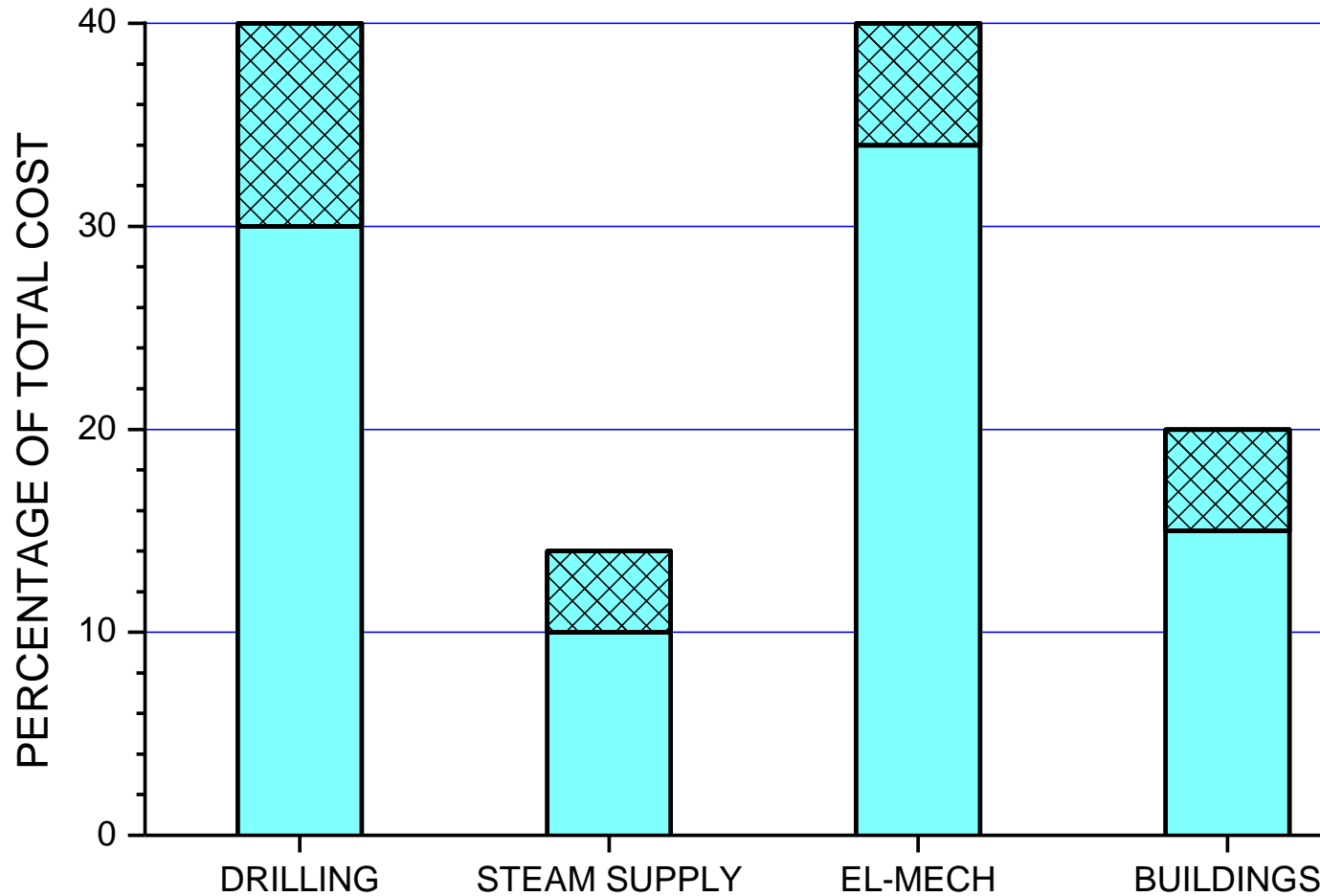


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Geothermal Power Plants in Iceland



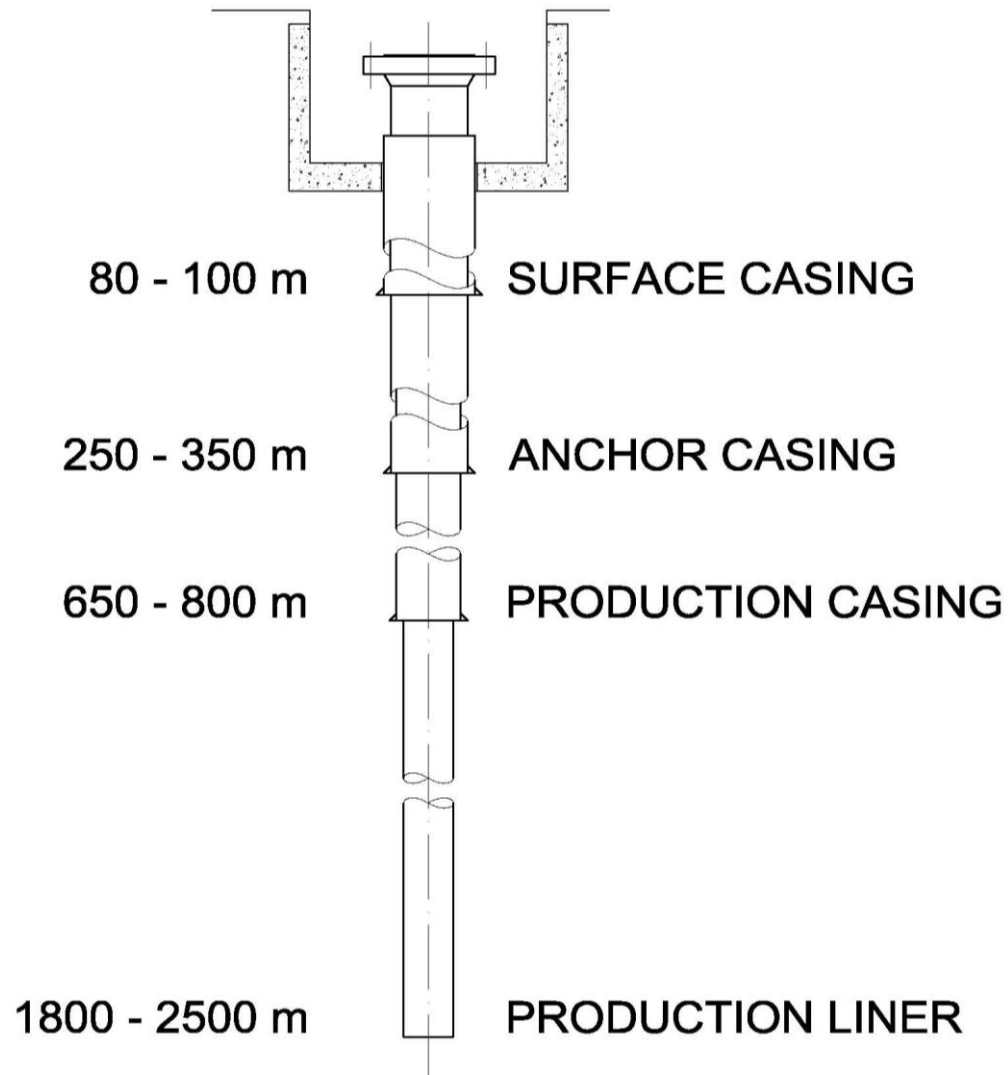
Rough Break Down of Geothermal Power Plant Total Cost



Drilling in Iceland

- Drilling contracts are mainly based on footage rate
- Contract sizes: 1 – 30 wells
- One dominant drilling contractor: Jarðboranir

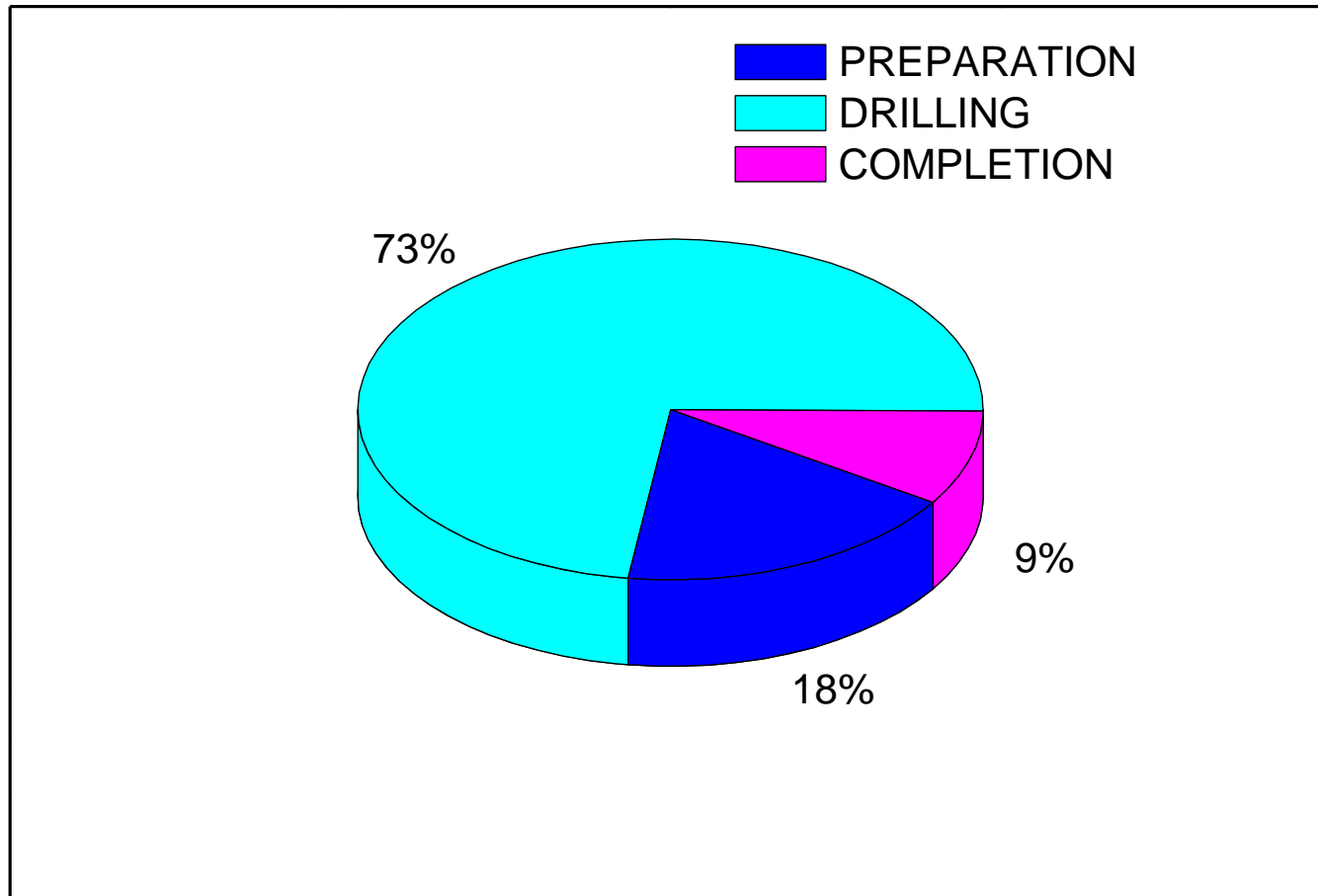
High Temperature Wells



Brake Down of Total Drilling Cost

- Preparation including drilling pad, water supply, surface casing
- Drilling including material
- Completion after drilling including wellhead, silencer, drainage system

Break Down of Total Drilling Cost



Estimated Total Drilling Cost

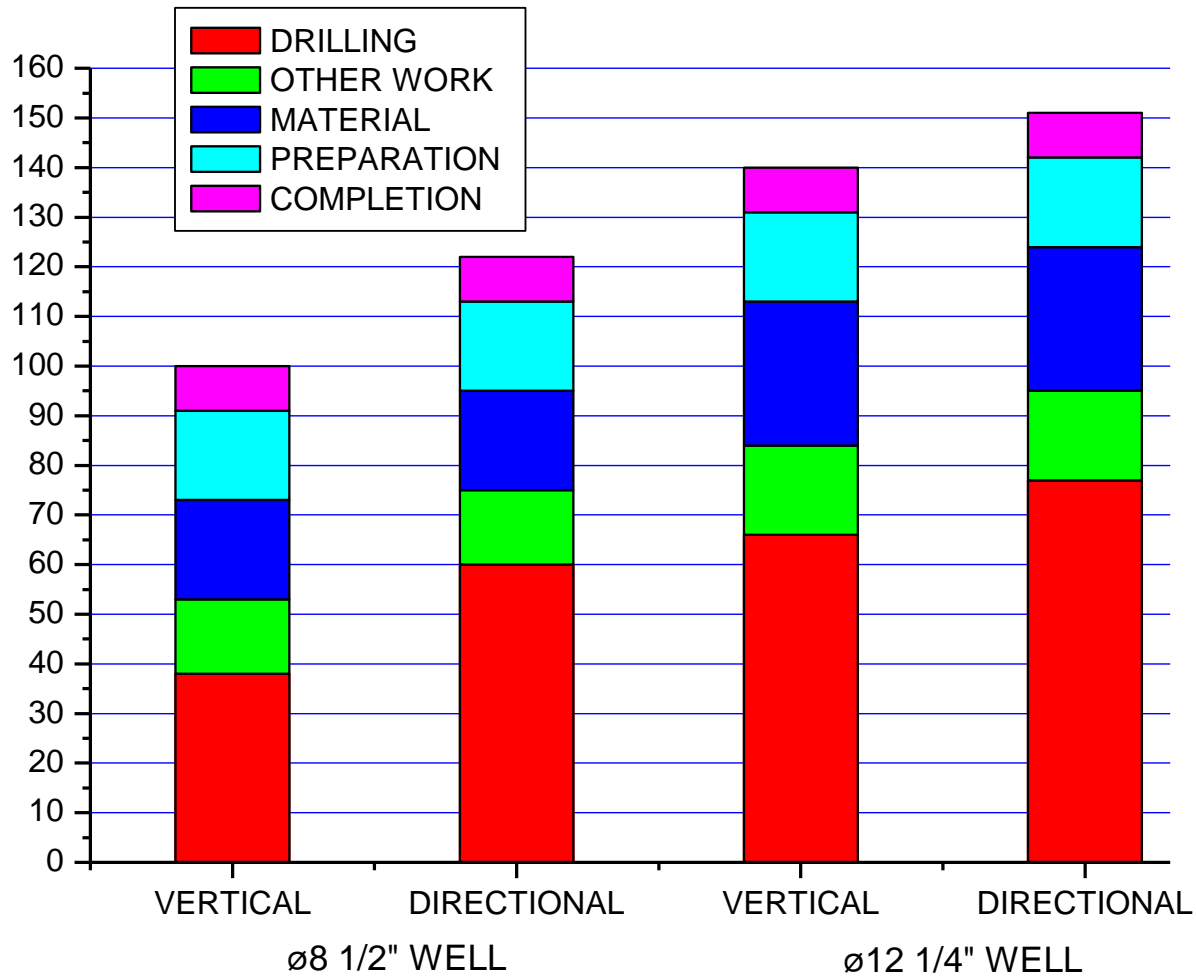
- Production part: $\varnothing 8 \frac{1}{2}''$
- Depth of 2000 m
- Vertical well
- Including design, supervision and contingency

Estimated Cost: ~225 MISK or 2,6 MEUR

Different Type of Wells

- Production part
 - $\varnothing 8 \frac{1}{2}''$
 - $\varnothing 12 \frac{1}{4}''$
- Directional drilling
 - Inclination $30 - 40^\circ$
 - 700 - 900 m horizontal displacement of 2000 m well

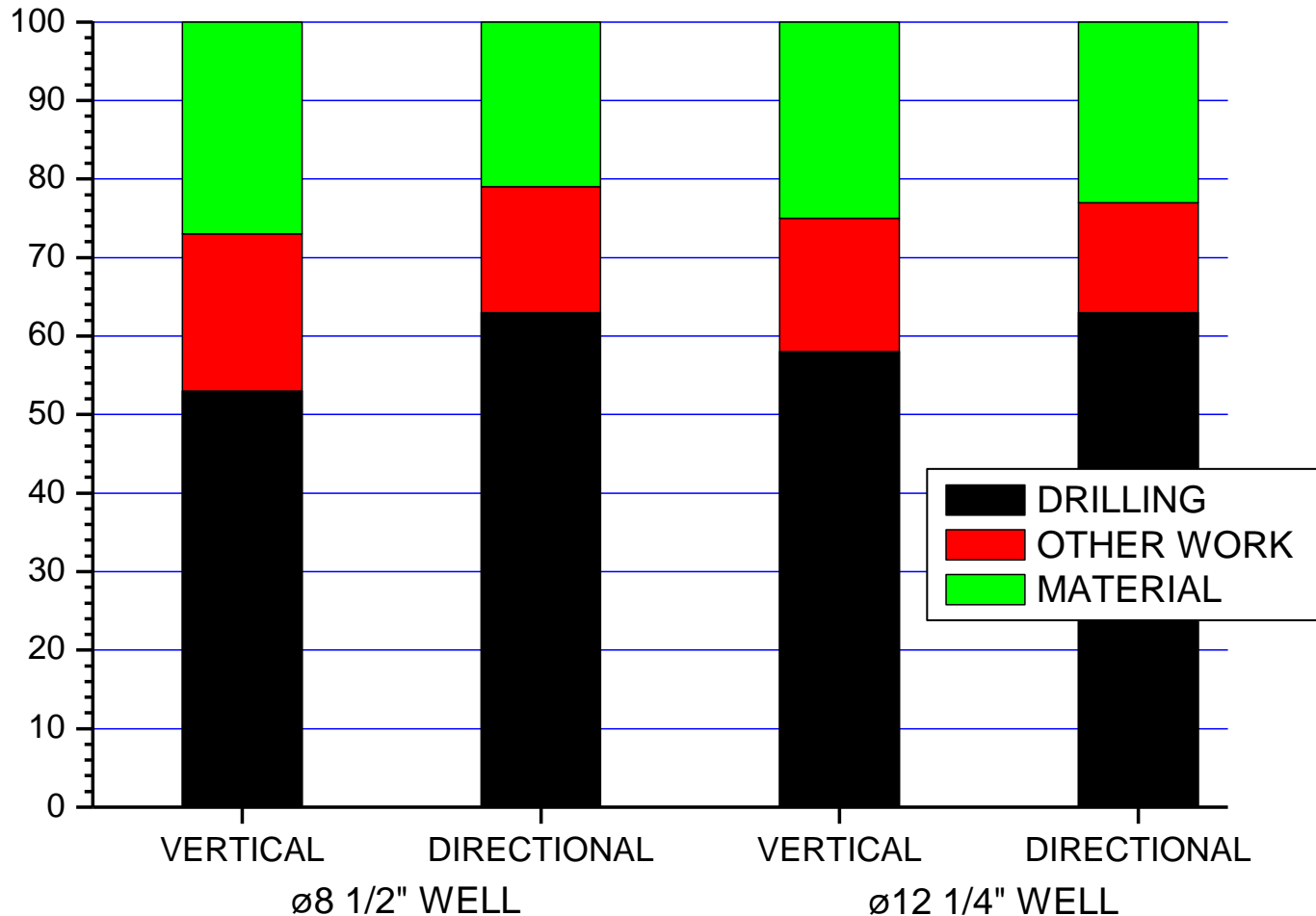
Total Cost of Drilling different Types of Wells



Break Down of Drilling Cost

- Drilling
- Other work such as running a casing, cementing
- Material such as casing, cement

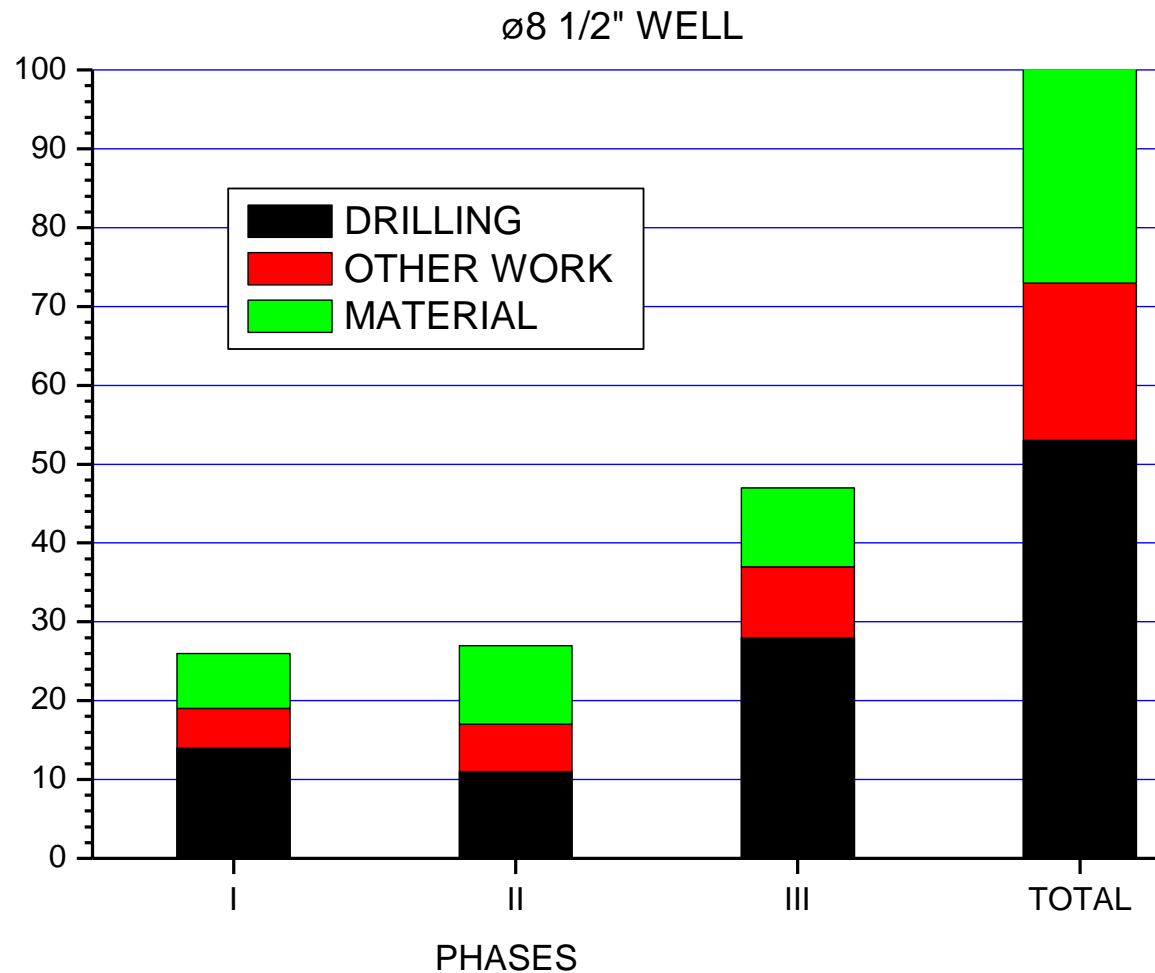
Break Down of Drilling Cost for Different Well Type



Drilling Phases

- I. Anchorage casing
- II. Production casing
- III. Production part

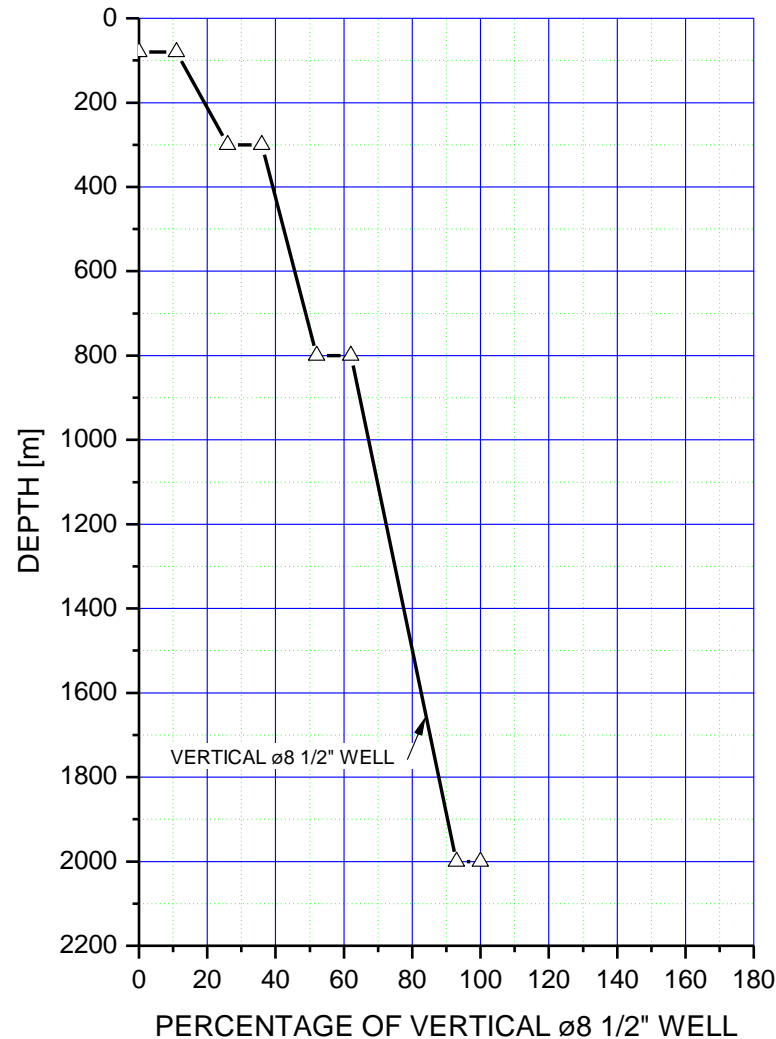
Brake Down of Cost for Drilling Phases



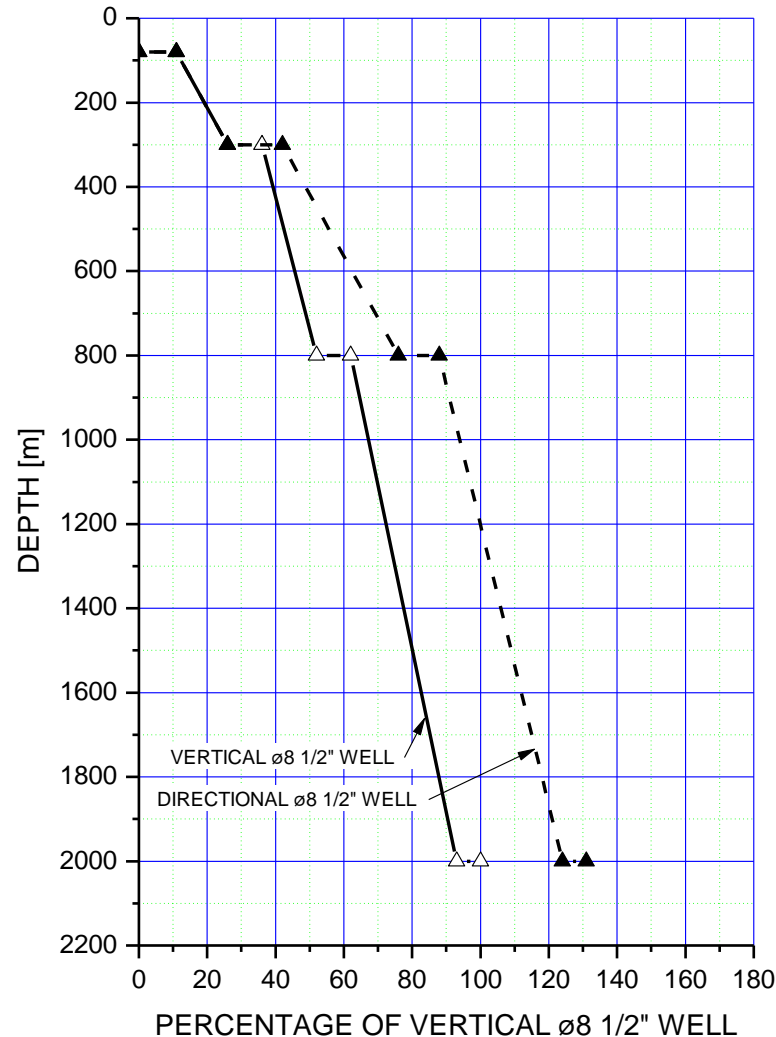
Fixed Cost and Variable Cost in Drilling

- Fixed cost
 - assembly of drill string
 - installation of safety valves
- Variable cost
 - Drilling
 - Running and cementing casings, material included

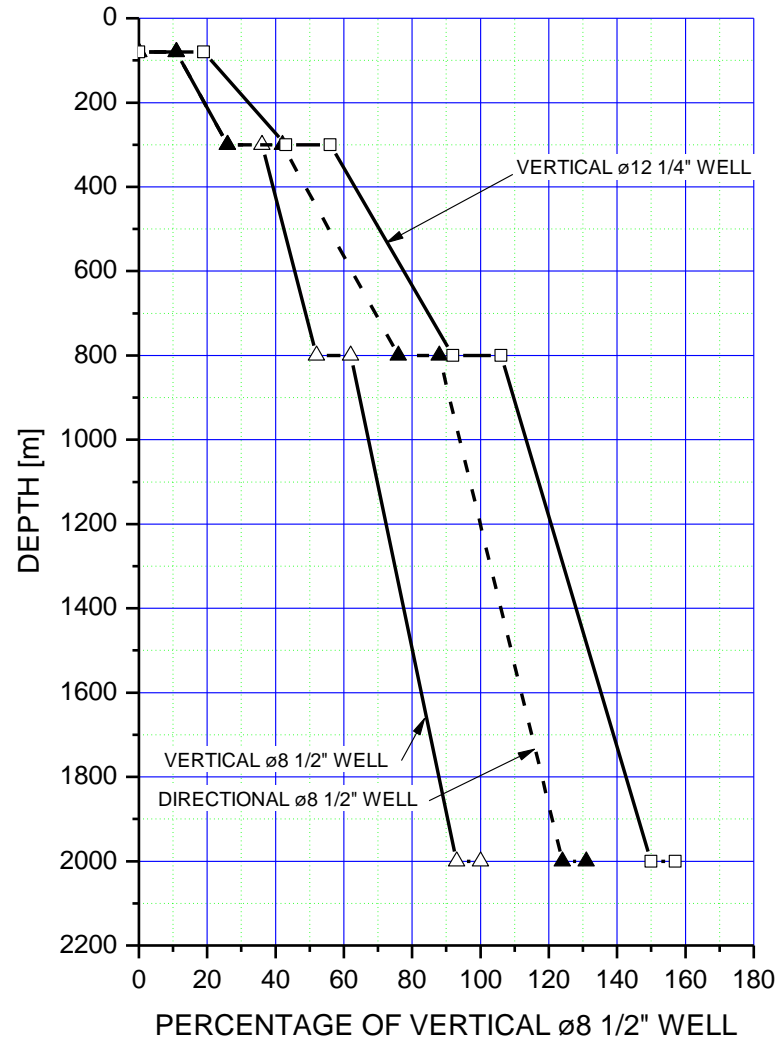
Drilling Cost as a Function of Well Depth



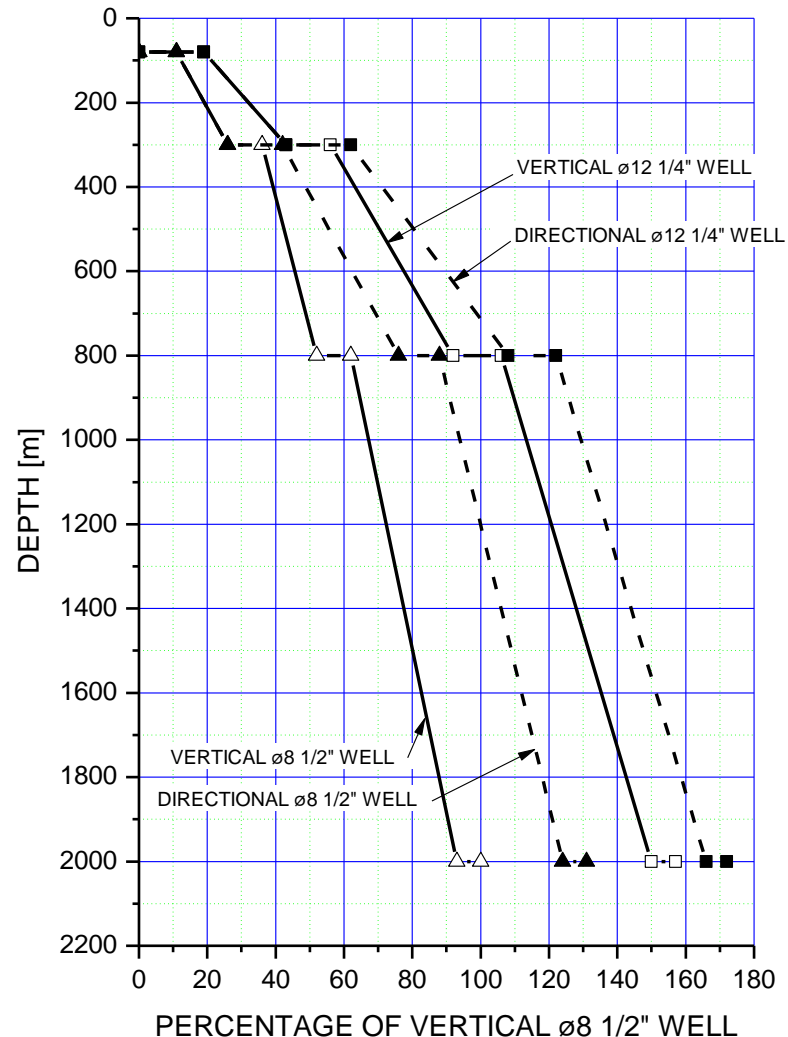
Drilling Cost as a Function of Well Depth



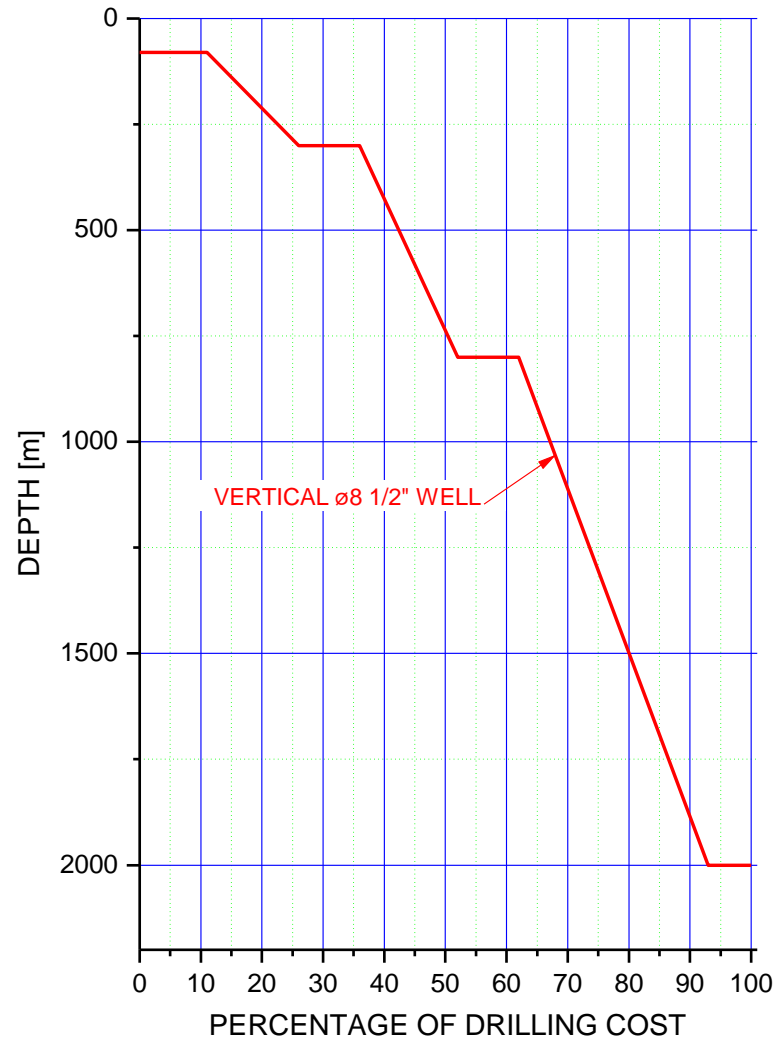
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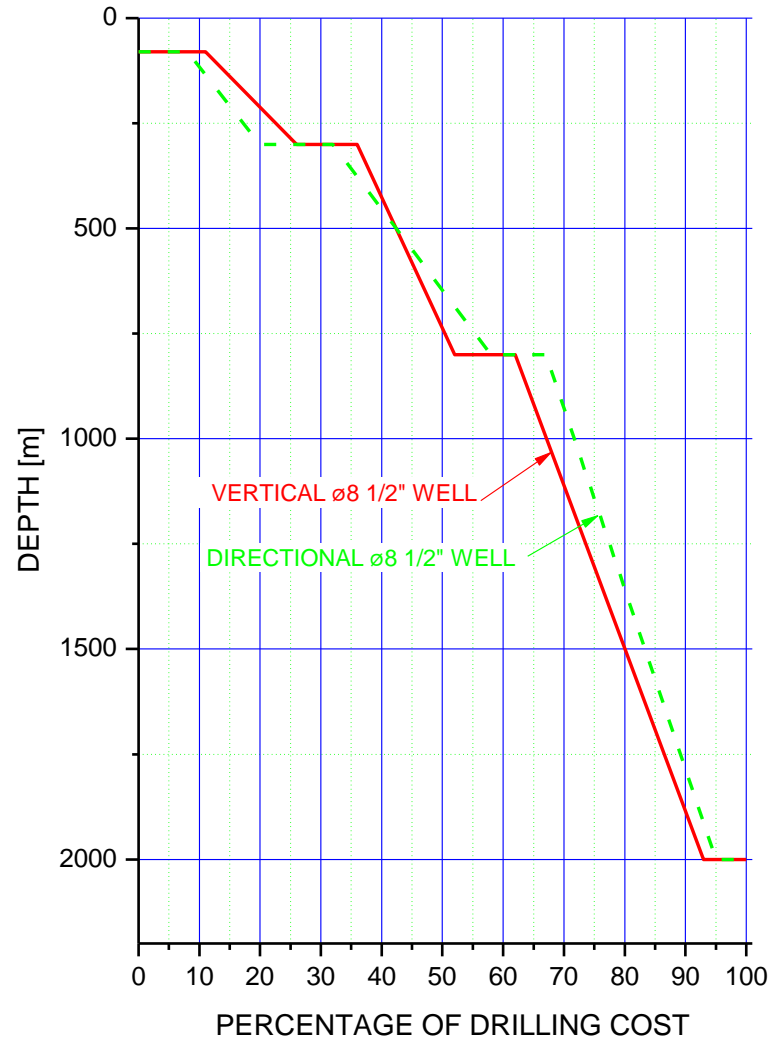
Drilling Cost as a Function of Well Depth



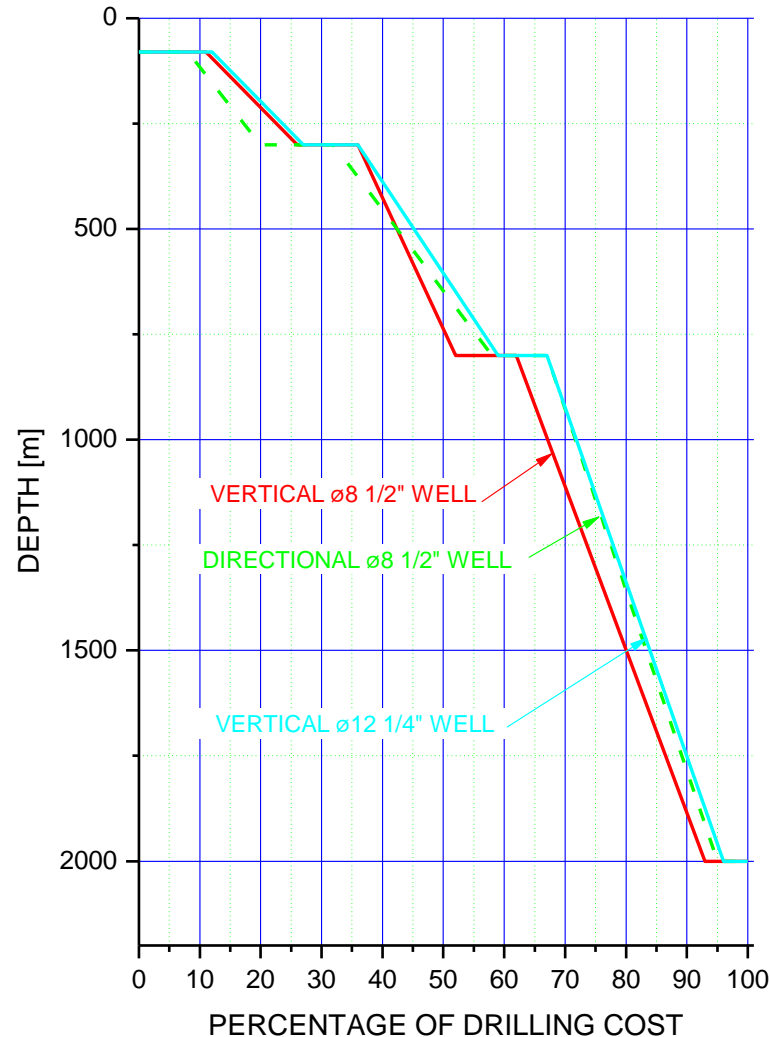
Drilling Cost as a Function of Well Depth



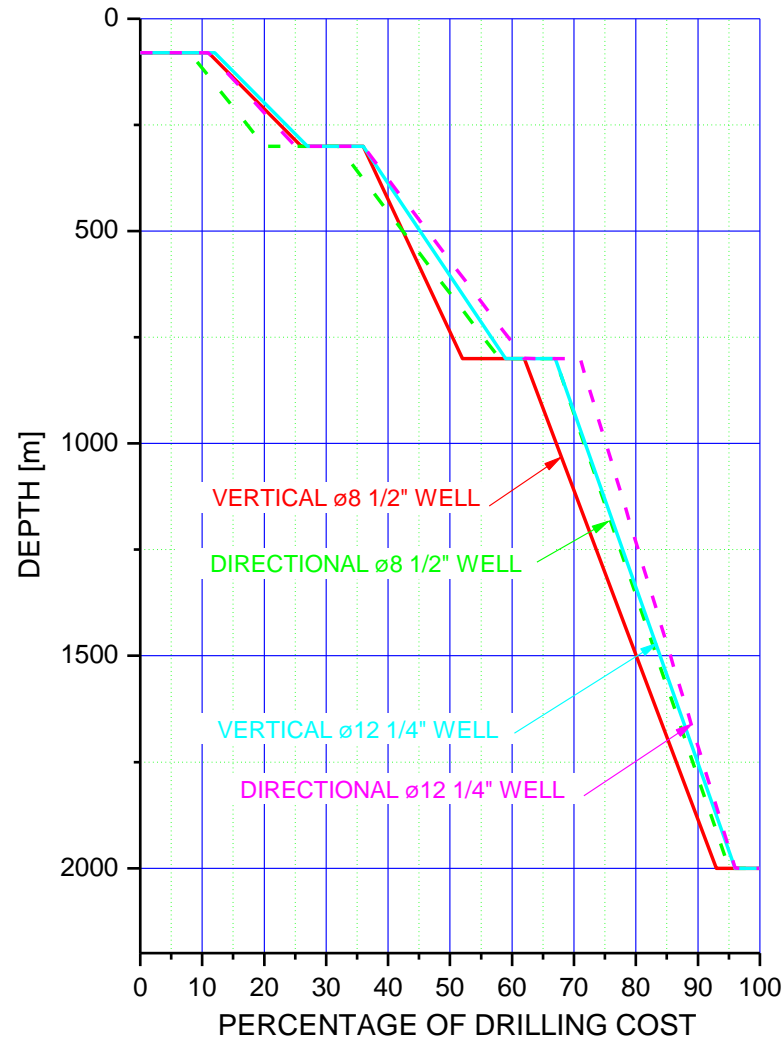
Drilling Cost as a Function of Well Depth



Drilling Cost as a Function of Well Depth



Drilling Cost as a Function of Well Depth



Development of Drilling Cost





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