

PLATFORM - Drill String



[Credit: Wikimedia Commons]

Have you ever wondered how drilling for oil is done?

How are the pipes assembled?

How long is each pipe?

How many pipes are used for each drill hole?



[Credit: Wikimedia Commons]

DO YOU KNOW?

- **Drill string** - consists of drill pipe & drill collars that transmit drilling fluid & torque to the drill bit.
- **Drill pipe** - connected sections of about 10 meters.
- **Drill collars** - larger diameter, heavier pipe that fits around the drill pipe and places weight on the drill bit.
- **Drill bit** - end of the drill that cuts up the rock.



Checkout the **Drill String Challenge**

[Teachers/parents guidance may be required]

Roughnecks aligns 1000 kg pipes within 15 seconds at the drilling platform. During the actual drilling operation, they add fresh lengths of drill pipe as the drill moves deeper into the rock.

Can you meet this challenge? Can you align the pipes in less than 15 seconds? Do it now!

Questions:

- What skills are required to successfully align each pipe in the shortest time possible?
- What are the possible consequences if roughnecks are slow or an incident happens in the drill hole?
- Were you able to improve your 'time' after a few tries? How is this related to athletes (you) training to improve their (your) performance?

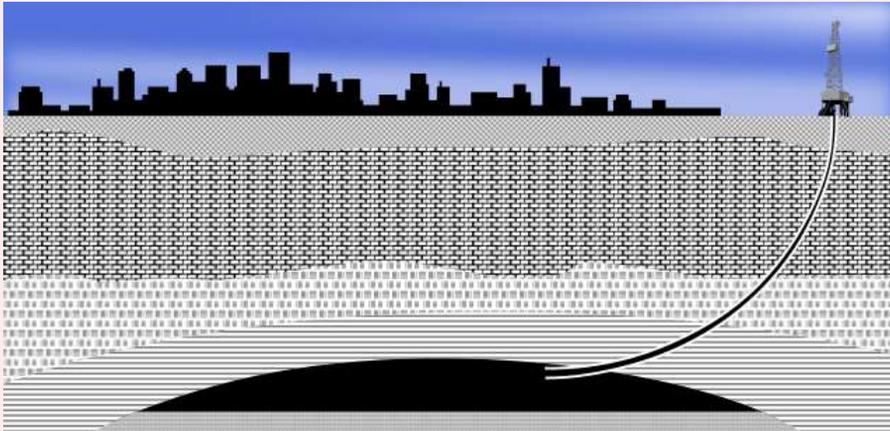
TO EXPLORE

Watch these!

- Drilling rig solo Connection https://youtu.be/y_paK1Qymp8
- Roughnecks at Work in HD - Drilling Rig Pipe Connection <https://youtu.be/KZxUiFFVEAQ>
- Dirty jobs - Drilling rig roughnecking <https://youtu.be/WqsGhbnR77I>

Keywords: drill string, drill pipes, roughnecks





Question:
What if there's a need to drill sideways (a.k.a. directional drilling)?

[Credit: Wikimedia Commons]

EXPLORE!

- Horizontal Directional Drilling / Boring (HDD): How the Drill Bit is Steered
<https://youtu.be/cl8BBoCV7gU>
- Complete directional drilling operation
<https://youtu.be/tUxkx48HRio?list=PLZIKftUPG22axSn2tTFQUhI5xFBbzpZQ>



[Credit: Wikimedia Commons]



Question:

Is directional drilling in the oil industry similar to directional tunnelling (e.g. Klang Valley MRT Project – underground section)?

[Teachers/parents guidance may be required]

Main method of construction for underground tunneling is by using tunnel boring machines (TBM).

EXPLORE!

Tunnel Boring Machine Time Lapse Burial <https://youtu.be/4i4DSvRoKQc>

TBM/Tunneling Video https://youtu.be/qx_EjMlGqY

Keywords: directional drilling, tunnel boring

