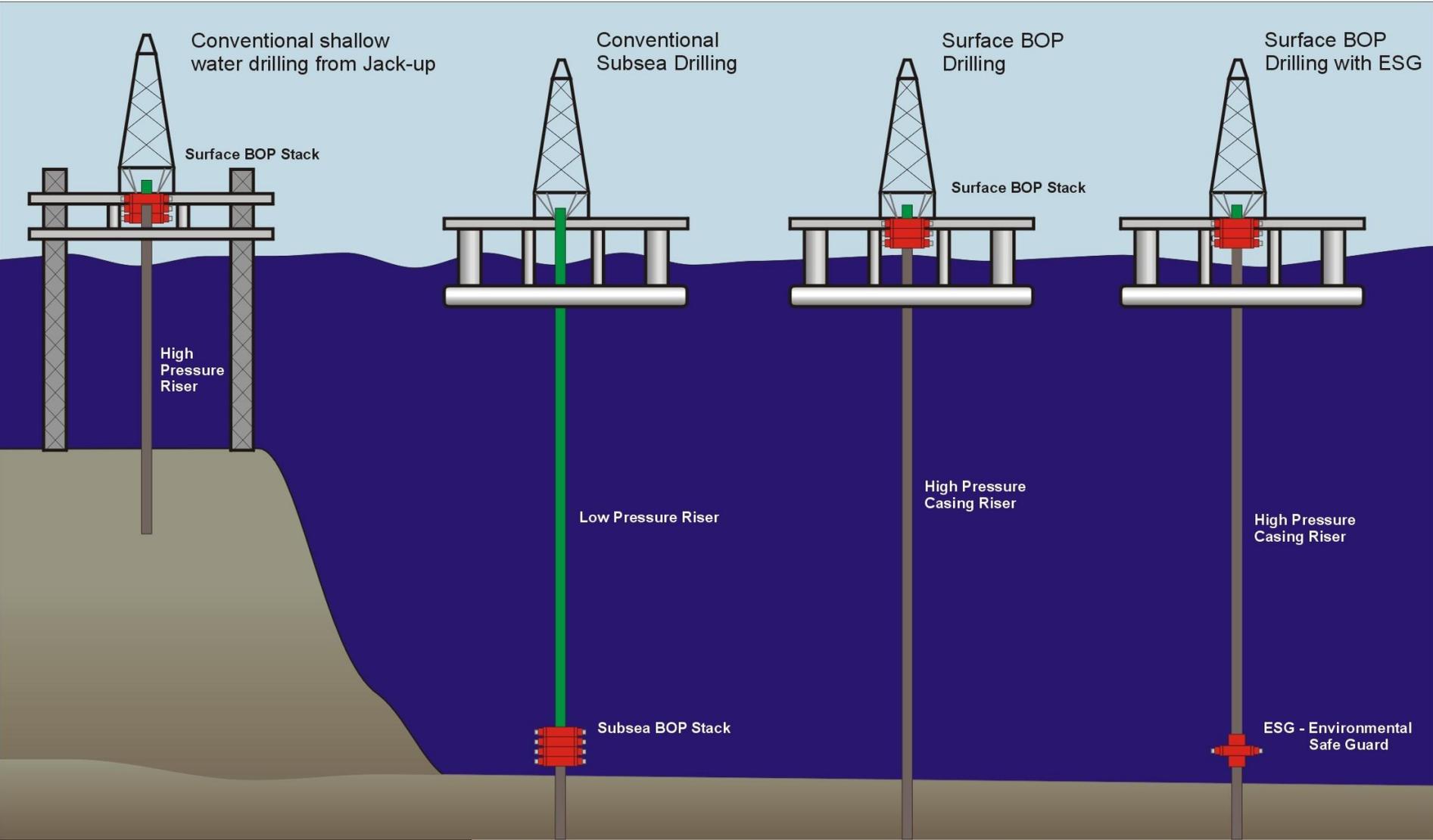




Beyond Ultra Deep Drilling Successes, Obstacles, and a Path Forward

Mobile Offshore Drilling Units



Historical reference:

- The total number of oil/gas wells drilled in 5,000 meter water depth?

Historical reference:

- The total number of oil/gas wells drilled in 5,000 meter water depth?

Exactly
0

Historical reference:

- The total number of oil/gas wells drilled in 4,000 meter water depth?

Historical reference:

- The total number of oil/gas wells drilled in 4,000 meter water depth?

Exactly 0

Historical reference:

- The total number of oil/gas wells drilled in 3,000 meter water depth?

Historical reference:

- The total number of oil/gas wells drilled in 3,000 meter water depth?

At least 1

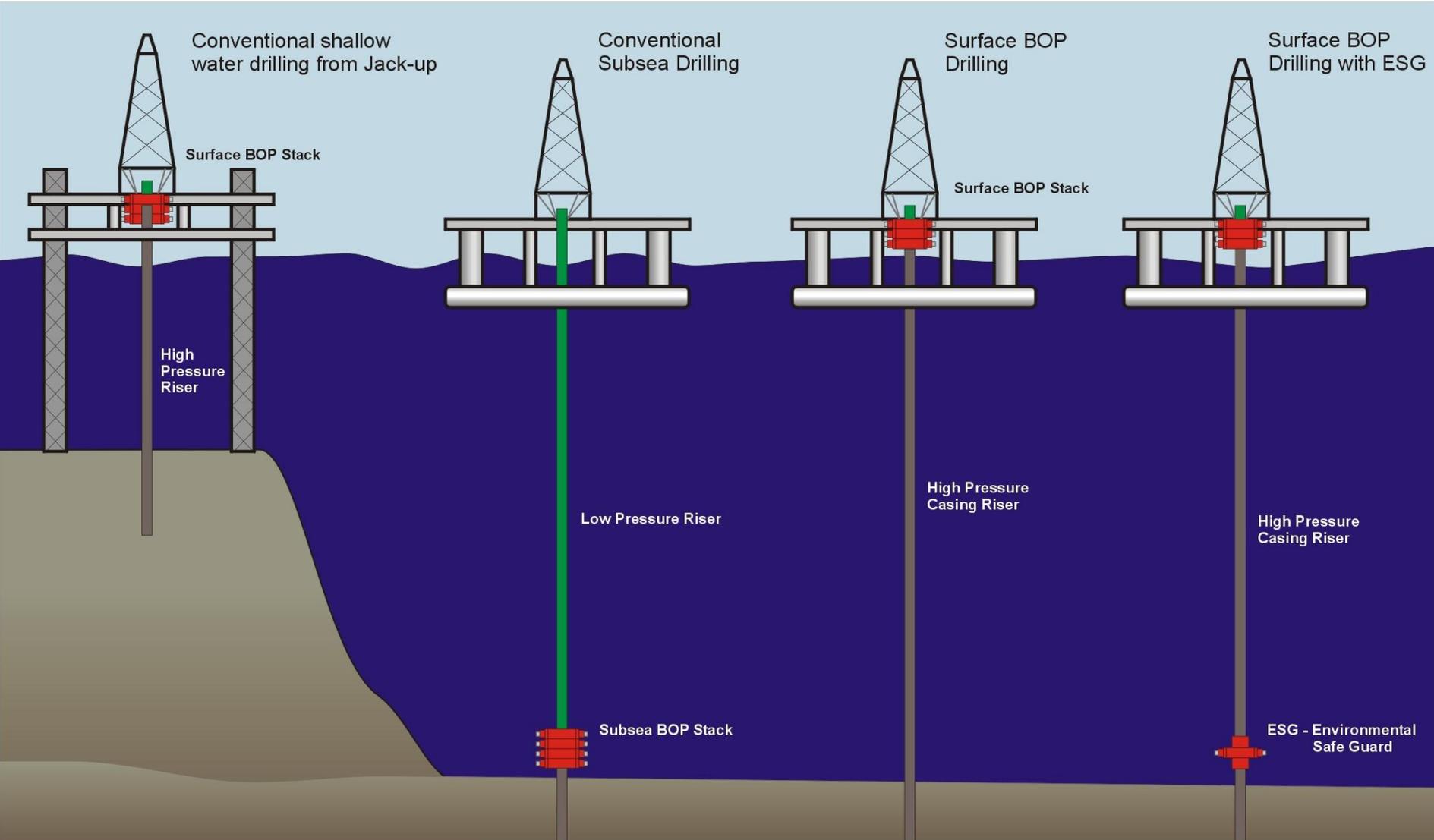
Historical reference:

- The total number of oil/gas wells drilled in 3,000 meter water depth?

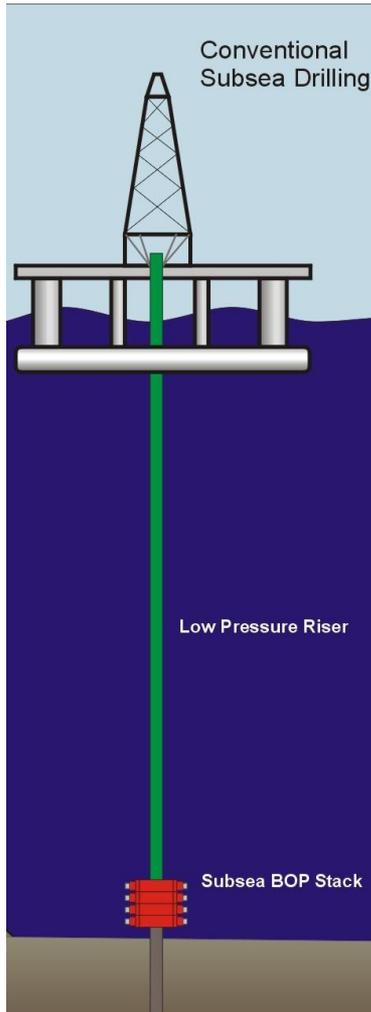
At least 1

The standing water depth record well stands at 3051 meters 10,011 ft., by the Transocean “Discoverer Deep Seas”, Nov 16, 2003, Alaminos Canyon Block 951, Gulf of Mexico

Mobile Offshore Drilling Units

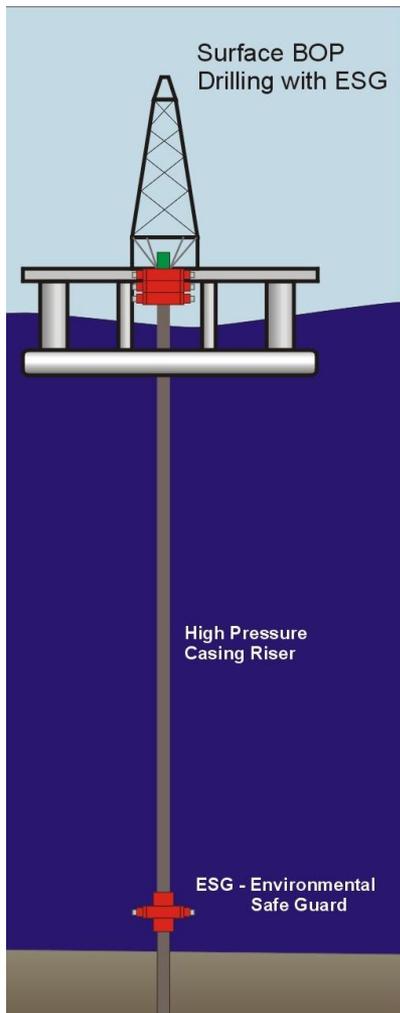


What would it take to safely reach 5,000 meters, conventionally?



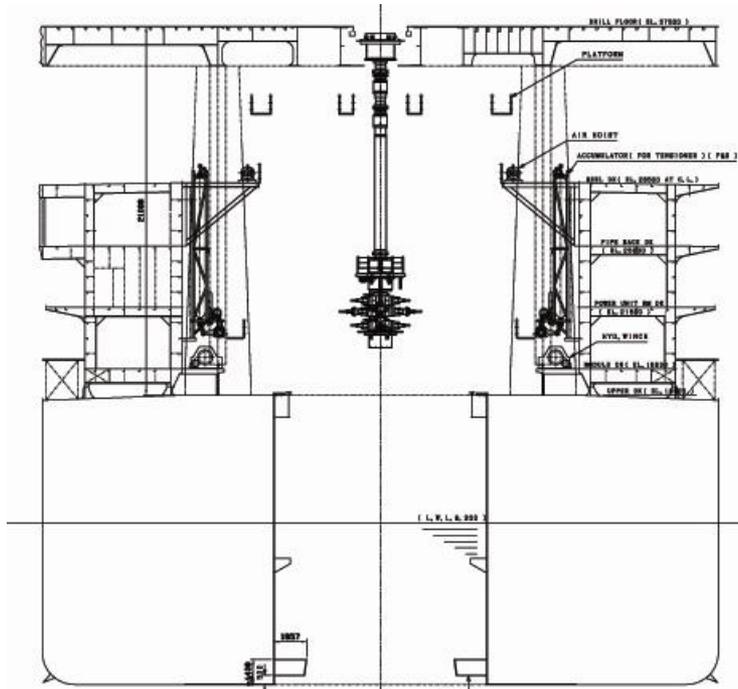
- Approximately 60% longer Riser
- Approximately 50% more Riser Tensioning capacity
- Significantly larger Derrick/drawworks packages
- Significantly larger mud tanks
- Significantly larger Drillship
- Substantially higher construction cost
- New, larger vessel design effort (and cost)
- Years of delays for design, construction and commissioning of the new vessel

What would it take to safely reach 5,000 meters, UN-conventionally?

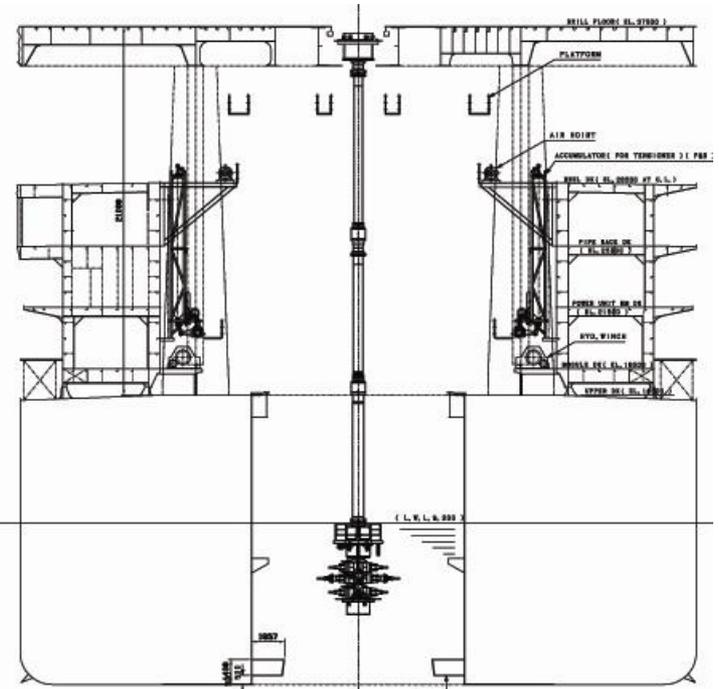


- Utilize ESG/Surface Stack/Casing Riser Drilling Technology
- Add ESG accumulators for deeper water operations
- Tweak the ESG Acoustic Control System components for deeper water operations
- Outfit an existing 3,000 m vessel (such as the Chicku) with ESG/Surface Stack equipment
- Minimal lead time
- Minimal equipment cost

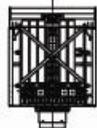
How would it all fit into the Chickyu's Moonpool?



WELL CENTER SECTION
(LOOKING FORE)



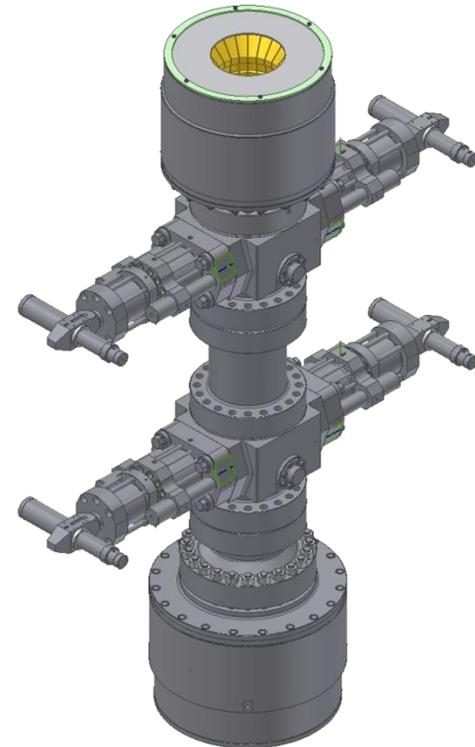
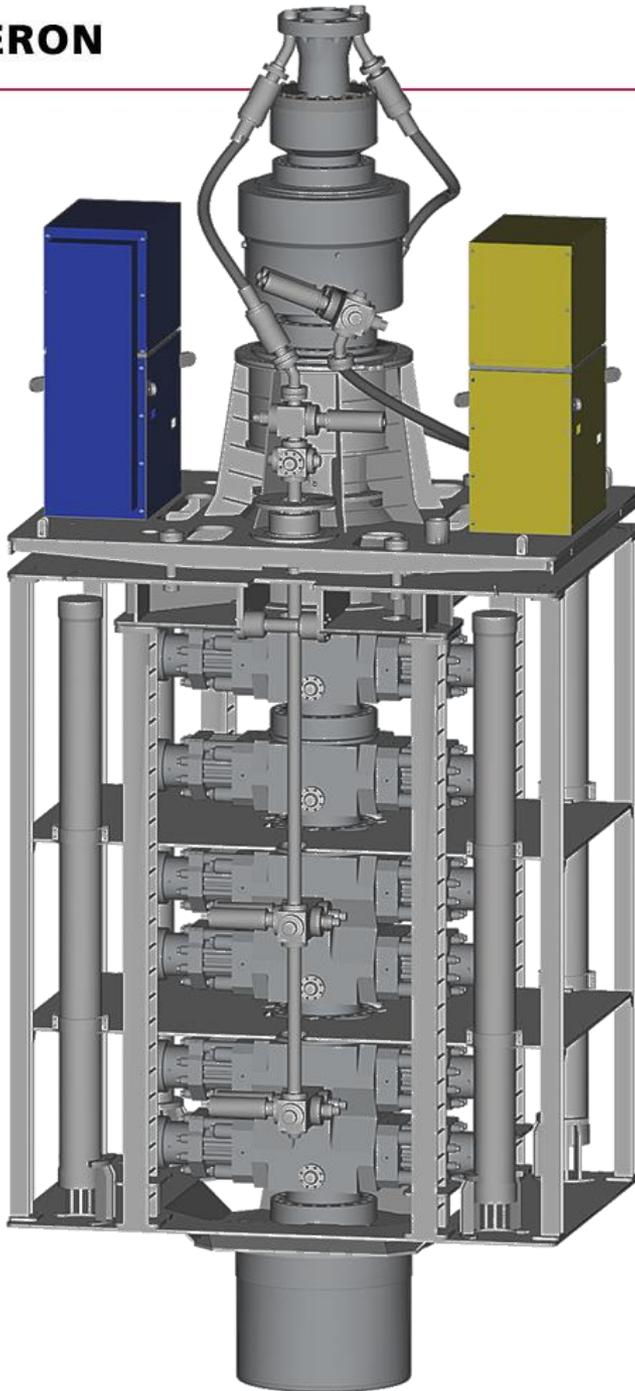
WELL CENTER SECTION
(LOOKING FORE)



Subsea Stack/ESG

Size Comparison

(750,000+ lbs. vs ~165,000 lbs.
depending on configuration)



Typical Surface BOP and ESG Packages



Conclusions:

- Surface Stack Drilling is a relatively new form of offshore drilling
- Surface Stack Drilling operations can be conducted as safely as Conventional Drilling operations
- Surface Stack Drilling utilizes less BOP equipment than Conventional Drilling
- Surface Stack Drilling has enhanced water depth capabilities relative to Conventional drilling
- Surface Stack Drilling operations can be significantly less expensive and faster than Conventional Drilling operations
- Surface Stack Drilling can be accomplished from smaller, lighter (less expensive) rigs, anywhere in the world



QUESTIONS?

The End

