Initial conversation with Carlos:

James asked about drilling into used wells or failed wells - Carlos seemed disinterested and the other guy talked about cost of remediation

James asked a number of other questions - they discussed the Nevada project in the gold mine - he asked why the mine was interested - whether it was expense or whether it was carbonization. I was a bit unclear on the answer - sounded like maybe both? Certainly seems like the expected energy cost was less than what James had imagined - and what I had imagined. 50$/mwh is certainly competitive. Though it doesn't immediately deliver at that price. I think they had contracted for 120$ either on this project or in Oregon.

There was discussion of the Oregon plant as well and several others I don't recall. Oregon plant planned for 1GW

James asked about direct heat early customers and how to find them - answer was that we go to companies and ask them where there plants are and figure out how deep they'd need to drill and what it'd cost and they say yes or no.

Re site mapping / IDing resources - it's not that hard. You just look at all the wells that have been drilled and where the temperatures end up being - plenty of data. It's well understood. If you're off, then you might have to drill one more km, but the heat is always there. I asked about the difficulty of identifying sites and Carlos said like look, there's so much well data out there that you can step back and find patterns - and it's not spotty like oil can be - temperature is there. You can be off by a km give or take, but you just have to get deep enough.

CEO Carlos Araque presenting / speaking:

15 years in O&G then 2018 founded Quaise

Speaks softly, clearly, intense, kind

Couldn't hear at points due to equipment though

Wherever O&G is drilling ona a site > go 2x as deep and that is where you'll get to 300-400C

"Bigger than O&G"

Taking O&G and give them a more profitable direction

Humanity total consumption of energy - 10% replaced (?) ea year by O&G just to keep up

Replacing / changing a drill bit takes a lot of time - Quaise skips the bit entirely

1 something
2 something
3 removing the cuttings
- They are light - they fall like snowflakes, so you can push them out with gas

Drilling is a means to an end

Power plant 250MW sold already in Oregon, 2030 dispatching power (?) - 1 GW plant (?)

Henry Phan speaking - VP Engineering - Houston based with 50 other engineers:

Originally schlumberger

“The Core” anecdote
- Watched years ago and called bull
- Now we are actually doing something kindof similar, granted no lasers

MIT worked on this for 10 years and learned to melt a small amount of rock, 2018 Carlos cam in
2019 reach out to Henry (initial H like ‘crazy’ then like ‘oh, doable’)

2020 seed funding - engineering work started

AC converted to 50,000V DC - high voltage into gyrotron, get wave on others side

Tech is shared with fusion industry - gyrotrons and wave guide both

3 years away - already digging the hole (?)

118m @ 5m/hr = the last demonstration - 100kw gyrotron

Commercial is an 8.5” hole - test is 1km deep using larger gyrotron (1MW)

- That is the checkpoint (1km) when the ygo to work in Oregon with that tool
- // there's also an intermediary step before that of drilling 1km with the smaller diameter / the rig we saw

"Beam" diverges out at the end of the tube - it creates a bigger hole than the wave guide this way

"Spall" a faster way of drilling - enough energy so you get tiny fragments (not clear on what this really meant, other than that by drilling with higher energy you can 'spall' the rock which goes a bit faster)

Series B funding to execute larger jobs

Equipment takes 2 years to manufacture BOTTLENECK
- Plan to vertically integrate and work w suppliers to mature the supply chain alongside the technology
- Within 1 year timeline at scale (all that they need) seemed like the goal there for 3 years from now

Once they drill the 1km hole here with the new equipment, they move it to oregon

DEMO metrics / data
- RF power
- Top drive position / vertical position
- Distance to the bottom - low power RF to check hole depth from top of rig
- Tension (if low tension, youve hit bottom or sides)

Micron scale debris

Hybrid drilling mechanism (*wasn't sure what this was about*)

Q: why rotation necessary? Not really, just for the drill pipe's threaded components

Tour

We did see the hole from the prior test - they surveyed it and ther was some movement of a couple feet over the 100m, but pretty straight

There's a reamer attached to the bottom as a precaution - like say that there's some debris or something along the wall as the drill goes down - just a redundancy - the PDC was barely touched - mostly just because they used it to check where the bottom of the hole was manually by setting it down

Gyrotron = 45% efficiency - higher in labs has been done. Quaise working with supply chain to get more efficient. BOTTLENECK

4 gyroton suppliers around the world - 1 in US - a supplier makes like 2 a year

Using hairline fractures - slowly, small fractures - you don't want to short circuit the loop, you want the water to permeate the rock before going over to the outtake well

// washington regulatory environment conversation with the guy - interesting

No need for directional drilling (you drill down and frac between), but they are working on 45 degree directional drilling for the optionality

Beam quality has no degradation going down the well except 2% at the mirro-bends (I think there were 3)

Purge gas here was using compressed air, but they'd use nitrogen at scale, which you can produce from compressed air - planned for newburry (how to spell newberry)?

Cuttings absorb CO2

'Plug and play' setup with O&G land rig and crew skills

- Just set up, bring the shipping container with gyrotron and a monitoring station, a driller and assistant driller
- Show up, do the drilling, head out

Closing conv with PM

Deep drilling suppliers BOTTLENECK

Why do people work at Quaise - for engineers, they're all new problems and that's exciting; also the technology; also microwaving rocks - trickier with the gyrotron phds bc they want to work on fusion (MIT Stanford, etc).