

A visit to the Deep Well

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December 10, 2012

Spyglass Energy Group, LLC invited the Minerals Council, the BIA, some of Congress, and a few very lucky Shareholders on a field trip to take a look at the drilling of Wha-Zha-Zhi #1 Deep, the deepest well ever drilled in the Osage. About 20 people showed up on this very cold day to witness history being made in real time. There was even a writer and a photographer from the Tulsa World taking pictures and asking questions, and they ran their story in the business section on December 11, 2012.

The location must be at least 25 miles west and north of Pawhuska, about 18 of those miles over very dusty gravel roads. The lease road to the location was in much better shape than the county road except for the gates, and it runs through a part of the Reed Ranch, where Reed has been a great source of grief to Spyglass over access to these leases.

Upon arrival, I immediately saw that this was not the large, triple derrick rig that Spyglass first intended to use, but a double stand-back derrick, incorporating a hydraulic top drive (which set the contractor back \$1.6 million just for the device to turn the drill pipe.) They had started the hole drilling with air but were forced to change over to drilling mud when they got down to the Mississippi Lime formation. There was too much salt water, and the weight of the column of drilling mud was needed to hold the water back. They drilled to about 200 feet into the solid granite “basement” found below the Mississippi and set casing at approximately 4200 feet. This “long string” of casing was cemented to the well bore all the way back to the top. This will insure that they will be able to handle any wild pressures they may later encounter, and will double insure that nothing from below can get up the hole to contaminate the ground water. Speaking of ground water, Spyglass had first drilled a fresh water well on site and installed a submergible pump, assuring an adequate water supply for drilling and any future completion operations. What few ponds are there in the area are very low, and I suspect that Mr. Reed wasn’t too eager to share, anyway.

Now, the “wildcatting” begins. This granite is very hard and abrasive, making it very hard to drill. They are using an 8 inch bit, studded on the bottom with 15 or so industrial diamond knobs about the size of large marbles. Immediately above the bit, they place an air operated “hammer drive,” which delivers a “jackhammer” like effect to the bit. When drilling, they try to maintain about 4,000 pounds of drill string weight on the bit, while slowly rotating the drill string. Approximately 750 CFM of air at 450 PSI activates the “hammer” and the air is expelled through ports known as “jets” on the bottom of the bit where it picks up the cuttings and carries them up to the top of the

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hole to be discharged. A huge pit of drilling mud is located immediately adjacent to the rig, and should excessive (which is usually good) down hole pressures be encountered, they can quickly switch back to mud drilling, thus keeping the well under control.

The last 8 inch bit and hammer to be found in the entire USA was lying near the rig, ready to go to work. A bit and hammer costs nearly \$25,000 and they have been lasting about 24 hours. If more cannot be found shortly, some major decisions will need to be made.

Today, the well was at 6,214 feet, and was still drilling in solid granite. Progress is averaging 57 feet per hour when actually drilling, however, it will take at least 5 or 6 hours to get a used bit out of the hole and get a new one back on bottom, and longer as the well gets deeper. If they can find bits and hammers, they could finish the hole by the end of the week, unless the drilling gets even tougher. And, I'm thinking that from 6,214 ft to the bottom, they will be watching what comes out of that discharge pipe very closely. This extra vigilance could slow them down a little, also.

Personnel safety and the ecology seem to be the primary concerns and Spyglass is spending a lot of money to be ready for any eventuality. Samples of the cuttings are taken frequently, and several devices for analyzing gas are in place that continuously monitor the air discharge flow and the air around the rig area, and a huge, multi-section blow out preventer that would make BP proud is bolted in place on top of the well. In addition to safety concerns, a gas spectrometer is being used to detect the presence of any methane, CO₂, H₂S, helium, and other stuff.

These guys seem to me to have all the bases covered and they are swinging big at the development of the oil and gas resources of the Osage Mineral Estate. Spyglass managing partner Charles Wickstrom and his partners have been drilling in the Osage for many years, and they have made many millions of dollars in royalties for the Osage Shareholders. Spyglass chief geologist Shane Matson is a very intelligent and personable young man whose great grandfather was instrumental in the development of the old "Burbank Field" in the 1920's. Shane will be around for a long time. As long as the Osage Minerals Council continues to work with them, many good things will continue to happen in the Osage.

I took a few very amateur pictures of the operation. Find them on the following pages. I would have taken more, but it was just too darn cold.

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On our way into the Wha-Zha-Zhi #1 Deep location, we stopped at one of Spyglass's locations where they had drilled a couple of years ago. There is a disposal well and one horizontal well here, currently making 60 BOPD. More wells can and probably will be drilled in the future from this very well kept production facility.



Spyglass production facility on the "Shaw" lease with 3- 100 bbl oil storage tanks, a gas/water/oil separator, 2 salt water holding tanks, and other ancillary equipment. The SWD well is seen directly in front of the oil tanks here. The black pipe extending to the right of the SWD and out of the picture runs about a mile west to the Hunka #1 location. The producing well here is behind the camera, thus not shown, but it looks very similar to the SWD. The permanent production piping from it to the tank battery is buried.

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A few of the field trip attendees

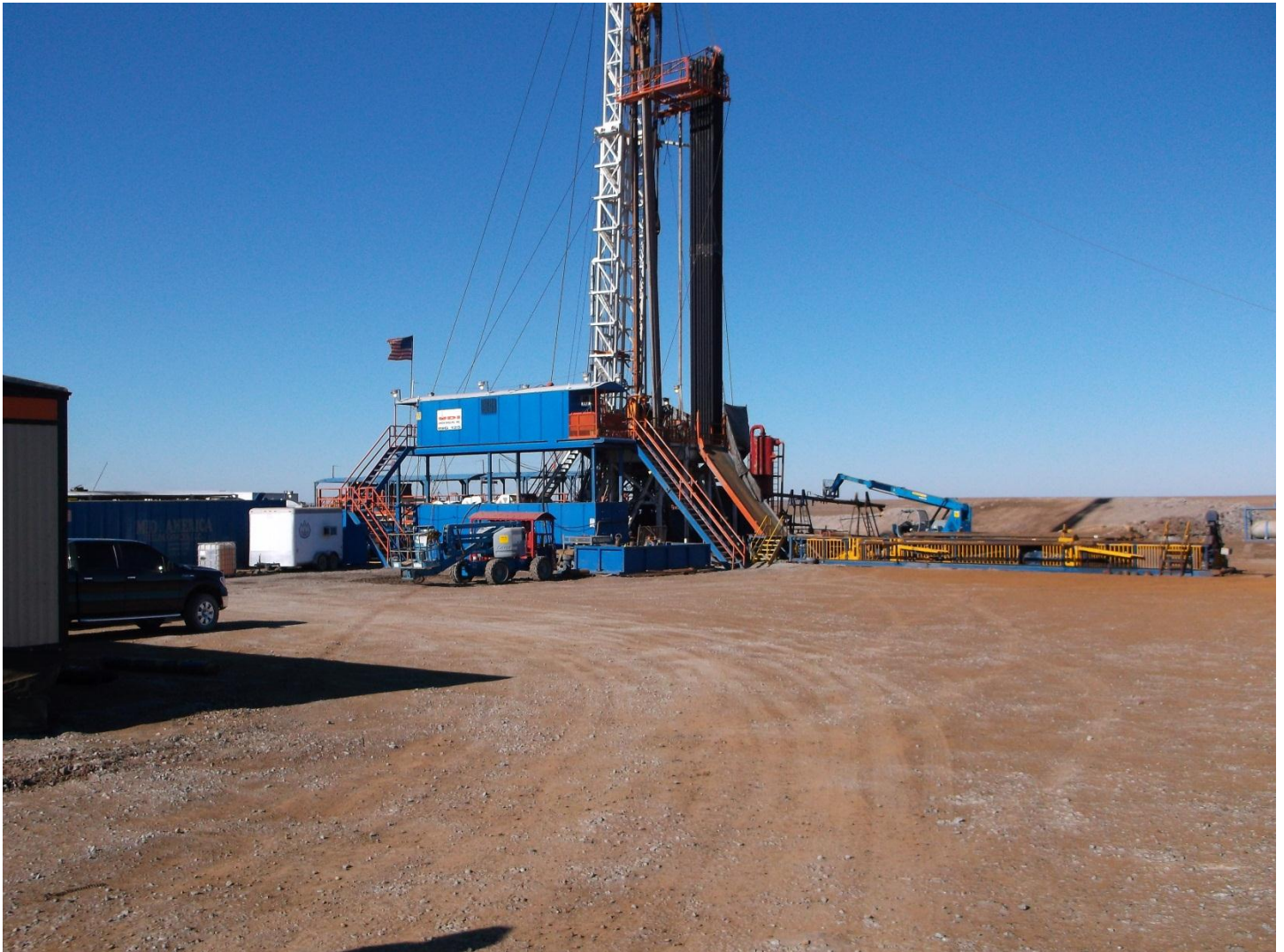


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Drilling Wha-Zha-Zhi #1 Deep



This is the first thing we saw when driving up to the location. Notice the pipe rack, shown here to the right of the rig. A joint of pipe is rolled onto this device. The device rises to rig floor level while hinging forward, then conveys the end of the single joint further toward the rig, where it can be lifted and placed into the drill string. This is an amazing, labor saving device. Many roughnecks have been injured over the years by man-handling the drill pipe into position for use.

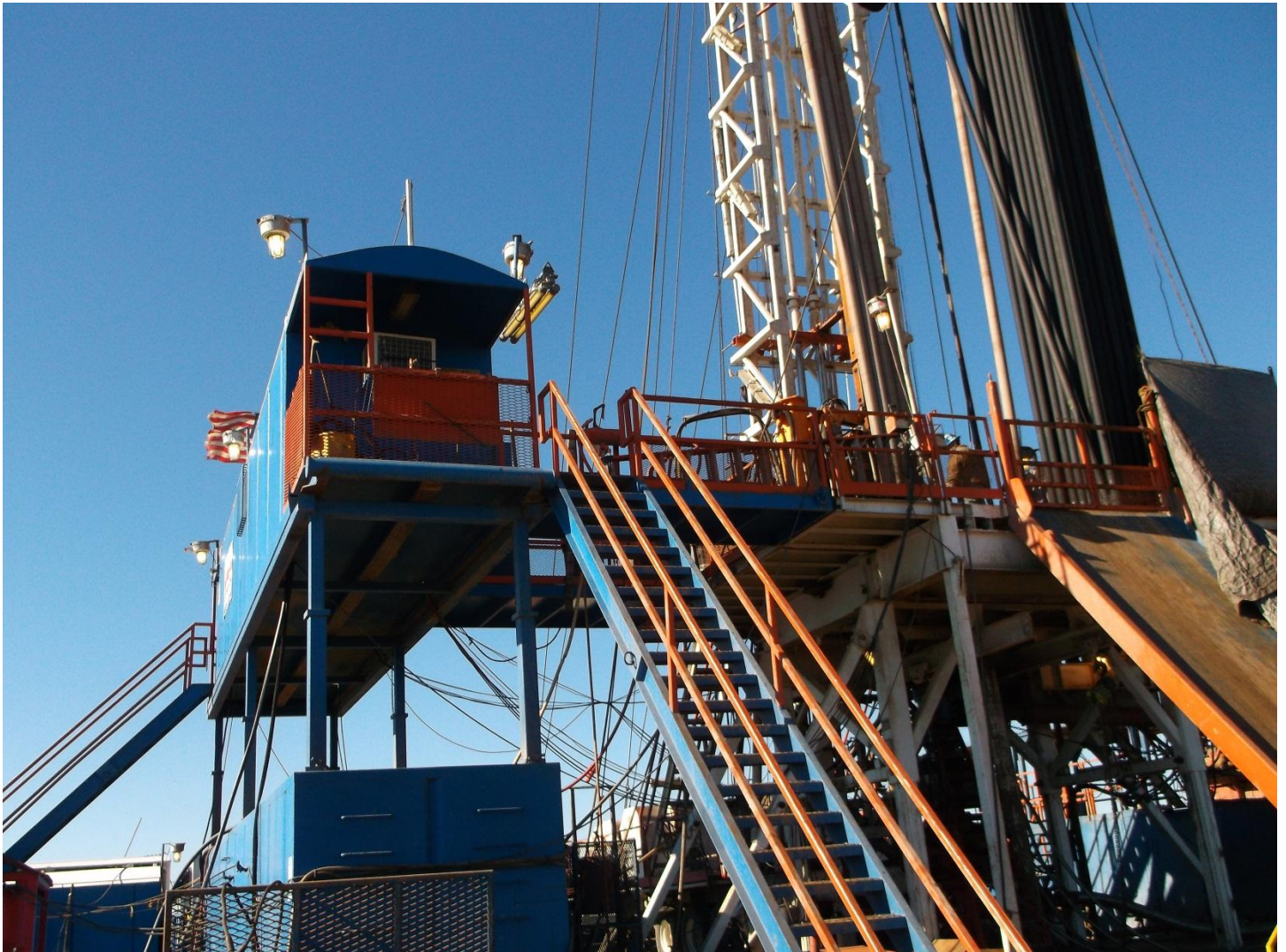
The geologist's office is the mobile home seen at the extreme left of the picture.

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Drilling Wha-Zha-Zhi #1 Deep



This rig is about as fully automated as rigs get for land based operations. All the wires seen in the back ground are a few of the electric cables and hydraulic lines needed. It took 43 trucks and trailers to move in and set up.

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Wha-Zha-Zhi #1 Deep

Blow out preventers



This is the massive, 3 section, hydraulically powered blow out preventer stack used while drilling Wha-Zha-Zhi #1 Deep. If it becomes necessary to use this device, the driller can simply push the proper button near his working position, and this apparatus closes around the drill pipe, sealing off the well. If power is lost, they can be closed manually.

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This huge generator set is barely “portable.” This is a truck load by it’s self, and several are required for this rig.

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Drilling Wha-Zha-Zhi #1 Deep

A lot of wind



Shown here are 4 huge air compressors needed to provide air for drilling. The 2 yellow engines at the end of the row are more generators. The mud pumps (not shown) are located between these compressors and the rig. There is a mud shaker tank (also not shown) behind the rig. This tank is equipped with shaker screens to separate the cuttings from the drilling mud.

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In the small ditch in the foreground, notice how well graveled this location is. These people are not just some “wooden axel” outfit trying to make a buck. They are here to stay and they WILL make a lot of money. So will we.