

Osage Minerals Council Visit to Devon Energy

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January 3, 2013

Devon Energy, LLC invited the Minerals Council and the BIA to visit operations in their South Bend Concession area on the far west side of the county. The head man for this area saw me standing there, looking kinda pitiful I guess, so he invited me to tag along. I cheered up immediately. After a modest demonstration of "Indian Time," we arrived about 10:30 AM on January 3, 2013. After being issued a fire resistant jacket and safety instructions, the first thing we were shown were the actual operations involved in frac'ing an oil well. Halliburton had won the bid from Devon to do the entire operation. Since the weather was better this time, I got a few more pictures so I will try to insert them as we go along.



There were six oil holding tanks and accompanying ancillary equipment located on the north edge of the location. It appeared that everything was all hooked up and ready to go. The power system was in and the 4 control systems for the submersible pumps were in place.

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These are water tanks and sand tanks for holding and dispensing the frac sand.

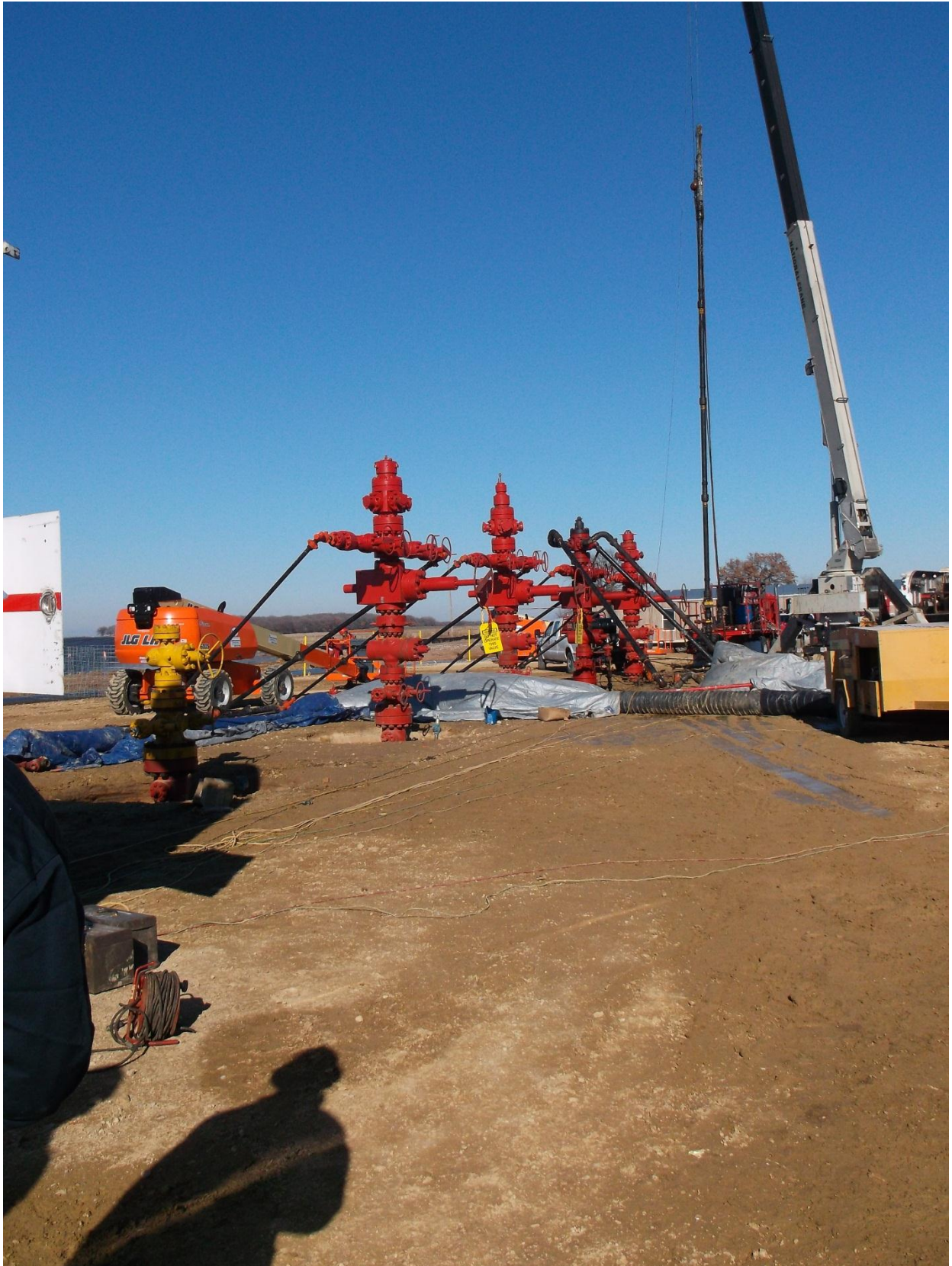


Notice the crane on the right. It is used to handle the tube used to insert the perforating guns into the wells.

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There are 4 Hz wells and 1 vertical salt water disposal well on this pad. The short, yellow one shown is the SWD and the 4 larger red ones are the Hz wells. Notice the several small wires on the ground leading to the control van on the extreme left. Remember these---they are explained a little later.

The long tube hanging from the crane will be loaded with the perforating guns and attached to the top of the red “Christmas Tree” of a well. The guns are then lowered into the well by wire line. Sometimes the guns are attached to a long roll of small, somewhat flexible tubing, and are actually pushed out into the horizontal part of the well bore. I didn’t ask how this wire line worked in a horizontal well, and I didn’t notice a roll of tubing on site.

These are the bullet type perforating guns. The sections can be put together if longer shots are necessary.



Each round, shiny hole contains a bullet, about the size of a 45 caliber.

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These guns have been used already. Notice the holes, and even an occasional misfire.



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After perforating the well, the frac'ing begins. There were twelve 2000 horse power pump trucks on site. A couple were spares in case of a mechanical failure.



five of the twelve pumpers

Remember the little wires on the ground several pages back. One goes to each pump truck, the mixers, the blenders, and everything else in the operation. Two engineers sit warm and dry in the control van and, using numerous monitor screens, switches, and other strange looking devises, they run the entire operation. They can start, stop, speed up, slow down, and do almost everything else necessary with each piece of equipment from this van. The rest of the Halliburton crew, numbering 20 or more, maintain a watchful eye out side. All wear head phones and are constantly in touch with the engineers, should something go wrong. This formation breaks down at somewhere between 4,000 and 5,000 PSI. Pressures like this are very dangerous, and believe me, everyone stays back as far as possible. This remote control of the operation makes things much safer than "back in the day." Each of the 4 Hz wells here are frac'ed in at least 15 different places, and it will take about 10 days to complete the entire job.

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The "Shooter's Truck"

Some of the MC/BIA crew



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Next, we were taken to a drilling pad about 5 miles east of the frac job. This rig had drilled the first 5 Devon wells, and was then moved to this new location. This rig is a triple derrick, 1,000 HP, all electric, and uses the top drive system. It was built to be skidded from hole to hole on the same drilling pad without ever being torn down. It is set up to drill with mud only, but it could be easily converted to air. It is powered by 3 huge diesel generators.



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The “ramp to nowhere” to the left of the rig is actually a folding bridge that carries the power cables and hydraulic lines from the power source to the rig. Each time the rig is skidded forward to the next hole, this bridge folds down a little more. The portable building to the right is offices for the geologist and the tool pusher.

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This rig had completed drilling and set the casing on the first of three Hz wells at this location less than 24 hours before this picture was taken. There is over 9,000 feet of drill pipe standing in the derrick, yet this rig was moved about 15 feet to the east and the first 400 feet had already been drilled. The pipe laying on the rack is the “surface pipe.” They were about to run this pipe into the well and then cement it in place back to the top. This will seal off any fresh water aquifers.

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These are the skids and the huge hydraulic rams which scoot this massive, fully assembled piece of equipment on to the next hole to be drilled.

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The Drill Bit



This is the drill bit type being used by Devon. They are cast from a very tough steel, and imbedded with many very expensive industrial diamond cutters. When worn down, these bits can be reconditioned at the factory by removing and turning the cutters, then replacing them in the bit.

They remind me of dinosaur jaws.

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The previous bit of choice.



This used bit is more like what we are used to seeing. It is also studded with industrial grade diamonds. This is called a “tri-cone” bit. This style of bit has been used for many years, and they still work well in some situations. These “cones” actually roll as the bit is turned, wearing away the rock. The newer style bit above has no moving parts and is designed to “cut” instead of wearing away the rock.

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Mud Pumps



This is the fluid end of 2 huge mud pumps. Normally, only one is used for drilling and the other can be used for conditioning or mixing up more drilling mud or just as a standby.

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This is the power end of those pumps. Notice that each has 2 large electric motors driving it.

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The power Supply



In the center are 3 diesel powered electric generators. They burn nearly \$3,000 each day in fuel. This is the muscle for everything that happens here.

Devon told us that the first 4 wells should be in production by the end of the month. The last 3 should be on line by the middle of March. The reservoir engineers will monitor the production for several more months gathering data relating to the total daily production of oil, gas and other stuff, the quality of that production, and the rate of decline (or incline). Using that information, they can begin mapping out their plans for fully developing this 54,000 acre pool of oil.

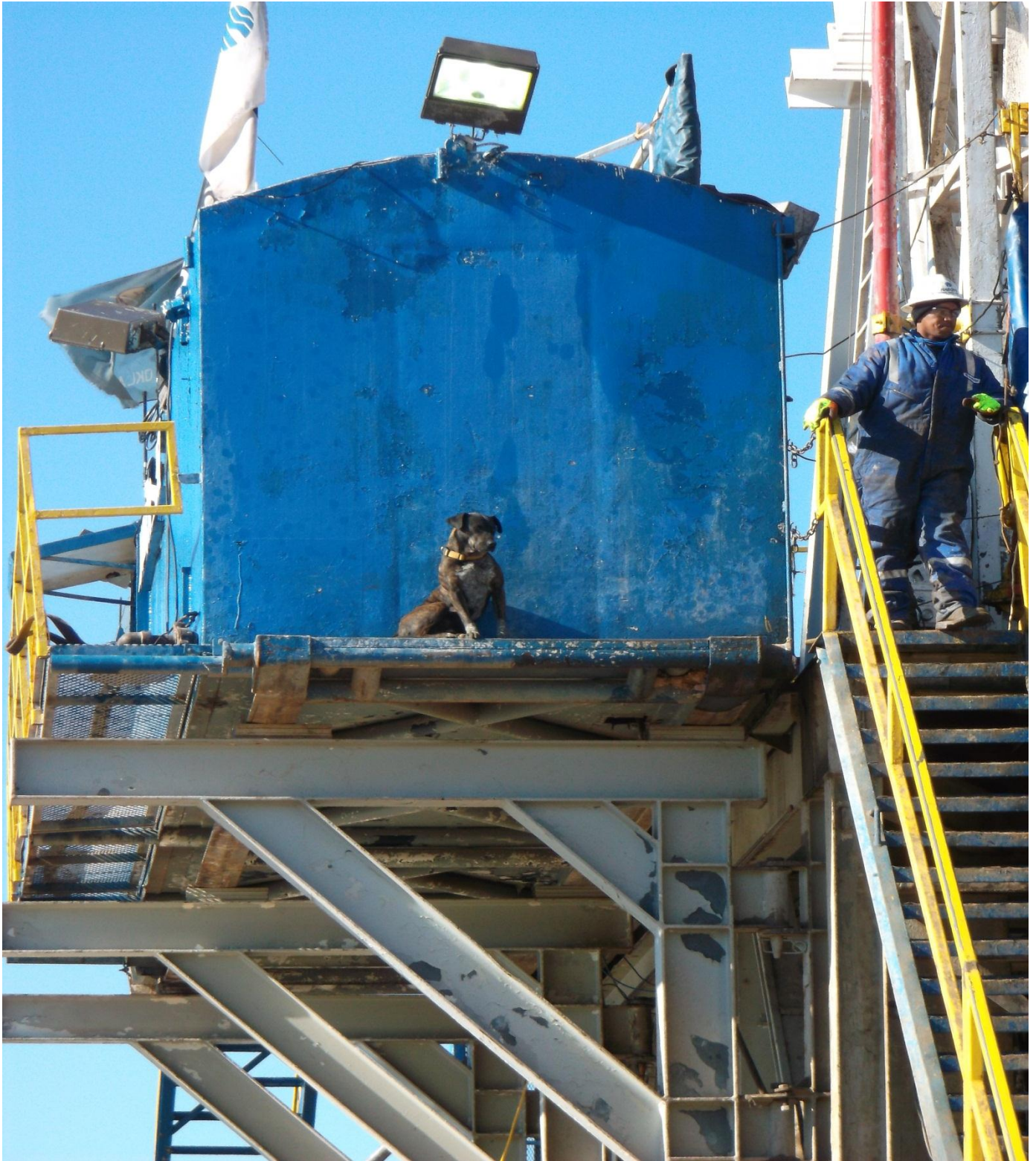
Devon also told me that their geologist had found several other “very interesting” things as they drilled these first 5 wells. No doubt they will exploit these areas as time allows. There has been some older, shallower production in the area for many years.

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Although it's a tough way to make a living,



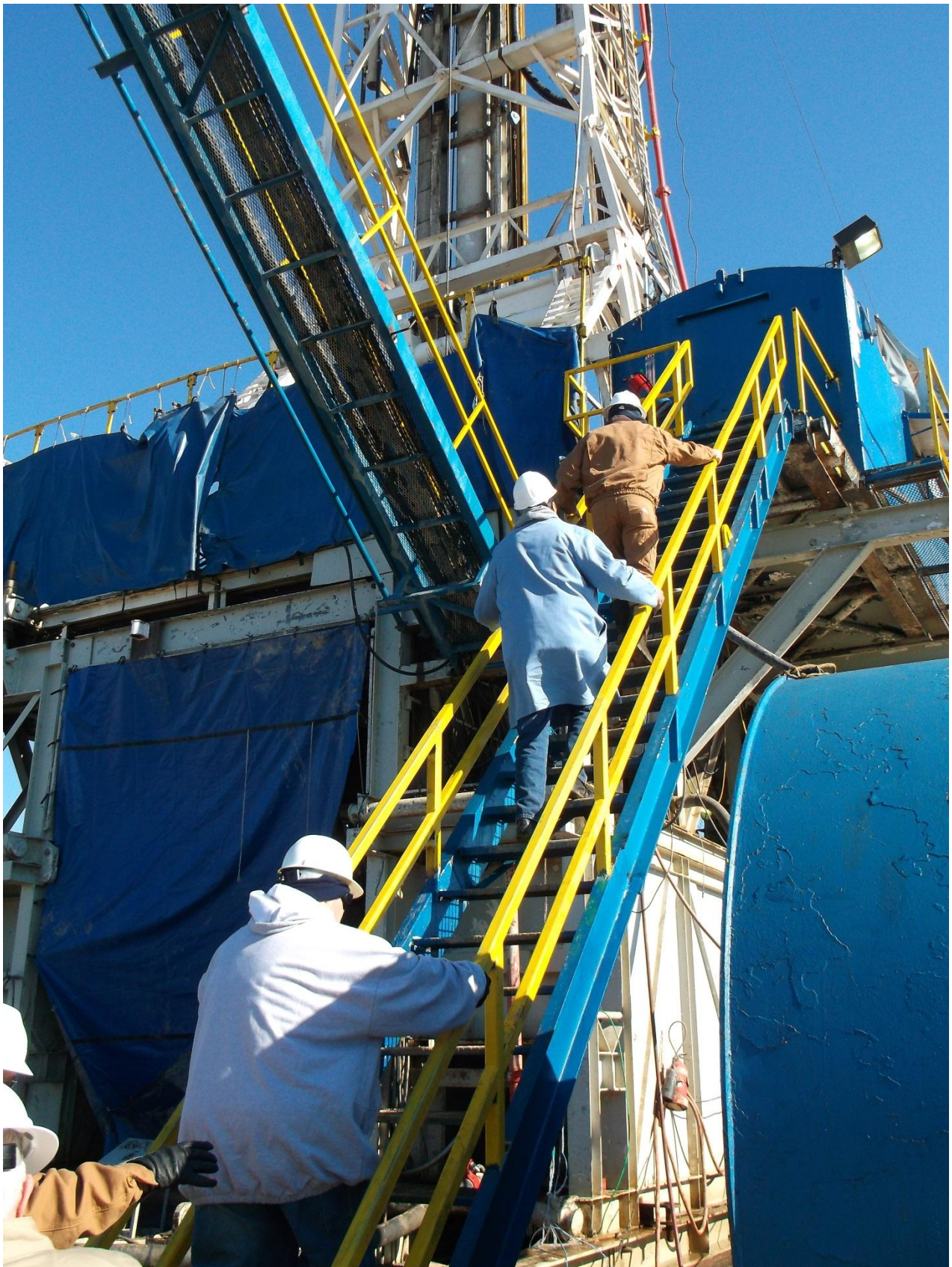
it just sometimes seems that some roughnecks have a better deal than others.
Especially at lunch time.

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It's a long way up to that rig floor.



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Oh, no. I aint go'in up there!

Ray McClain, Osage Shareholder