

DEEP HOLE DRILLER

AN ATLAS COPCO PUBLICATION FOR THE DRILLING PROFESSIONAL No 1 2006



Making Natural Gas Drilling More Profitable

**TAILORING THE FAMILY BUSINESS
SPIRIT OF A WILDCAT**



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A TOOL FOR COMMUNICATION

We are in a time of unprecedented demand for earth's natural resources. As the earth's population surpasses 6.6 billion, humanity's increasing demand for water, energy and minerals is putting a strain on our ability to extract those commodities. Economics, safety and efficient drilling – with a minimum impact on the environment – are challenges we must address in our pursuit of better, more innovative products.

Atlas Copco desires to be a leader in this challenge with a strong commitment of products and services for the deephole drilling industry. From our broad range of reverse circulation, core and exploration drills, to our comprehensive line of waterwell drills and mobile oil and gas drills, we are well equipped to support the deephole industry.

However, leadership requires more than a complete line of products. Through our dedicated distribution network, we also offer one of the industry's broadest ranges of drilling tools, hammers and accessories. Service, support and constant communication with you, our customer, are all critical elements in our quest to provide innovative drilling solutions.

In our pursuit of better communication with you, Atlas Copco is launching this new publication: *Deep Hole Driller*. The publication's mission is to share challenges and solutions, highlight your drilling accomplishments, and feature applications related to deep hole drilling. We hope you find this publication informative and enjoyable.

Deep Hole Driller will cover a variety of applications and geology from around the globe. We hope you will benefit from the sharing of experiences across the spectrum of the deephole drilling industry. From every continent, we will be looking for stimulating and interesting articles, we hope will help you in your business!

If you think your story would benefit other drillers,

please share this with your local Atlas Copco representative.

Happy reading!



BOB FASSL
President, Atlas Copco Drilling Solutions

DEEP HOLE DRILLER

Is published by Atlas Copco Drilling Solutions. The magazine focuses on the company's know-how, products and methods used for deep hole drilling and the advancement of the industry worldwide.

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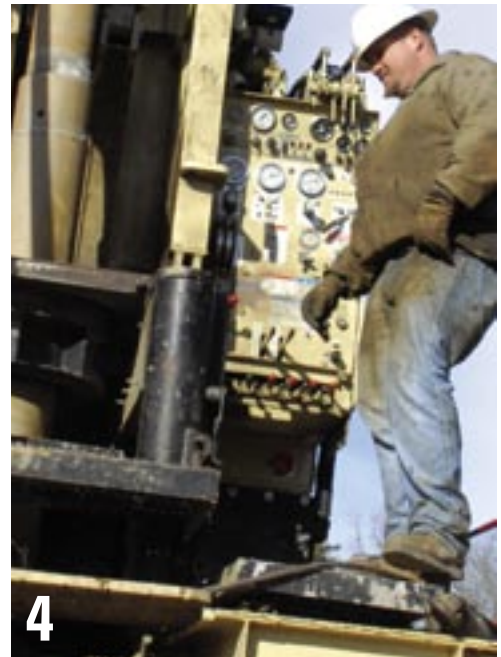
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COVER
After reaching total depth, water and air cleans the hole as gas is burned off as a safety precaution.

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Drilling for Natural Gas in Arkansas, USA

Periods in time are identifiable by the differences in rock and what was left behind in those formations. Sediments build; creatures and plants die; sands, silt and clay solidify – and to our benefit – fossil fuels develop from the decay and pressure of time.

In the central USA, the Carboniferous Period is divided by US geologists as the Mississippian age, 360 – 325 million years ago and Pennsylvanian age, 320 – 286 million years ago. The geological formations within this time hold compartmentalized reservoirs of natural gas, and the goal of the driller is to find the reservoirs so they can be drained.

In 1962, Ronnie Pense was a driller with a contract to do exploratory work in the state of Missouri, but he had no drill. However, he did have a brother, Clifford, who owned cattle. Not to make it sound simple or trivial, as it most certainly could not have been an easy decision: to start the business Clifford sold his cattle and Pense Brothers Drilling Company (Pense) was born.

Today Ronnie and Clifford's family company has grown to include their children, who are an intricate part of operating and growing the company.

Pense is a leader in the exploration of natural gas drilling throughout the south-central USA. They specialize in drilling shallow gas wells, generally contracted to drill the initial hole, which could go to depths of 3,000 to 4,000 feet (914 m to 1219 m). Later a conventional drill will

◀ To the left Pense Brother's RD 20 stands at the ready to begin drilling the 12 inch (304 mm) hole with the QL 120 DTH hammer.

At the right the worker is setting the collar which ▶ will divert cuttings and gas to the discharge line.

Far right, Ronnie Pense stands to the right of his ▶ 42-year employee, tool pusher Gary Warren.

move onto the site to continue drilling the hole horizontally an additional 3,000 to 4,000 feet.

EFFICIENCY IN RESOURCES

Using an Atlas Copco RD20 drill, Pense can efficiently move onto a site and drill the required hole in less than a week. Within 24 hours, they can move to a new sight and begin the process again.

Up time is critical to efficiency and profitability. Ronnie Pense says, "I use the RD20 because it is a smooth operating and easy to use machine."

Also, when footage incentives are a bonus and maintenance is critical to maximize footage, Pense says, "the RD20 is easy to maintain."

Pense works in the US states of Alabama, Arkansas, Colorado, Missouri, Utah, New Mexico, and Oklahoma. This highly organized, family-oriented company rotates men and machines throughout the country to maximize operating efficiencies.

Rigs generally run with three, four-man crews working two weeks on and one off. Each drill will operate with two crews working 12-hour shifts changing out at noon and midnight.

"Our customer has it in the contract to have a four-man crew, but it's also more efficient and safe," says Mr. Pense.

"I've got good people and want to keep them," says Mr. Pense. That is evident by the tenure of the tool pusher on this job, Gary Warren, who has been with Pense Brothers for 42 years.

ARKANSAS GAS DEPOSITS

Formations of rock that developed toward the end of the Mississippian age and the beginning of the Pennsylvanian age hold the concentration of gas in the Pense's area. This area of Arkansas is identified as the Ozark Plateaus Region.

According to William D. Hanson of the Arkansas Geological Commission, "The formations of the Mississippian and Pennsylvanian, mostly Fayetteville shale but also Pitkin limestone and Batesville sandstone, are full of fossils and compartmentalized natural gas."

The depth of the gas varies in this area, as does the consistency of rock. According to Mr. Pense, "Today (site pictured) we are drilling close to 4,000 feet (1219 m), whereas last week, total depth was at 3,000 feet (914 m). We see quite a bit of shale, but there is some real abrasive sandstone down there too."

As stated, in the Stratigraphic Summary of the Ozark Plateaus Region, as defined by the Geological Commissions, "The depositional environment of the rocks found in the Arkansas Ozarks is one of a relatively shallow continental shelf, sloping toward deeper water generally toward the south. This shelf emerged many times during the Paleozoic resulting in numerous unconformities throughout the sequence."

In this area of Arkansas, drilling data shows that gas is found at different levels. In the week this writer traveled with Pense, the first drilled hole hit gas initially about 2,800 feet (853 m) and the

second was projected to hit at 3,100 feet (944 m). The two vertical holes Pense was contracted to drill – just two miles from one another – were 3,950 (1203 m) and 3,967 (1209 m) respectively. Generally, only one well permit is given in a 640-acre (259 h) section in Arkansas. If there are believed to be more compartmentalized pockets of gas in the same section, a permit can be petitioned to the Oil & Gas Commission to do additional drilling on the same section.

DRILLING PROCESS

Although Pense works a band of states that stretches over half of the continent, the drilling is similar in most states. "Each hole is a little different, but we use the same set up, from Colorado to Alabama," says Mr. Pense.

Colorado has more shale and Alabama has more hard rock, but they use the same tools, just adjust drilling, as the conditions require.

The first 500 feet (152 m) is drilled with a 12 1/4 inch (311 mm) bit on a Secoroc QL 120 down-the-hole (DTH) hammer. Pense uses two 8 inch (203 mm) stabilizers above the hammer to add weight. The hole is then cased with 9 5/8 inch (243 mm) casing. The 9 5/8 inch (243 mm)



DEEP HOLE DRILLER

▶ surface casing has threaded and coupled ends. The RD20 uses a wishbone device to pick up and thread the joints of range III casing together. The surface casing is then cemented in place before the bottom hole is drilled.

At that point, the crew starts over drilling an 8 7/8 inch (225 mm) hole from the surface through the concrete. The hole will now be drilled to the specified depth of the contract.

Pense drills the 8 7/8 inch (225 mm) hole with a Secoroc TD 90 DTH hammer and a slightly concaved 8 7/8 inch bit. They use the hammer drill and bit – usually to about 3,000 feet (914 m) – then go to a tricone bit. The DTH hammer drills 3 to 4 times faster than the tricone bit, so they stay with it as long as possible.

Although shale is predominate in this area, stringers of highly abrasive sandstone, very hard chert and other course rock is present.

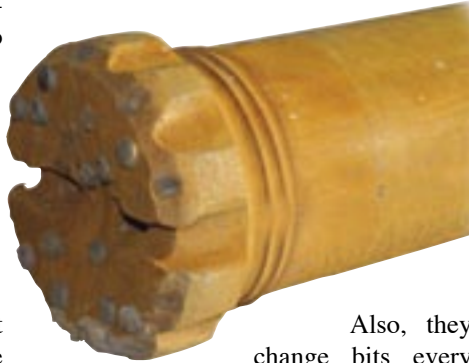
They use both TD 90s and QL 80s for the 8 7/8 inch (225 mm) hole but mostly use the TD because they feel there is more strength in the larger shank on the TD 90 bits.

Pense says, “We always use Sec-

oroc because of the dependable performance.”

Pense will put 20,000 to 40,000 (6092 to 12192 m) feet on a hammer. According to Mr. Pense, “On the smaller hammer (TD 90), we can wear the outside skin out before the insides at times.”

Pense doesn’t rebuild hammers because his philosophy is that if one thing needs replacing, usually there is something else going as well. “We find it’s not worth the chance of down-time, again efficiency is key to profitability.” Again, says Mr. Pense.



Also, they change bits every hole when using the 8 7/8 inch (225 mm) size and never rebuild bits as they feel it’s not cost-wise. “The

potential for downtime is too great, and being down costs more than we would save,” says Mr. Pense.

“We actually save money by keeping with new bits.”

Pense has even been offered free bits by competitive companies to make the switch, but he says he won’t take the chance of shanking one. “We don’t switch because we know what works. It’s an economical thing, time is money.”

A Baker-Hughes float valve is installed into the drill string every 500 feet (152 m). This allows for most of the drill string to remain pressurized when making a new connection. Only the portion above the float valve will unload during steel change.

Pense uses the 1250/350 air on the RD20 and two additional 1070/350 compressors to provide air to flush the cuttings from the hole. All of this air is run through a second stage booster compressor that raises the pressure from 200 psi to 400 psi. This allows the primary compressors and drill rig compressor to run at 200 to 250 psi, which is a lower duty cycle than 350 psi.

They add about 20 to 25 gallons (75



Pense Brother’s crews and tool pusher take less than a day to move to a new location, set up and begin drilling.

DEEP HOLE DRILLER

to 951) of water per minute to keep the bit and hammer cool, while also aiding in cutting removal. No foam or mud is necessary in this area and depth.

BEING SUCCESSFUL

Pense Brothers has a total of 18 rigs working at one time, 10 of those are RD20's – and an 11th is on order. In Alabama and Oklahoma they run day rigs, but for the most part a rig is in the field, and productive around the clock.

On this particular job transition, from the time the crew reached the 4,000 foot (1219 m) depth on one location and began the process of flushing the hole, to the time it began hammering rock in a new hole was less than 22 hours.

Pense Brothers Drilling is a first-class organization that focuses on its efficiencies and getting the most out of their equipment.

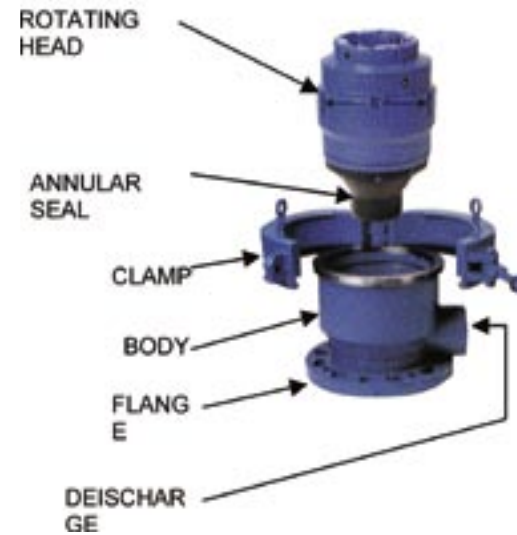
As Mr. Pense said, "I use Atlas Copco and Secoroc because it is the best. To shank a bit at 3,000 feet (914 m) just isn't worth it!"

And with a grin he added, "I have a bit retrieval system on a few of my rigs, but I sure don't want to use them."

DHD 1 06



using a substructure in gas drilling



In oil and gas deep hole applications substructures are a commonplace because of the need for a blowout preventer (BOP). This structure may be a half-height or full-height structure depending on the clearance needed under the rig table.

A substructure is a fabricated steel structure that supports and elevates the entire drill rig above ground level and comes in three types.

FLOAT – A Low sub structure that elevates the rig 12" to 24" above ground level

HALF-HEIGHT SUB STRUCTURE – A sub structure that elevates the rig 4' to 6' above ground level

FULL-HEIGHT SUB STRUCTURE – A sub structure that elevates the rig 8' to 12' above ground level

The BOP is a device attached to the surface casing to control gas pressure in the well and prevents the well from "blowing out" or releasing an uncontrolled blow of explosive gas from the well.

A short annular BOP is used for ground level or half-height substructures.

DHD 1 06

PERFORMANCE & SIMPLICITY

the KEY to TOTAL DEPTH

There are two kinds of drillers – as far as tool usage is concerned. Which one are you? Driller A sells or discards it while Driller B services a hammer to keep it in operation.

Generally, Driller A consistently drills to 3,000 feet and finds it too expensive to have hammer problems at the bottom of a deep hole; therefore, replaces a hammer after its first life. In the case of a TD 65 DTH Hammer, that could be 30,000 to 40,000 feet.

For Driller B who rebuilds hammers, profitability includes servicing a DTH hammer to maximize its footage.

For either driller, reaching total depth in the most efficient manner, then moving on to the next hole is where money is made. And that includes matching productivity to the cost of tooling.

The TD Series incorporates new and improved features focused on productivity. To increase efficiency and profitability Atlas Copco has engineered performance and simplicity into the TD DTH hammer.

Many drillers have found Atlas Copco's Secoroc TD Series to be more than they expected and most effective in increasing their productivity. As the TD 60 and 65 uses the same QL6 shank used on most hammers, it's easy to try the TD hammer today to see how it increases your penetration rate to total depth.

Performance

The air cycle that was first developed for the Quantum Leap series hammer, with its proprietary valve cycle, allows supply pressure to be applied to the piston for 80% of the impact stroke thus delivering higher energy than fixed port designs. The increased compression ratio with the Total Depth also results in greater efficiency.

The large 4.75 inch (120.65 mm) bore of the TD60/65, 1/4 inch (6.35 mm) larger than even the QL series, allows increased power output by matching and optimizing piston-to-bit mass.

The piston guide system uses a floating piston seal to minimize galling and frictional cracking normally associated with misalignment between the backhead and casing. The wear resistant polymer seal also prevents metal-to-metal wear, which robs performance.

Simplicity

The innovative snap-in cylinder reduces the number of precision parts required to

position the cylinder within the drill thus increasing simplicity and reliability as well as ease of service.

A one-piece rubber check seal replaces the spring and plunger system normally used on DTH hammers. This flapper check seal design is less prone to wear, damage and eliminates the possibility of spring failure.

The backhead saver-ring is used to prevent erosive wear of the backhead and indicates when to reverse the casing or replace it. When it's time to replace externals, an inexpensive saver-ring is used rather than a more costly backhead.

The modular design of the TD60/65 allows the entire tool to be disassembled for service with no special tools, once the backhead and chuck joints have been loosened. Speed and reliability of service means you can return to drilling faster.



TOTAL DEPTH

ATLAS COPCO SECOROC

NEW DISTRIBUTION CENTER FOR DRILLING SOLUTIONS

Atlas Copco views Aftermarket and Manufacturing as two distinct and separate business areas with tremendously differing goals, flows and requirements. For this reason, we strive to have them in their own separate environments.

Effective May 1, 2006, Distribution (which includes Jim Board, Lydia Collins, Dawn Barlow, Bill Scott and their teams) will relocate to a new facility in Allen, Texas.

The Distribution Center (DC) will occupy 81,000 sq.ft. of space and allows room for future expansion. Highlights include a 30-ft height (9.14 m) clearance for racking and equipment, 12 dock doors complete with power leveler, and a truck dock locking system. State of the art, narrow aisle wire-guided forklifts will be used. The new office facility is designed around our specific requirements and will streamline efficiency.

Steve Bialas, Jim Board, Lydia Collins, Dawn Barlow and Bill Scott are hard at work implementing the move.



They have identified over 115 issues that need attention leading up to the relocation dates, April 26 – May 1.

Two key employees outside ADS, Stella Allende from AC Chile and Dave Berggren (AC Orebro) will be lending their expertise to the relocation. Stella is responsible for keeping our Customer Centers well informed and up to date regarding the relocation: how it affects them each and what they can expect leading up to and throughout the relocation period. David Berggren was in Garland the first week of April to review the core team plans and offer valuable input to avoid problems down the way. Dave has extensive experience splitting DC inventories from Manufacturing in Orebro and will be a tremendous asset.

There is a lot of work to do in such a short period of time, but our Distribution team is excited and energized. We are confident that our efforts and planning will lead to a very smooth and successful relocation with little to no negative impact to our valued customers.

Atlas Copco Drilling Solutions considers the Aftermarket a key business area and values the contribution that it offers. It is approved projects like the DC relocation to Allen that exhibits our dedication to customer support.

We invite you to come and visit us in the new Distribution Center. We would love to take you on a tour of the new facility and show you the benefits of split responsibility and flows.

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IMPROVING DEEP HOLE PERFORMANCE

Drilling for oil and gas is technically demanding and commercially challenging. Equipment must perform at the highest level for a company to reach its greatest return. Atlas Copco Drilling Solutions' Operation and R&D Manager, Rudy Lyon, highlights some of the issues unique to the industry.

A basic tenet of oil and gas drilling is that everything that goes into the hole must come out. A deep oil or gas well that is clogged with failed parts is little more than an expensive hole in the ground. The risk of losing parts to down-hole equipment must be avoided at all costs in order to maintain the integrity of the hole and the investment made in it.

As operating costs for drill rigs are very high and involve lots of people, maximizing total drilling costs are a key motivator for buying productive and reliable products. Leveraging

ing penetration rate and uptime are essential.

The Atlas Copco Secoroc Total Depth range of down-the-hole hammers was developed to provide the maximum return on investment for drilling contractors. The TD hammers can also be adapted with a range of options to suit the specific needs of a wide variety of applications and drillers' preferences.

Atlas Copco Secoroc's patented JetSub enables high volumes of cleaning air to be consumed without the loss of performance, which normally accompanies conventional DTH choke systems. The JetSub enables high flows to be bypassed above the hammer with upward facing nozzles that evacuate and clean the hole.

Many oil-gas contactors see a key benefit of the JetSub system as having no need for a high pressure booster. Boost-



**Rudy Lyon,
Atlas Copco
Drilling Solutions'
Operation and
R&D Manager**

ers are normally needed to push high volumes of air through DTH systems. The JetSub also improves performance and generates less bit wash due to better hole cleaning.

Another optional feature available on the TD hammer range is the patented AirSelect system. The generally high and variable flow demands on hammer drills in oil and gas applications are taken care of by this system that adapts flows according to need and supply. The Secoroc Airselect system makes air changes easy with its rapid and efficient air selector system.

DHD 106



TAILORING THE FAMILY BU

Expanding a business is not the only way to ensure its continued profitability. The old adage that a business must continue to grow in order to remain fiscally sound is simply not always correct. In fact, there can be a set of circumstances where maintaining a business at a given level, or even downsizing it, might yield wanted profits more efficiently. The tailoring by downsizing of the James Drilling Company in Arvada, Colorado, has made this company not only financially stable but more profitable.

James Drilling has been a family-owned company since its inception in 1957, when it was founded by James Keaton. Keaton built the company as a drilling and excavating company. Actually, there were three separate business activities. Both water well and natural gas exploration drilling were specialties, as well as excavation that included underground utilities and building-site work.

In 1970, when his son, Mike, came into the business, there were 20 employees. Mike took over the helm in 1980 when James retired. During the 70s and early 80s, there were anywhere from three to six drill rigs and an assortment of major excavation equipment in the company's fleet. Mike says, "We were active in all three types of businesses, but it was getting out of control because each type is a specialty which demands a lot of individual management concentration. You cannot be a jack-of-all-trades and do all of them well, so profits and efficiency can suffer as a result."

A very important issue for Mike is to personally manage the company employees and establish a good working relationship with each one. He feels that not only will they remain loyal to the company, if they are treated with personal respect, but they will put more into their work, which reflects in greater work productivity and

its quality. This philosophy is working well, James Drilling has employees that have been with them for 18 to 30-plus years. Mike says these employees have been an important asset in ensuring a successful business. In turn, there are important benefits enjoyed by the employees. One of the major benefits is an excellent health-care package that is paid completely by the company.

The outstanding business success experienced in recent years was not always so for James Drilling. Mike says the diversity of the business, in part, helped to bring about difficult business times. Consequently, instead of continuing with the different businesses, Mike decided to concentrate on water well drilling by phasing out of exploration drilling and excavation activities.



BUSINESS TO PROFITABILITY

Today, the company does very little exploration drilling, which represents only one percent of the company's total revenue. To reduce peripheral activities associated with their water well business, Mike decided to eliminate the company's water pump sales and their installation. He says that the margins in performing this service are too thin to justify it. Instead, he refers the customer to local reputable water pump sales/service companies. Occasionally, for a given customer's convenience, Mike will have the pump installed through his company by sub-contracting the activity with a third party.

With the elimination of the exploration drilling and excavation businesses, the company's employees were reduced from 20 to 12. Of the 12 employees, six of them man the two water well drill rigs in 3-man crews. The rigs are recently purchased Atlas Copco T4W carrier-mounted water well drills. Mike says, "I realize I could have expanded the water well drilling business after dropping the other two businesses, but I prefer to keep

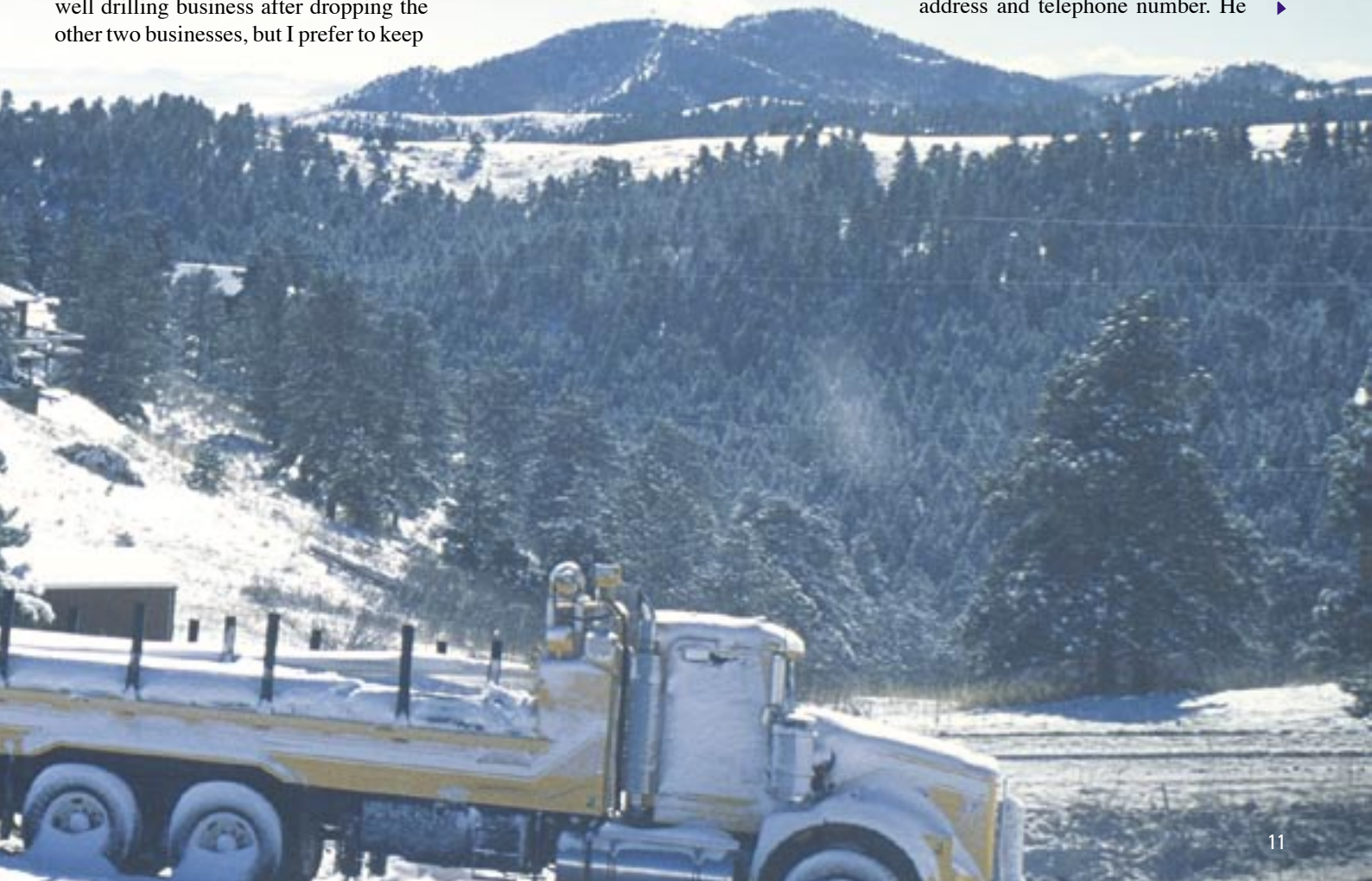
it at a level where our drills are constantly working. If I were to add additional drill rigs to the fleet, I would have to hire a salesman, which I'm not inclined to do." As the company is now structured, Mike and his son, Jordan, do all of the selling, manage the business and both regularly visit the drilling sites. Jordan started full-time with the company in 1990, but has more years experience than that. In fact, he started working part time after school and during the summers when he was 12 years old. Early on, he learned to operate the water well drill rigs.

While Jordan is very adept in operating a drill rig, Mike also has been teaching him the business end of the operation. He says, "It is valuable for him [Jordan] to be proficient in drilling activities, but that is not enough to ensure he can manage the business. There are some really excellent drillers that probably would not do so well in managing a water well drilling business."

ADVERTISING PAYS

The Keatons say that effective advertising pays. Besides their direct sales activities, they gain many leads from the display and classified ads the company runs in the Yellow Pages, the local newspapers and at a company website. Despite the fact that the company enjoys a very good reputation as a water well drilling company, which the Keatons built over the past 48 years, they still find it necessary to advertise. Aside from their repeat customers, who mainly are home builders, most home owners depend on the Yellow Pages when they want a water well drilling company. Water wells and the contractors who drill them are not exactly a household word. Most people have the need of water well drilling services once in their lifetime.

Another effective way to advertise, according to Jordan, is to keep their drill rigs bright and shiny with easily read lettering that includes the company's name, address and telephone number. He



► says that many people take notice of the rigs on the road or at the drilling sites because they are kept cosmetically in showroom condition.

For the past six years, the water well business has been very good for James Drilling. They have drilled an average of 300 to 320 wells drilled annually. All projects were located in Colorado with most of the wells drilled within 100 miles (161 m) of Arvada. Nevertheless, there is a lot of travel time involved. To minimize the drill rigs' mobilization costs, Mike takes contracts far enough in advance so that he can bundle a sufficient number of the drilling projects within a given location.

This practice reduces overall drill rig travel costs and, just as important, the travel time required to go from project site to project site. The bundling of projects according to a given location also results in more available drilling production time, that in turn, leads to greater drilling revenue per year.

ATLAS COPCO DRILL RIGS ARE CENTRAL

The center of the company's equipment fleet consists of the two Atlas Copco T4W carrier-mounted water well drills. Atlas Copco, an international company with a strong pres-

ence in the water-well industry, recently bought the Drilling Solutions Division from Ingersoll Rand because of its ideal fit with existing complimentary products in the Atlas Copco product line.

Mike says they have tried other make drills through the years but says the Ingersoll-Rand, now the Atlas Copco product line, has been his first preference. "I am encouraged to see that Atlas Copco has made a firm commitment to the waterwell drill line so we can expect both continued quality service and improved products in the future. We will continue to buy the Atlas Copco products," says Mike.

Mike's school of thought is to trade in existing equipment on new equipment while it still has plenty of usable life left in it. He has a number of reasons for this thinking. One is, the equipment is most reliable during the first part of its usable life. This is very important to Mike, as the drill rigs are at times operating in remote areas of the state. Their remoteness relative to service centers precludes just-in-time service, therefore a newer rig reduces an unscheduled maintenance problems. Another reason Mike prefers trading frequently is in taking advantage of the latest drill ing equipment technology, which can improve production efficiency. Last, by trading in early, the drill still has much usable life and thus carries with it a high trade-in value.

Usually, Mike trades in a drill after three seasons of service. This constitutes about 5,000 machine hours put on it. The drilling company's season is about eight months with the winter months being inactive due to inclement weather. As mentioned, about 300 wells are drilled each season using the two drills. Mike says the average depth drilled to complete per well is 400 feet, so each drill rig will drill 180,000 feet (54,864 m) before it is traded in on a new one.

While granite is predominately the rock drilled, occasionally quartz is encountered. Drilling

penetration rates range from 30 to 70 ft/h, with occasional rates as high as 100 ft/hr, depending on the hardness of the rock. As for choice of drill bits, Mike prefers and uses exclusively Atlas Copco button drill bits. "We have tried other makes but always return to the Atlas Copco bits. They are reliable and have very good wear life," says Mike. The size button drillbit used is 6 1/4 in (158.75 mm) diameter to drill holes sufficient in size to accommodate installing schedule 40, 4 1/2 in (114.3 mm) diameter x 25 feet (7.62 m) long pipe.

Tailoring the James Drilling Company to a size that can be efficiently managed by Mike and Jordan is providing successful, not only financially but the new size serves them well. The Keatons have time to devote to family and other interests that go beyond the business. Mike, for instance, enjoys traveling some during the winter months, visiting some of his favorite haunts such as Southern California and Mexico. "I enjoy my work but I also enjoy my time away from it," he says.

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HAND ON WITH JT KESLER

Tools Exist for a Reason

On a recent machine start-up, I noticed some of the tools shipped with the new T4W were either not being used or used incorrectly by the experienced crew.

It made me wonder how many other drillers aren't using the standard tooling because they don't know their function or how to use them.

Tools exist for a reason: to make a job safer and easier, or so the rig runs longer and more efficiently. The reason tools are not used or are misused is that the operator thinks it's quicker not to use a tool or that he doesn't understand the function of the tool and how to use it.

One lesson to remember, today's shortcut may become tomorrow's problem. Use the tools for their intended purpose; it will save you headaches later.



Carousel Support

The most unused tool is quite clearly the carousel support. You may think that there is no real reason to use the support.....that it's not really needed. This is definitely not the case. There is a very good reason to use the carousel support.

After a drill gets to be a few years old, some people wonder why the rotary head spindle does not line up with the pipe in the carousel any more. Lack of support over time may cause the carousel to sag. This misalignment can cause pipe thread damage and slow down the drilling operation. The carousel support tool was

designed to support the carousel in the transport position and prevent misalignment.



Chain Wrench Plate

Another misunderstood or ignored tool is the chain wrench plate. Many drillers don't like to take a few seconds to install the plate. Others don't know what that curved plate with a 'V' notch in it is for. The wrench plate's sole purpose is to act as a rest for the chain wrench, a.k.a a breakout wrench.

Over time, you will build up extra muscle lifting the 64-pound (29 kg) chain wrench every time you use it to break a joint. You'll also be putting unnecessary strain on your back, shoulders and arms. For you young guys, it's all in a days work. For us older guys, it's common sense to use a tool that makes the job easier. Remember, 'a smart driller uses his brain instead of his back.'



Hex Fork Chuck

There are two fork chucks. The standard fork chuck fits the flats on the pin end of a T4W drill pipe. Everyone knows how to use that one. The forgotten fork chuck, the hex fork chuck, fits around the hex

end (box) of the drill pipe. This handy tool secures the box end at the centralizer so you can break or make the connection at the rotary head. It's the safest way to perform this operation.

You won't need it often but it's worth it's weight when you do. The hex fork chuck isn't standard equipment with a T4W, so you'll have to order it. I recommend you have one in your toolbox.



Rod Lock

The rod locking tool is probably the most important tool during transport, because of its safety factor. With a seven-rod carousel, the locking tool locks the drill pipe into the carousel and keeps one from possibly shooting forward if you have to stand on the brakes. This is a mandatory tool that you have to use every time you lower the derrick and move the rig.



J Wrench

The "J" wrench, fits the flats on the back head and holds the back head of a down the hole (DTH) hammer allowing you to break it from the drill pipe.

There are many more tools that come standard with a new drill, but these are the many of the most overlooked. What's important is to always use the right tool for the job and always focus on the job at hand.



Be safe out there!

J.T.Kesler



SPIRIT OF A WILDCAT

A lifetime of searching for that next hidden treasure is more than a job for some; it is a passion. Modern day wildcatter Rod Johnson exemplifies that attitude...and spirit.

A trained geophysicist who uses instinct and modern technology makes for a hell of an oilman. Johnson spent ten years developing a software program that uses geology, GPS technology and topography to help locate oil. And as its functionality is so accurate, and he wants to keep it a secret, that is all I can tell you.

It's that excitement for finding buried treasure, while developing new or better ways to get to it, that makes Johnson so interesting.

After a lifetime of searching for earth's treasures (he has owned two goldmines in addition to his lifetime of oil ventures), Johnson has purchased the first RD20 ever sold in the state of Texas.

As many drill clauses require 120 day period to begin drilling, the RD20 is the perfect drill to get into oil reserves quickly, install surface casing and reach total depth fast. The RD20 is new to Johnson. This is its first hole.

Johnson isn't afraid to be first, and it has been successful for him. With

the Atlas Copco RD20, he expects to put 300 holes in this area and is forecasting 2 million barrels.

At 780 feet (237 m) they hit gas and at 1400 feet (426 m) found oil, – something not unheard of, but anymore it more uncommon to find Texas oil that shallow.

Using Gas Gun technology and hydraulic fracturing, Johnson expects to get 80 to 90 barrels a day from this drill sight.

This remote area of South Texas near Sonora and Ozona is rough and remote. Having a drill like the RD20 capable of moving where needed is critical for the precise hole program Johnson has planned - down to the axis of the fault line.

Technology is a big part of Johnson's drilling program. The RD20 will offer mobility in throughout the ranch's valleys and mountainous terrain, but to maximize the drilling productivity of his drill Johnson is outfitting his new drill with monitoring equipment.

From a remote location, Johnson will be able to monitor everything from penetration rate to engine and compressor efficiency. He will even be able to oversee his crew's progress with a camera that feeds a signal over the internet.

From spudding in a new well to marketing the oil, Johnson's vertically integrated company is capable of doing it all. And his modern attitude and technique reflects his adventurous character...and that spirit we call wildcat.





UNICEF Provides Water Relief to Nicaragua

Atlas Copco Drilling Solutions recently supplied a TH5 shallow water well drilling rig to UNICEF (United Nations Children's Fund) in Nicaragua.

The TH5 drill modules are built in Atlas Copco's Bangalore, India drill plant. Once arriving in Nicaragua, the rig module was mounted on a Ford F450 pick-up truck. The rig can operate from a trailer or be mounted on a truck with a 3,200 kg (7,050 lbs) payload capacity.

The rig is used in conjunction with a XAHS 236 compressor to drill 4.5" - 6.5" wells with a DTH-hammer.

The TH5 has a pull-back of 2273 kg

(5000 lbs) and making it suitable for drilling wells to a maximum of 100 m (328 ft) with 6 1/2" DTH. The drill will also drill a 7 7/8" hole in soft, upper formations using rotary mud.

UNICEF works in more than 90 countries around the world to improve water supply and sanitation facilities in schools and communities, and to promote safe hygiene practices.

All UNICEF water and sanitation programs are designed to contribute to the Millennium Development Goal: to halve, by 2015, the proportion of people without sustainable access to safe water and basic sanitation.

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The Color of Atlas Copco

In December, the United States' National Ground Water Association met for its annual conference and trade show. Attending the show were 2,824 contractors and manufacturers from the US and around the world.

Atlas Copco themed its display "Getting to Know Our True Colors" to highlight its business philosophy, and symbolized this by introducing the flagship model T3W in its new standard color - Atlas Copco Yellow.

For those drill customers of the former Ingersoll-Rand company the philosophy of Atlas Copco may not be well known. The branded yellow paint is recognized around the world as a color synonymous with a higher level of quality and exemplifies how Atlas Copco does business.

Three words were used to define this theme: Commitment, Interaction and Innovation. The point was to let those long-time customers of Ingersoll-Rand know that Atlas Copco is committed to the business and development of the product.

Innovation comes from the demand of the customer to be more profitable and efficient. Atlas Copco listens and interacts with customers to know what they are needing to grow. These sentiments signify Atlas Copco's commitment. They are more than words, they are a credo to doing business.

And for those who may take more time to warm up to yellow, you can still order your drill in your color of choice.

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