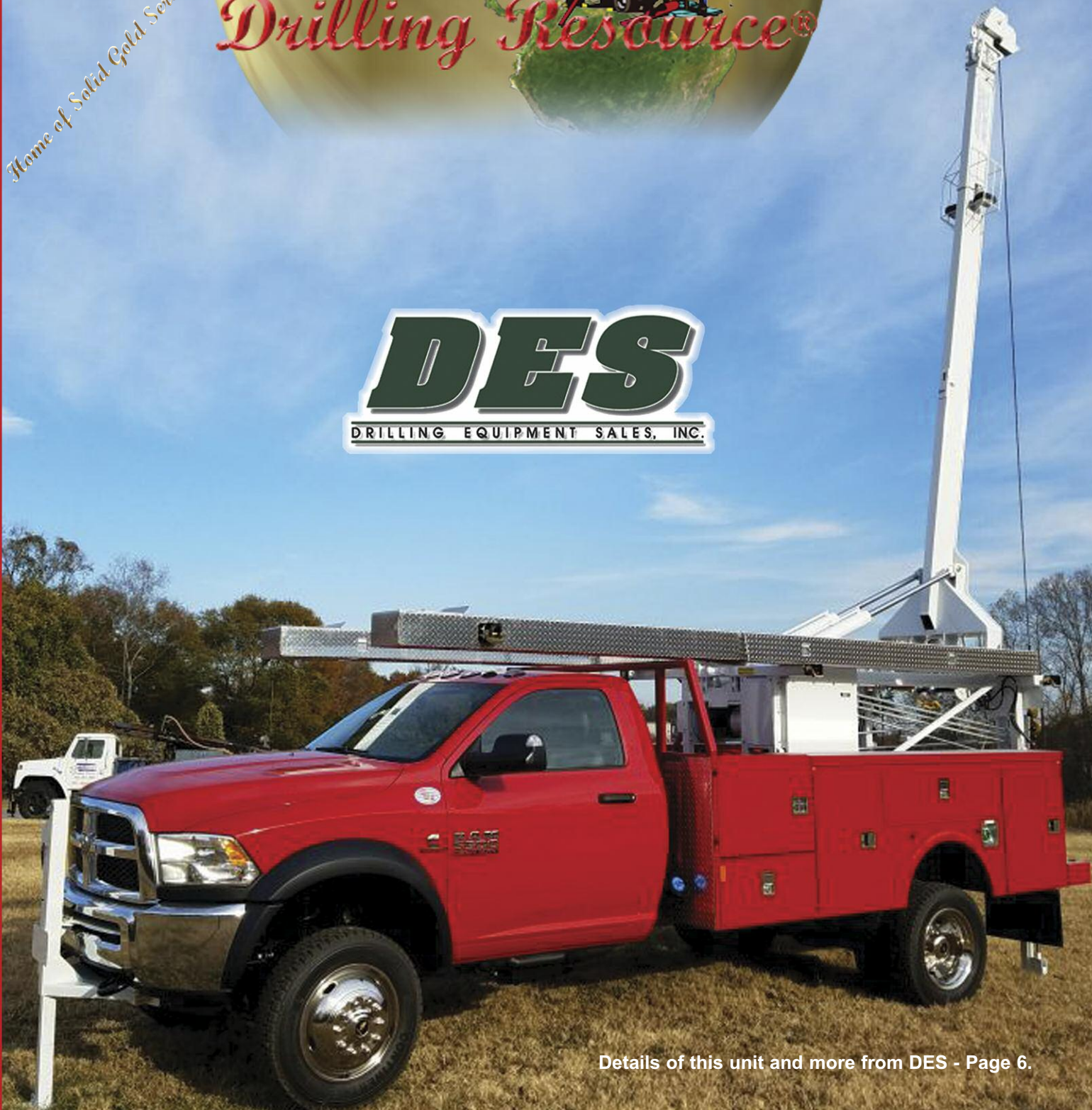


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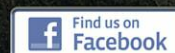


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Ronnie,
Managing Publisher
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A great deal has happened these past few months I wanted to share with you. The remodel on the office is progressing well with the three offices complete and occupied. Really looks nice - many compliments from visitors. The remodel will continue with a new entrance and a ramp, as well as two additional offices and storage. "Growing Pains!"

While we were in the midst of all that, we made some additional changes:

Hired an Associate Editor, Caleb Whitaker. Hired Betsy Willett for marketing (you may have seen her in Las Vegas - that was her debut). Then a staple here at **WDR** ended her Leave of Absence - Kathy Heinrich. Now we are fully-staffed for a short time - still looking for another editorial associate, but I'm certain that will come once the other offices get completed. Right now everyone has "their own space", and that is an **accomplishment** when we have had 3-4 people per room at times.

While doing that, we did a little internal remodeling to one of the offices - made a small work area into quite a larger one - with a great area for spreading out paperwork, etc.

So, now we decided our "sales" people aren't sales people. WHAT? You say! That's right! Because you see, we don't really have anything to sell - we are **SERVICE PROVIDERS**. We are the **Resource** people turn to when they need YOU with YOUR equipment, products, and services. So from now on we have PUBLIC RELATIONS PROFESSIONALS = Brenda, Betsy, Jan, and Kathy. They are professionals in their fields and know how to help your business grow through proper planning of your marketing advertisements, as well as how to work with our editorial department - Bonnie and Caleb, for editorial coverage that will draw attention to exactly what you do, what your equipment and products do, and how all of that together, aids your customers in providing their service even better - right on through our production department and Marcel.

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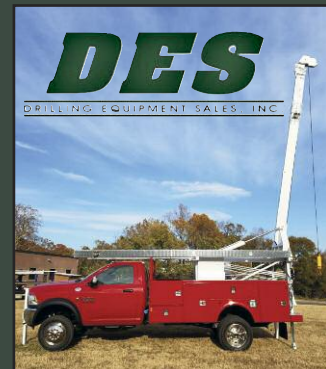
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The Un-Comfort Zone II

by Robert Evans Wilson, Jr.



Good Advertising is Rooted in Psychology

Back in the early 1990s, the marketing director of a small software company called me for a consultation to help them with their advertising. I had been recommended by one of their customers, and by one of their vendors. She explained the company was in crisis. Until recently, they had been very successful. Their software was a business application which served many different types of companies, and had grown rapidly. During this time, they had enjoyed the tranquility of being the only player in a niche market. Their success inspired the owner of the company to send out press releases, and in turn, the company received a lot of positive publicity. The publicity, however, attracted the attention of several larger software companies, who, upon learning of the lucrative niche market, decided to enter it as well. Soon, the little software company was losing market share to the larger competitors.

When I first heard the story, I thought of an old story my father had told me. It was about a little bird who failed to migrate south early enough, and was caught in a snowstorm. Its little wings iced up and it crashed into a barnyard where it looked like it would soon freeze to death. A passing cow then dropped a load of manure on the little bird. The warmth of the manure thawed out its wings and it was so happy it began to sing. A cat heard the bird, dug it out of the manure, and ate it. My father said the moral of the story is: Just because someone craps on you, doesn't mean they are your enemy; and just because someone takes crap off of you, doesn't mean they are your friend; and when things are going well, you should keep it to yourself so you don't attract unwanted attention.

On my arrival at the software company, the marketing director led me into a conference room. As I asked her questions about their current marketing strategy, I noticed she kept looking at her watch. After about five minutes, she told me the president of the company wanted to sit in on our meeting. Almost immediately, the door flew open and a burly, florid-faced man burst in without introducing himself. He walked rapidly toward me. Assuming he was the president of the company, I rose from my seat and extended my hand in greeting. He ignored my gesture to shake, and slammed a stack of laminated company advertisements on the table in front of me and demanded, "If you know so damn much about advertising, tell me which of these ads worked and which didn't." I was shocked by his rude behavior and thought to leave, but decided it could be a lucrative account. So I took a deep breath and counted to ten. I was a little disconcerted anyone would question my ability in such an obnoxious way - especially when I had been highly recommended to the company. I had expected my expertise to be accepted because of the word-of-mouth referral. After composing myself, I was able to respond to his request.

Wilson cont'd on page 24.

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Municipal Installation Made Simple with Flexible Drop Pipe

Adapted from Information by Hose Solutions, Inc.

submersible pump at 430 feet. The 600 gallons per minute will be pumped into a nearby canal and distributed to the City of Angels - Los Angeles, California. The submersible pump hangs on a continuous length of six-inch flexible drop pipe with no threads or joints, making installing and retrieving pumps easy, quick, and safe.



The *WWD* camera caught up with Nicolas Steverlynck from Hose Solutions, Inc. as he proudly displayed his Boreline flexible drop pipe equipment to Jim Dobrovolny of Delta Irrigations at Las Vegas Water Expo.

ing depth settings was attached. The flexible drop pipe was clamped and lowered into the well. The clamp eventually came to rest on the well casing while a second clamp lifted the next section of pipe.

Flexible drop pipe is lighter than steel so a smaller pump rig can be used for installations. A rib along the Boreline flexible pipe was used to support the power cable along the entire length. The double-ring fittings were used to secure the drop pipe to the pump and elbow.

The elbow was lowered into position, the final plumbing was completed, and the pump was up and running. These guys chose flexible drop pipe because it is ideal for wells spread around a vast area.

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Hot Off the Press

Permatex Wins Award

Permatex®, a leading innovator in chemical technology for automotive maintenance and repair, received the Best Merchandising/Advertising Award for its Fast Orange Grease X Mechanic's Laundry Detergent. The award was presented by the Import Vehicle Community as part of its 2016 Import Products and Marketing Awards at the 2016 Automotive Aftermarket Products Expo Show.

Dan Clarke, senior product manager at Permatex noted, "When we launched our Fast Orange Grease X Mechanic's Laundry Detergent, we wanted to focus on the plight of our primary customer, the professional mechanic. So we developed advertising assets that talk directly to a nagging issue that plagues mechanics and their households on a daily basis, namely greasy and smelly work clothes that simply don't come clean with regular detergents. We placed these advertisements in a variety of print, web, and social media outlets."



The company said Fast Orange Grease X is a first-to-market, professional-grade laundry detergent specially formulated to clean grease, stains, tar, oil, automotive fluids, and odors from work clothes. It features a built-in pre-treater which removes up to 99% of automotive stains and odors. Grease X also incorporates a proprietary soil release/antistatic agent to repel future soils and keep the washing machine clear of residual grease, which can end up on clothes in the next wash.



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Environmental Monitoring

by Thomas Kwader, Ph.D., P.G.

A Word of Caution Concerning Private Wells

Recently, I “chastised” the large public water supplies for “prohibiting” the drilling of new private wells within their jurisdiction. Well (no pun intended), I received an earful of what is wrong or potentially a problem with private wells.

Owners of private wells have some moral responsibilities also, such as:

- 1) When there is a drought and water restrictions are imposed, we as private well owners withdrawing from the same aquifers, should also cut back on water consumption. In most cases, we all share the same aquifer and need to do what is best for each other and the groundwater resource.
- 2) Test water for bacteria and “drinking water contaminants of concern”. If the water has a peculiar taste or the area is near commercial businesses, it is possible it could have low levels of harmful contaminants such as benzene, chlorinated solvents, pesticides, etc. I can’t tell you how many drinking water wells I’ve tested with “compounds of concern” (CoC’s)

and the owners didn’t even suspect they were drinking them. In some communities, the local health department or city laboratory may analyze a sample for free or at a reduced cost.

- 3) Bacteria - Keep in mind, public water supplies are chlorinated to kill bacteria and/or viruses. If a well does not have a chlorinator, it may or may not have a bacteria or virus problem, particularly if it is a shallow well and or has an on-site septic tank. Most health departments will test private well water for harmful pathogens at little or no cost.

- 4) Proper well construction - Is the well grouted from top to bottom? If not, it could have contaminated water and/or be contaminating the aquifer for other users downgradient. If unknown, confirm the integrity of the well seal. I know of an incident where a well with a short casing (cased above the water level) near a landfill, allowed methane gas to seep up alongside the well and into the house. When the basement pump turned on (electrical contacts), there was an explosion. Fortunately, there was no one home at the time.

Owning a private well has many advantages; however, there are responsibilities that come with “well ownership”.

Tom

Tom Kwader may be contacted
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Oil/Water Exploration by Harold White

Preparing to leave home in Eugene, Oregon, we first fueled up the pickup truck and changed the oil. After breakfast, we got a U-Haul trailer and took it to our granddaughter Abigail's house. There, we loaded her clothing, furniture, dog, and ourselves. She was moving to Tonopah, Nevada. Arriving in Reno, Nevada, we stayed at Circus Circus Hotel and Casino for two nights, then drove on to Abigail's new home.

Leaving the U-Haul, we went on to stay two nights at the Tonopah Stage Stop Hotel. This is where the bearings went out on the pickup truck. We needed parts, and there were none for miles. Abigail and her fiancé drove us into Las Vegas and we got a rear axle. We stayed for the Groundwater Convention while they drove back to Tonopah and installed the rear end. When replacing the axle, they noticed it was bent. The place we bought it from found another one - back home in Eugene - and had it shipped to Tonopah.

I met a drilling contractor from Bozeman, Montana. I told him I had been there on an oil and gas research tour and had stopped at Potts Well Drilling and talked to some of his crew. He said he would have liked to have been there, for me to stop again sometime. His friend is a missionary's son raised in Africa, who wants to drill wells for some of the tribes there who need clean, pure water. I told him I would like to help, and he thought it could be arranged.

The Silver Peak Mine in Silver Peak, Nevada, has the most pure lithium in the world, and has been operating since 1960. I went there to study about the best, so when I go out into the rest of the world to find lithium for interested parties or persons,

it is not that I don't know how or where to find lithium. I just want to find the best for them.

Harold

Harold White may be contacted
via e-mail to michele@worldwidedrillingresource.com

From *WWD* Publisher Veronica I. "Ronnie" Jones ... Shortly after Harold sent us this article, he called and told me after the Las Vegas Water Expo, he had vehicle trouble which delayed his trip back home to Creswell, Oregon. Then, as they started back, he received a telephone call advising his home had been destroyed by fire along with everything in it. Harold has a terrific outlook on life and always looks on the bright side of things. He was not in the home, nor was anyone else at the time of the fire, so there were no injuries or deaths. However, he was very saddened to see all of those quilts, his mother had left him, along with much memorabilia had been destroyed. Then, he quickly said everything has a bright side, and he looks forward to the future with bright eyes and ideas on how to improve the homesite. I personally say, God Bless You Harold - you are not one of those people who cry with sorrow, you actually look around and know others around you never had a home to burn down.

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BREAKING NEWS

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CONEXPO-CON/AGG® and IFPE 2017 released a new mobile app, powered by CAT®, to help attendees efficiently preplan their show visit and stay connected onsite.

The new app is enhanced with beacon technology and features interactive 3-D contiguous maps to help attendees easily navigate the show floor. The app continuously synchs to the online show planner where attendees can create a personalized agenda of can't-miss exhibits, education, and meetings. Visitors can also use the app to stay connected with real-time show notifications, participate in gamified show activities to earn prizes, network with fellow attendees, and much more! Search your mobile app store for the free download.



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WHO'S IN THE NEWS



During the Ohio Water Well Association (OWWA) Annual Convention and Trade Show, the association presented Fred Schreiber with a Certificate of Appreciation for his dedicated service to the OWWA Board.

Look for additional announcements from OWWA, as well as awards from the Las Vegas Water Expo online at worldwidedrillingresource.info/Whos1.pdf

Send your Who's in the News to: promotions@worldwidedrillingresource.com

Where are you planning to go? How about including these shows:

Join *WWD*



Every three years, CONEXPO-CON/AGG® is the international gathering place for the construction industry, including aggregates and ready-mixed concrete. Held at the Las Vegas Convention Center in Las Vegas, Nevada, this massive event features exhibits of the latest technologies and innovations in equipment, products, and services. There's also education opportunities with tracks on technology, business management, workforce development, and much more. Be there March 7-11!

Get all the information you need at www.conexpoconagg.com

The 89th Annual Michigan Ground Water Convention and Trade Show will take place March 9-10, at the Grand Traverse Resort and Spa in Acme, Michigan. Thursday is filled with the McElhiney Lecture, industry updates, annual banquet and awards, entertainment, casino night, and microbrew/wine judging. Even more happens Friday, including the trade show exhibiting the products and equipment needed to do your job from start to finish.

Visit www.michigangroundwater.com



Get set for the New England Water Well Expo at the Best Western Royal Plaza Trade Center in Marlborough, Massachusetts, March 10-11. The event starts on Friday with educational seminars, followed by the trade show preview at 4:00 p.m. Then family fun night begins at 6:30 p.m.

Saturday has more seminars and another chance to view all the displays. Don't miss it!

Registration is easy, go to www.newwassociation.org

Be the solution at the CGA (Common Ground Alliance) Excavation Safety 811 Conference & Expo, March 14-16, at Rosen Shingle Creek in Orlando, Florida. This is the largest annual educational and networking event dedicated to utility damage prevention and protection of buried

assets, such as water and sewer infrastructure. Sessions, workshops, and displays abound, so there's numerous opportunities to learn new information directly related to what you do, to visit with peers who understand your job function, and share ideas with other dedicated professionals.



For additional information, see www.cgaconference.com

Dig in to the ground source heat pump industry March 14-16, at the IGSHPA (International Ground Source Heat Pump Association) Conference & Expo at the Crowne Plaza Denver Airport Convention Center in Denver, Colorado. Expanded breakout sessions and dedicated expo hours provide the tools and information needed to take your geothermal business to the next level. Be there to see some new faces who can help support your work!

Learn more about this event by visiting www.igshpaconference.com



The TWWA (Tennessee Water Well Association) will hold its Annual Meeting & Trade Show March 31 - April 1, once again at the Park Vista Hotel in Gatlinburg, Tennessee. Enjoy breakfast and lunch on Friday and Saturday, the trade show, technical sessions, Friday night dinner, scholarship auction, and door prizes.

In case you're wondering, the hotel was a victim of the wildfire last year, but has undergone repairs and they are "super excited to have everything back together".

E-mail:

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See more events online at

worldwidedrillingresource.info/Planning1.pdf

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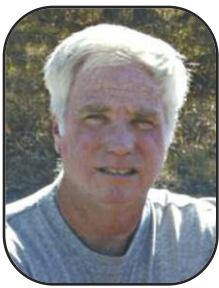
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Keep it Simple

by Britt Storkson
Owner,
P2FlowLLC

In past articles, I have given examples of how simpler designs are often better, cheaper, and more reliable than their complicated counterparts. Almost always in industry you will find the simplest, least expensive design is utilized for nearly everything, unless there is a very good reason not to use it. Often, there are good reasons for the manufacturer to not use the simplest, most reliable design.

Lee Iacocca, former CEO of Chrysler Corporation has been quoted as saying they (the car companies) thought they would have success building "little boxes that got 30 miles to the gallon", but found out it didn't work in terms of sales appeal. I would agree with this, to a point. There are always some car buyers who want all of the bells, whistles, gadgets, fancy paint jobs, and interiors, who are willing to pay for it. However, there is a significant segment of the car buying public who values things like durability, reliability, low maintenance, and ease of maintenance when it is needed. If this is not the case, how do you explain the success of the Volkswagen Beetle? The original Volkswagen did not have any frills and it wasn't perfect, but it was cheap to buy, reasonably reliable, cheap to run (good gas mileage) and, most importantly, was cheap to maintain and repair. A fellow I worked with one time told

Storkson cont'd on page 48.



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Grout Pump



Through the Back Door!

by Jim Kuebelbeck

From my daily notes . . .

Had a job this morning locating a water supply for someone who wanted to get off of a city water supply for watering his lawn. It was costing him \$500 every two months! I think we did find him one good possibility, which was the only choice on the small city lot.

This afternoon, we had another job for someone who was in the final stages of constructing a huge chicken "broiler barn". It must have been at least 300 feet in length and 60 feet wide. They had already drilled three dry holes fairly close to the building site, and the drilling contractor had told him to call us. When we got to the site, we could see two of the dry holes were drilled within 12 feet of each other! I knew immediately some other (probably less expensive) dowser or dowsers must have preceded us, or the crew wouldn't have drilled right next to a dry hole. Already knowing the answer, I asked why they had drilled so close to a dry hole, and the guy mumbled something about "he wasn't sure". Rather than pursue further conversation which might be uncomfortable for the both of us, I simply told him I would try to see what I could find. I first worked around the previous dry holes, and then told the landowner I didn't find what I was looking for on those sites. (Not quite rocket science, right?) I did eventually locate two good possibilities about two or three hundred feet away from the new building. They'll be drilling again tomorrow.

*The statements and comments in this article are based on information and references believed to be true and factual. If you have any questions or comments, please forward them to me in care of **WWD**.*

Jim

Jim Kuebelbeck may be contacted via e-mail to michele@worldwidedrillingresource.com



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Managing Publisher - Veronica I. "Ronnie" Jones

Those who know me, I mean really know ME, understand this company has and continues to be built on HONESTY for the purpose of providing a service to our drilling industry worldwide. At some point in time, it becomes my obligation to **SET THE RECORD STRAIGHT**. This is that time, and here it is.

THOSE PESKY STATISTICS Mean a lot to you... Read on...

by Veronica I. "Ronnie" Jones, Managing Publisher, *WorldWide Drilling Resource*®

We are just like you – struggling for many years now to stay on top of a great many things – we aren't wealthy – we watch each and every dollar – incoming and outgoing – just like you.

This small team of **WorldWide Drilling Resource, Inc.** employees work hard each and every day – just like you. Big Corporation? No; Fancy cars? No; Fancy clothes? No; just down to earth people – just like you.

Honestly speaking – your dollars and cents placed in the capable hands of this team will help you reach each and every contact possible in the drilling industry – which includes much more than rigs, bits, etc. – it includes pumps, tanks, pipe, safety for your employees, education, wire, electronics, and more.

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So look at the statistics as we have – bragging? No – “Just the Facts ...” You decide where to put your valued dollars and cents.

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WWJ	120,000	240,000
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Drill Bits	45,000	90,000
WWD	186,585	373,171

Now, for the number of copies (ability to reach contacts annually):

ND	247,176 Average Annually
WWJ	288,000 Average Annually
Australasian Drilling	21,000 Average Annually
CSDA	76,000 Average Annually
Drill Bits	18,000 Average Annually
WWD	447,806 Average Annually

Really, I don't make these things up – I just did the fact-finding pesky statistics work for you. Now all you have to do is make the decision.

**Note – This is down from the 40,000+ we normally print and mail due to world crisis and deliveries to certain countries, as well as the downturn in drilling ventures.*

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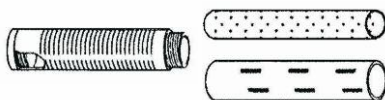
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More next month...



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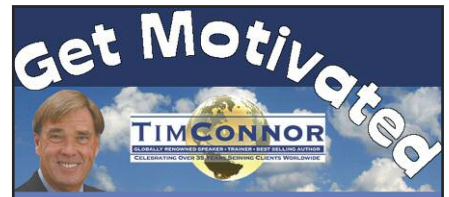
by Tim Connor

If you devoted just 30 minutes a day (a small portion of the 24 hours you get), focused on a variety of actions, attitudes, and behaviors, you can't imagine the positive outcomes both short- and long-term you could experience. Everyone wastes a great deal of time every day on any number of useless and often nonproductive activities. If they would just invest a mere 30 minutes concentrating on simple and productive actions, they would be amazed at the progress they could make in a variety of life areas, such as relationships, health, wealth, career, and life in general.

You can find 30 minutes a day - the problem is the willingness to devote this time in activities which will produce more successful outcomes than current behaviors or routines. Do you spend at least 30 minutes or more every day in front of the TV, at your computer searching aimlessly for information which will not change your life, commuting to and from work, jogging, gardening, etc.? I'm not implying these and other activities are not worthwhile or valuable uses of your time and don't often contribute to your success or happiness, but the question remains - if you spent just 30 minutes each day on specific actions that over time would specifically and directly improve an important aspect of your life - would this be a worthwhile task? If yes, read on.

I have developed a simple approach to ensuring each day of your life you make regular progress in the right direction toward your goals, dreams, and desires. Yes, we all need to improve our talent and skills. Yes, we all need to spend time at work, on our businesses or careers, and yes, we all need to devote time to our families and building relationships. If you will use the following process, you will make significant progress sooner, rather than later, in all these areas.

So, what's the process? There are 30 actions at the end of this article. I would like you to take or focus on one each day for 30 days. Print off the list and individually cut each item from the list and fold them in half. Now put the items in a jar. Every day, reach into the jar and pull out one item. Focus on this item for 30 minutes before the end of the day. Put the item aside, and



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Connor cont'd on page 52.

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I separated the ads into two piles. Pointing to the first pile I said, "These two ads may have generated a small response, but far from what you hoped for." I could tell by the look on his face I was correct. I then pointed to the second pile and stated confidently,

"These four ads generated no response at all."

The company president's mouth fell open and he said, "You're absolutely right." He then demanded angrily, "How can you know that?"

I tried to explain to him there is a science to advertising. It's not difficult, but there are simple principles of psychology to be followed which ensure an ad will work. Most of the ads from the zero response pile had humorous headlines, photos, and illustrations which had nothing to do with his product. Beginners, who have watched too many beer commercials, believe an ad has to be funny or clever to get attention. Below the headlines and visuals were dense blocks of copy which would turn away any casual reader. The copy in all of his ads mostly bragged about the company's growth, and said little about the product other than its features. There was no copy which pointed out the benefits the customer would gain from doing business with this company. By contrast, in a successful ad, the headline and its supporting images call out to the target audience, letting them know about something beneficial to them. The greatest failure of his ads was they did nothing to show how his software would solve his prospective customer's problems. Advertising is all about problem solving; and people are motivated by solutions to their problems.

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After the meeting, I learned the owner had created those ads himself and had expected me to praise them. When I didn't, he grew angry. I understood his anger was really about his company losing market share, but he was also a "control freak" who had built his business himself, and wasn't accustomed to accepting advice from others. Needless to say, we did not do any business together. Sometime later, I heard he ended up selling his company to one of his competitors.

The software company owner's problems seemed to stem from his pursuit of publicity. When you use public relations as a marketing tool, you relinquish control of the message. Advertising is much more expensive, but you control the message and who sees it.

Even though I didn't get the job, I learned a lot about my ability to diagnose ads, which I was able to use in helping other companies. What adverse situations have you encountered where the silver lining was the awesome lesson you learned from it?

Robert

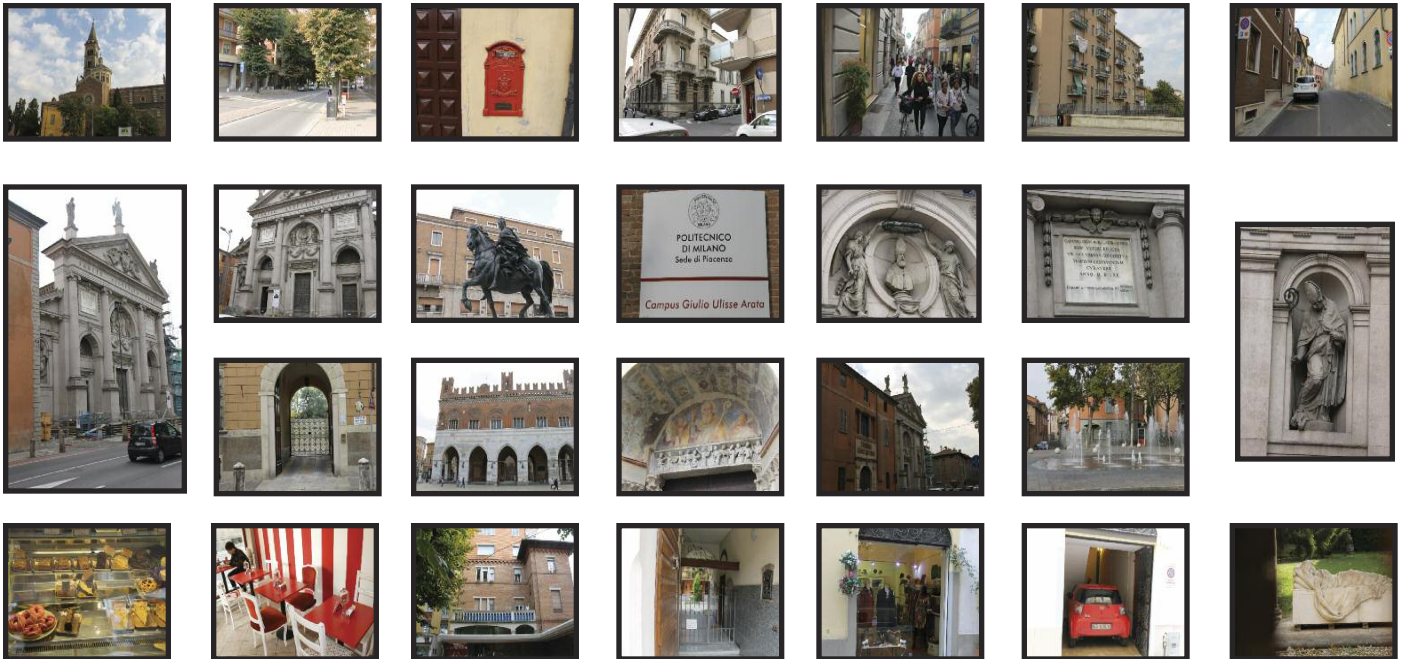
Robert is an author, humorist, and innovation consultant. He works with companies that want to be more competitive and with people who want to think like innovators.

For more information on Robert, visit www.jumpstartyourmeeting.com or contact him via e-mail to michele@worldwidedrillingresource.com

Deadline for April issue!
Space Reservation:
February 25th
Display & Classified
Ad Copy: March 1st

Italy - A View from the Camera, by Marcel Schimpf, *WDR*

There is nothing like seeing a country and its beauty in person, but our Marcel Schimpf has done his best to bring Piacenza, Italy, to you straight from the camera in these photos from his trip to the GEOFLUID Event last October. We hope you enjoy this short trip to a beautiful historic country.



Italy still believes in keeping its historical buildings and statues, and combines them with today's lifestyle as you note the car in the garage and the red and white eatery and the wonderful food waiting to be devoured! Hope you enjoyed Piacenza!



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Tales from the Field

by Jeremy C. Wire
Geoconsultants, Inc.



WorldWide Drilling Resource® welcomes Jeremy as a contributing writer. He is president and principal hydrogeologist at Geoconsultants, Inc. and has worked extensively in the hydrogeology field since 1961. He has been honored by several geological societies and organizations, including the California Groundwater Association establishment of the Jeremy C. Wire Award to honor its technical members of merit.

The Saga of "The Well from Hell"

Anyone who has been involved in water well drilling projects for any length of time, especially drilling contractors, occasionally get involved in a well drilling operation which seems, despite best-laid plans, everything that can go wrong does, sometimes from the start. We call these projects the "wells from hell". These jobs may be rare, but they do happen and particularly try the skill and patience of the drill crew and everyone else involved. Worse, they often "blow" the budget. The outcome may be uncertain at best; sometimes good, sometimes bad. In this particular case it was . . . well, you'll need to read on for "the rest of the story" as the saying goes.

The location was in Northern California, where a rural public utility district needed a large-diameter well drilled. The geologic setting involved volcanic rocks, noted in the region for difficult drilling conditions at best, with such potential geologic hazards as large open fracture zones, lava tubes, rubble zones, and "block and ash" intervals consisting of hard blocks of rock (sometimes as large as small cars) surrounded by soft ash. We had some idea of subsurface conditions from a nearby test hole drilled and logged ten years previously, but for various reasons, a well was never completed at the time. The project started by drilling a new small-diameter test hole to a depth of 300 feet. The first indication of problems to come was caving of the borehole so an electrical log could not be run below a depth of 200 feet despite repeated efforts to clean the hole. The logger had another job to do and finally had to leave. It always seems these kinds of problems occur when a location is remote from the logging service company's home base! In any event, the production well was designed using what information was available from both the new and previous test hole.

A reverse circulation rig was then mobilized to the site, but by time late fall arrived with subfreezing temperatures. The drill crew discovered the hard way that diesel fuel in equipment from a warmer climate will "gel" without a proper additive, a problem which caused some delay. In addition, drilling the 24-inch-diameter bore through the hard, but fractured, volcanic rock took several passes, taking more time than expected, compared to the relative ease of drilling the test hole. Small hole diameter drilling does not necessarily correlate to drilling a large-diameter hole

Wire cont'd on page 34.

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Increased Construction Drives Up Demand for Met Coal

Compiled by Editorial Staff of WorldWide Drilling Resource®

Construction projects may often be seen by some as a messy hindrance to society, but they are major influences to increasing economic growth for businesses, cities, and nations worldwide. When it comes to the coal sector, construction can be a major player in increasing demand for certain types of coal, such as metallurgical (met) coal. Met coal, also named coking coal, is an excellent fuel source to make steel because it burns hot and clean. Thus, increased construction and infrastructure projects will lead to a greater demand for steel and the met coal used to create it. Prices for met coal have already begun to rise largely because of China's influence in the market, but increased demand is sure to bolster the price as well.

New Colombia Resources Inc. is one such company which has benefitted from increased demand in met coal due to increased construction. The company is focused on the acquisition and development of high-quality met coal producers in Colombia, where demand is currently high for building material as new construction projects and infrastructure begin to be approved.

Corsa Coal Corp., headquartered in Canonsburg, Pennsylvania, is another company showing significant gains in revenue from met coal production due to increased steel demand. The company recently stated, "Corsa plans to increase production and sell significantly more tons of metallurgical coal over the coming quarters." Increased production might just become a reality for Corsa because spot prices for met coal have risen almost 250% on a year-to-year basis, and there has been great improvement in global steel prices. Corsa's met coal has quickly garnered the attention from both domestic and international steel companies looking to fill their increased demand.

All current indications seem to predict as more infrastructure and construction get underway worldwide met coal will experience an increased demand, and the companies will benefit greatly. The market is trending toward cleaner burning fuels and away from fuels heavy in carbon content, and met coal is already in demand with sales ready to take off. As the world changes with increased construction and infrastructure, met coal looks to be the force behind the scenes creating much of the metal used to reshape our world.



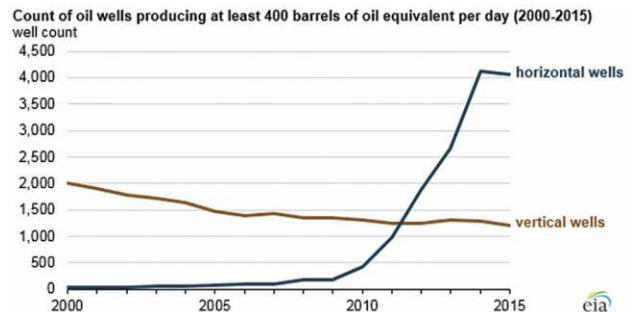
Oil Wells Using HDD are Among the Highest Producers

Adapted from Information by the U.S. Energy Information Administration

Commercial use of horizontal directional drilling (HDD) began in the 1980s. Since then, enhanced drilling techniques have improved the process and it has become a more common practice in the oil and gas industry. HDD is currently used in some of the highest producing wells in the country.

Typically, geologic formations are greater in horizontal extent than they are in vertical thickness. For this reason, more oil-bearing rock is exposed for production in horizontal drilling than in vertical drilling. HDD wells are often completed in combination with hydraulic fracturing to maximize production along the exposed rock formation. The U.S. Energy Information Administration estimates two-thirds of U.S. natural gas production comes from hydraulically fractured wells.

In 2015, nearly 77% of the most prolific U.S. oil wells, or those producing more than 400 barrels of oil equivalent (BOE) per day, were horizontally drilled. For about 85,000 moderate-rate wells producing in 2015, defined here as more than 15 BOE per day and up to 400 BOE per day, 42% were drilled horizontally. Of the approximately 370,000 lowest rate, marginal oil wells in 2015, also known as stripper wells, only about 2% were horizontal wells.



Frequently-Used Geological Terms Part 58

Glossary Adapted from the Dictionary of Geological Terms

O

Onyx - A variety of chalcedony which is like banded agate in consisting of alternating bands of different colors but unlike it in that the bands are always straight and parallel.

Onyx Marble - A compact, usually banded, generally translucent variety of calcite, or occasionally aragonite, resembling true onyx. It is usually deposited from cold water solutions, often in the form of stalagmites and stalactites in caves.



WWDR photo of opals.

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Australian Innovation with Worldwide Application

*Adapted from Information Provided
by Spinflector Industries*

South Australia's mine sites may become significantly safer thanks to an innovation called the Spinflector. Produced by Trampas Cutler, the Spinflector is a new device designed to clean reflectors on delineator posts, solving an all-too-common safety problem by maintaining visibility for machine operators.

For five months, the Spinflector was used successfully at an iron ore mine in South Australia's Iron Triangle. At most mine sites, teams of workers spend valuable time traveling almost weekly along major thoroughfares with the sole purpose of manually cleaning dust and grime from the reflectors. Along with resulting in

a loss of productivity and a hike in labor costs, serious safety concerns cropped up on the route.

"It's an endless job as the reflectors get dirtied with grime over and over again," said Cutler, the Spinflector Industries founding director. "That interrupts production because they have to put signage in place, they have to have clear radio communications with the trucks to tell them to slow down when they drive past, and the massive safety issue of them being run over by a machine."

So how does it work? The Spinflector is built to mount on a PVC delineator post with either a small amount of PVC glue or with self-tapping screws, sporting a series of brushes to clean mud and debris from reflectors. The brushes are powered by a built-in wind vane, requiring no electricity or water to work. According to Cutler, the device only needs to rotate about half a dozen times in a 48-hour period to be effective, simply not allowing a dangerous build up of dirt. The product is constructed of durable materials intended to withstand harsh conditions, and there are also mounting solutions available for delineators built to different specifications.



The Spinflector harnesses wind power to provide safer working conditions at mining sites.

WorldWide Drilling Resource® is a proud member of these associations:

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Drilling for Geothermal Plant in Indonesia Commences

*Adapted from a Press Release by
KS Orka Renewables*

KS Orka Renewables Pte Ltd of Singapore announced drilling for the Sorik Merapi geothermal project in North Sumatra, Indonesia, has started. The first drilling rig, operated by Dati, is proceeding with drilling on pad A and another drilling rig from KS Drilling is being mobilized for another area in the concession, pad E.

The 240-megawatt project is one of the largest greenfield projects in Indonesia. KS Orka is the 95% owner and developer of the project.

KS Orka is a joint venture between Hugar Orka ehf (an Icelandic company) and Zhejiang Kaishan Compressor Co., Ltd. KS Orka combines the Icelandic knowledge in geothermal development with Kaishan's power plant technology and manufacturing expertise to form Asia's only vertically integrated geothermal and waste energy company. KS Orka brings to the project some of the most experienced geothermal experts and power project developers in the world.

The KS Orka team plans to bring the first pilot power plant into operation some time this year.

Don't Forget to Maintain Your Battery!

by Darren Stanley Geoprobe® Service Manager

The battery, and specifically the connections to it, seems to be one of the most neglected items on a drilling rig. The hydraulics and engine may get serviced routinely, but very rarely do people take time to clean and maintain the connections at the battery.

Loose or corroded connections can lead to starting issues in the field. Routine maintenance of battery connections, and even the connections to the Master Disconnect can eliminate many problems down the road. A poor connection can lower the amperage from the battery getting to the starter, leading to cranking the starter too long without it starting, which in turn can burn up the starter or, at the very least, shorten its life.

A good rule of thumb would be to simply remove and clean the connections and reinstall them with some dielectric grease whenever you service the hydraulics.

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In Memoriam

Sandra A. (Currie) Constable (1945~2016)



When we hear of the loss of a friend across the miles, it tears at our heartstrings. Such was the feeling as I read the notice from the Ontario Ground Water Association just before Christmas. Sandra Constable was indeed a friend to many despite the fact she was from Ontario, Canada.

Sandra left us on December 14, 2016, at the age of 71. She was the wife of Ken, loving mother of Teresa Hawley (Grant Spurdle), Kevin Hawley, and stepmother of Kevin (Nicole) Constable, and Kerrie Constable. She cherished her grandchildren Max, Zach, Ryan, and Kurtis. Sandra will always be remembered by her sister Sharon (Glenn) Fraser, brothers Eugene (Elaine), Eldon (Marie), and Gary Currie; sister-in-law Gloria Currie, as well as her many nieces, nephews, and a terrific circle of friends. She was predeceased by her brother Ross Currie.

Memorial donations in her honor may be sent to the Thornton Community Food Bank.

Condolences may be sent through www.adamsfuneralhome.ca.

You rarely saw her without her loving husband Ken; except when she was holding a Board Meeting at one of the events!

Or, at the hospitality suites!



She might even have become a miner, or how about a singer? One thing is for sure, Sandra had a great many friends in the drilling industry as is quite evident by a few of the photos the **WWD** Team managed to capture her in. Such great times with her is one thing we here at **WWD** will never forget. When such a person enters your life, they are never really gone, they are right there with us always in fond memories. She did love to have fun and smile with everyone, and this is the way we remember her.

The management and staff of **WorldWide Drilling Resource**® send our sincerest sympathies to Sandra's dear family and friends worldwide.

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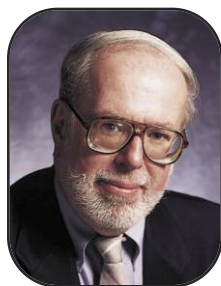
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Drilling Into Money Not Boring

by Mark E. Battersby

Last-Minute Tax Savings & Potential Pitfalls

Although tax planning should be a year-round strategy, with year-end and planning a good backup - even as the tax filing deadlines approach - it is not too late to reap tax savings. Keeping in mind a drilling professional's obligation is to pay their fair share of taxes, and not a dollar more, consider a few last-minute tax savings tips.

Depreciation is an annual allowance for the wear and tear, deterioration, or obsolescence of business property such as buildings, machinery, vehicles, furniture, and equipment. The "extenders" bill passed late in 2015, permanently set the Section 179, first-year expensing write-off at \$500,000 with a \$2,010,000 (thanks to inflation) overall investment limit before phase-out.

The same extenders bill also extended the 50% "bonus" depreciation write-off for equipment placed in service between 2015 and 2017, with a lower percentage kicking in for an additional two years. This means a write-off of 50% of the purchase price in the first year, plus regular depreciation for the remaining 50%.

Whenever possible, repairs and maintenance expenses should be deducted immediately, rather than capitalized and depreciated. Small businesses lacking so-called applicable financial statements (AFS) can still take advantage of a de minimis safe harbor to deduct \$500 or less per purchase or per invoice. Businesses with an AFS can deduct as much as \$5000 per purchase or invoice. Small businesses with gross receipts of \$10 million or less can also take advantage of a safe harbor for repairs, maintenance, and improvements to eligible buildings.

S Corporations - the most common entity in the United States today - are required, at least to the extent their owners perform services for the business, to pay the owner a reasonable compensation for those services - an amount which is subject to self-employment tax.

Anyone who has tried but can't get their taxes prepared by the filing deadline can file a Form 4868, Application for Automatic Extension of Time To File U.S. Individual Income Tax Return or use an online service. Remember however, the extension provides more time to file the returns, but not more time to pay the tax bill.

Although taxes should never be the primary reason behind any strategy, purchase, or move made by a drilling business, it is never too late to plan on saving taxes. To achieve a low tax bill, either before or after the return is prepared, professional assistance may be required.

Mark

Mark E. Battersby may be contacted via e-mail to michele@worldwidedrillingresource.com

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in this environment! By this time, with winter snow, the contractor was anxious about this job taking excessive time. Finally, however, the casing and screen were set to total depth, and the cement seal placed to 160 feet by late one freezing night. By now, the crew was looking forward to some short development time followed by demobilization.

The next afternoon, the contractor called, saying they had a problem. They thought the casing had collapsed, and they couldn't work the drill stem past about 128 feet. Obviously bad news, and the cause for such a calamity was unknown. A downhole camera was needed to assess the situation. Luckily, the utility had a very small-diameter camera they used to inspect sewer pipes. The camera revealed the thick, 14-inch diameter steel casing was crushed inward, so the cross section resembled a "crescent moon", but allowing the camera to pass through a very small opening. A ten-foot section was damaged, fortunately above the static water level, and the casing and screen were undamaged.

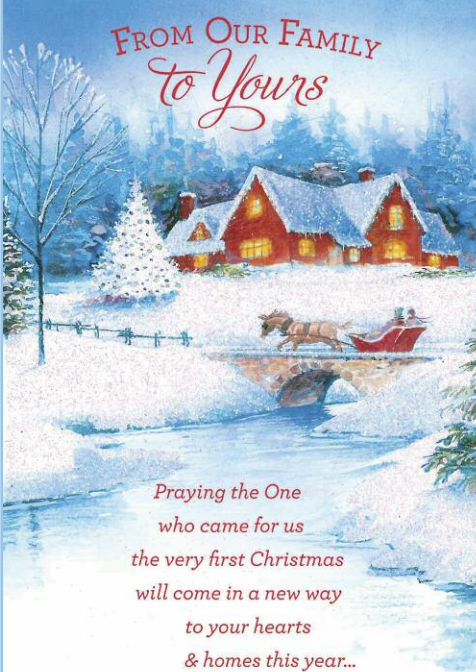
Abandoning the well and starting over was out of the question considering the time, effort, and money spent to date, and it had to be saved! More snow hindering access to the location allowed time to develop a strategy for repair. A specialist in the use of explosives for destroying wells was employed to carefully blast away the ten-foot section of deformed casing, also breaking parts of a large rock, presumably from a "block and ash" flow which somehow had been dislodged during the cementing process, crushing the casing. Several liners were then installed to repair the casing.

Then the question was: "Will the production from this 300-foot well be worth nearly four months of time, effort, and extra funds to repair it? A sustained pumping test soon answered the question. The well produced 900 gallons per minute (the capacity of the pump) with four feet of drawdown. Now, maybe not exactly a "well from heaven", but close to it, considering the positive results for the owner. The moral of this story? Obviously, skill and persistence paid off in this case.

Jeremy

Jeremy Wire may be contacted via e-mail to michele@worldwidedrillingresource.com

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San Francisco's Leaning Tower

Complied by the Editorial Staff of
WorldWide Drilling Resource®

Most people have heard of the Leaning Tower of Pisa, but have you ever heard of the "Leaning Tower of San Francisco"? The skyscraper in question is the Millennium Tower, which has developed a worsening slant since its construction in 2009. The tower has sunk 16 inches and tilted at least 2 inches northwest at its base, which translates into an alarming 15-inch tilt at the top of the building.

The Millennium has 58 floors and reaches an architectural height of 645 feet, making it the tallest residential building in the city. Though the glassy blue structure paints quite a splendid view in the downtown skyline, the focus has become its precarious lean and the possibility of sinking a total of 31 inches from its original foundation. Some settling is to be expected with very large structures like the Millennium. The problem engineers are trying to understand is why the tower is sinking more than the 4-6 inches it was expected to over the life of the building. Then, they can tackle the questions concerning what the building is going to do in the future, and how to stop further tilting and sinking.

The project developer, Millennium Partners, has proposed the structural problems were caused by dewatering at the construction site of the Transbay Transit Center next door. Pumping out millions of gallons of groundwater from the area is thought to have softened and compressed the soil under the tower. However, Transbay believes the structural problems are caused by an improper foundation design by Millennium Partners. The building rests on more than 900 "friction piles" driven into dense, old bay mud at a depth of 60-91 feet. Transbay thinks the developers should have used "end bearing piles", which would have reached down 200 feet into the bedrock. Prior to the Millennium project, no major building downtown had piles driven into bedrock, but since then, four projects by Transbay developers have used the method. Both techniques have worked in the area; however, Millennium Tower is five times heavier than other buildings with a similar foundation. Either dewatering or poor foundation design could be correct, or perhaps a mixture of both, but it will remain speculation until results are in from an independent investigation.

Soil experts have drilled a six-inch-wide hole using a rotary drill rig, which will eventually drill 260 feet into the ground. The

hole will allow experts to drop three instruments into the foundation, which will measure the buildings tilt, groundwater and soil conditions, and how much the soil under the building has settled. The plan is to use two holes along the front of the building, and a third around the corner, with the intent of finding out where the soil is compressing and where it is settling. If it turns out the building does need to be fixed, the easiest solution would be to reinforce the foundation by injecting material and adding additional support; a more serious scenario could involve radical solutions like taking 20 floors off the top of the building to make the structure lighter.



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The Millennium Tower,
courtesy of Michael Gimbel.

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The "Idiots" Corner

by "Billy Bob Smith"

"Refuse to accept the belief that your professional relevance, career success, or financial security turns on the next update on the latest technology. Sometimes it's good to put the paddle down and just let the canoe glide."
~Simon Mainwaring

As the new year starts to take shape, I'm sure many of you have already broken some of your New Year's Resolutions or have abandoned some challenging goals. As we head into what I believe will be a positive year in many ways, it is important to keep one thing in mind as you grow your business, increase your market share, service your customers, and improve your bottom line - and that one concept - staying relevant in your market with your customers and prospects. Hundreds of businesses fail every day in the U.S. Why? They have lost relevance and are still operating as if things haven't changed. Relevance has nothing to do with your history, size, products/services, or market share. It has everything to do with offering what customers want, how they want it, and when they want it.

So let me share a few stupid things I have heard over the years by business owners and executives of failing companies. I won't mention the person who made the comments, since I hate lawyers who have nothing better to do than file useless suits on poor idiots like me. You may remember some of them.

Eastern Airlines - "People will always need to fly. As long as we keep our safety rate in line with expectations, we'll be okay."

Howard Johnsons - "We own the turnpikes in the U.S. There is no way any other food chain can replace us."

Borders Books - "We sell books. We are the largest bookseller in the U.S. There is no way we can ever fail."

Schwinn Bicycles - "We have a long history and thousands of loyal customers. We will be around forever."

Fruit of the Loom - "It's underwear, not rocket science. No worries about the future."

Bethlehem Steel - "The world will always need steel products. The idea that plastic can replace steel is just plain dumb."

Blockbuster - "We own the video rental market in the U.S., and always will."

Kodak - "Yes, cameras have improved and evolved, but people will always need them."

Ever said anything close to these? Make 2017 a year with fewer mistakes and stupid decisions.

Billy Bob

Contact him via e-mail to michele@worldwidedrillingresource.com

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Jon and Chris Hansen helping with the container loading.

The 13th was a Thursday and the container was to be in-gated to the dock for loading on Friday, but it did not. A few days later, when I looked at the Mediterranean Shipping Company tracking information, it showed the container had missed the cut-off time for in-gating the container, and had missed the ship.

I called the trucking agent in Seattle and inquired why the container was still on the dock. She said the schedule for the ship had moved up and had caused the in-gate cut-off time to be earlier than they expected, so the container missed the ship. The next ship would load in two weeks.

I was able to learn the container had been in a secure yard at the trucking company, so I was a little relieved. There was nothing to be done.

The container did load on the next ship and headed south as scheduled. It made port in Balboa, Panama; then went across to the Caribbean side of Panama. The container was loaded on a small ship and headed for Costa Rica. From there, it was scheduled to go to Puerto Barrios in Guatemala, but it did not. A hurricane was circulating in the Caribbean. The captain decided the schedule did not matter as much as the ship and cargo, so he kept the ship in the port in Costa Rica and let the schedule slip.

Finally, the ship was scheduled to arrive and it did. It took the usual wrangling by Berny to get the container through the customs process where there is no schedule, but finally the money was paid and the container released.

The container arrived at our shop in early December. What a relief!

It was unloaded with difficulty, but successfully. Just before the heavy pallets of donated bentonite were to be unloaded, hydraulic hoses on both forklifts burst. The bentonite had to be unloaded by hand. Some young men from the orphanage assisted with the unloading or it would not have happened. Finally it was complete. We had the precious supplies. Things did not happen on the schedule we chose, but the Good Lord had things on his schedule, and all was well.

If you would like to help, contact Gary Bartholomew at 509-466-5075 or 509-939-1941

Tim

Tim Rasmussen may be contacted via e-mail to michele@



by Tim Rasmussen

This year, we decided to try and schedule the container early to avoid the holiday work slowdown. With dock storage fees of \$125 per day, every day counted, so we settled on October 13, and scheduled the truck.

The day for loading the container came on schedule, and the truck came on schedule. We got it loaded on schedule, but this is where the schedule ended.



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The Asset of Effective Marketing

Compiled by Caleb Whitaker, Associate Editor

WorldWide Drilling Resource®

Marketing is always at the forefront of every business, but it can also be one of the least understood and most undervalued aspects of growing a business. Many times, circumstances arise where cutting cost is needed and advertising seems to be the most logical place to start. While it may be good to cut costs, marketing might not be the best place to do it. More than anything, marketing is an investment which generates a financial return in terms of sales and customers.

When fewer people are buying products and services, it's easy to see only the money being spent on marketing and it seems natural to cut back on that

important part of the investment in their company. However, a big budget isn't needed to make an impact and move the business forward through advertising. Even in the worst of economic times, the drilling industry still purchases products and services. While customers might be more selective over which products or services to buy, businesses can have success if they use a keen marketing prowess to effectively promote themselves.

When it comes to the marketing campaign itself, the message is almost always the hardest part to get right. Oftentimes, there simply is no message at all; instead, only a list of services and products are provided. People want to know what they are looking at when viewing an advertisement. If there is nothing being said, why should people listen? If used effectively, messages can be powerful tools. Keeping it simple is the key because an **advertisement, by nature, should be short and clearly expressed.** Complexity will add clutter and irrelevant noise, which will often just confuse people. It can sometimes be difficult for a business to look at what they have to offer and distill all the intricate parts down into one simple message, but it is an essential part to marketing effectively.

Targeting the market will also increase advertising success. It is important to be well informed of the latest industry trends and developments. If direct competition is a factor, keeping a file with competitive intelligence can be useful. Businesses should seek out new ways to talk about the products and services they offer and present a unique proposition, which should stand out from the competition. This will pique interest and aid in building the brand for the business. The goal is to

Effective Marketing cont'd on page 54.

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Photo of the new solar facility at the

Solar Power in the Sunshine State Thanks to the Mining Industry

Adapted from Information by Duke Energy and Mining Facts

Hunting for camouflaged Mickey ears around Disney World is a popular game in sunny Florida. The most recent hidden Mickey isn't too hard to spot, as it is made from 48,000 solar panels on 22 acres near Epcot.

Duke Energy joined with Walt Disney World Resort and Reedy Creek Improvement District (RCID) to develop the five-megawatt solar facility operated by Duke Energy. The energy produced will be sold to RCID to help meet the power needs of Walt Disney World Resort, as well as other customers including the Four Seasons Resort and other hotels along Hotel Plaza Boulevard.

"We're committed to providing our customers with greater access to renewable energy, and the Walt Disney World Solar Facility is one example of how we're doing that," said Alex Glenn, Duke Energy state president - Florida. "We appreciate this unique opportunity to collaborate with Reedy Creek Improvement District and Walt Disney World Resort to expand the use of solar energy generation in Florida."

Disney, Duke Energy, and RCID representatives commemorated the opening of the new facility by flipping a giant light switch.

"As a company that cares about the environment, we continually take steps of varying sizes to benefit the environment and protect the planet," said Angie Renner, environmental integration director for Walt Disney World Resort. "This new solar facility will help us in our efforts to conserve natural resources."

With its Florida regional headquarters located in St. Petersburg, Florida, Duke Energy is one of the largest electric power holding companies in the United States. The new solar facility at Walt Disney World is one of several solar projects in development. By 2024, Duke Energy plans to add up to 500 megawatts of additional solar energy to Florida.

The increased demand for solar power is good news for the mining industry since arsenic, bauxite, boron, cadmium, coal, copper, gallium, indium, iron ore, molybdenum, lead, phosphate, selenium, silica, tellurium, and titanium dioxide are required to manufacture the solar panels.



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Danish Company Wins Heat City Contract

*Adapted from Information by
Ross Offshore*

The Danish company Ross Offshore has won a contract to provide well engineering and drilling management to WarmteStad Groningen in the Netherlands. The project is part of the development of Groningen transforming the city to accommodate district heating and cooling using geothermal energy as one of the city's core sources of heating energy. WarmteStad (Heat City) is a joint initiative of the Water Company Groningen and Groningen municipality.

The project has begun and is expected to stretch into 2018 with commissioning of the well system and heating grid. The geothermal system will draw heat from a reservoir located around 11,000 feet beneath the city, with temperatures hovering at nearly 250°F (120°C).

Lars Andersen, Ross CEO said, "WarmteStad Groningen is making a change - going from a natural gas based heating system to a district heating based system based on green geothermal energy as source. Together with WarmteStad and our project partner IF Technology BV, we will develop a sustainable supply of green energy for decades to come."

"The geothermal project will be developed and constructed in conjunction with the district heating grid" says Dick Janssen, managing director of WarmteStad Groningen. "We have a clear vision for the city of Groningen for going CO2 neutral and provide our citizens with the sustainable energy sources. As a vibrant city with a university and large student body, we have an obligation to set a path for others to follow. We envision geothermal energy to provide us with energy for years to come."

The main goal is to create an energy-neutral Groningen by 2035, and using geothermal energy as one of the city's core sources, is a key component to achieving this objective.



CONEXPO-CON/AGG® Announces Fundraising Efforts for Veterans

Adapted from Information by CONEXPO-CON/AGG and the Call of Duty™ Endowment

The Call of Duty™ Endowment, a nonprofit organization dedicated to helping veterans secure employment, has been named the official charitable partner for the 2017 CONEXPO-CON/AGG® & IFPE event. Terex Corporation has generously donated a benefit concert featuring the multiplatinum rock band Foreigner. The concert will be held on Wednesday,

March 8, 2017, in Las Vegas and is being hosted by Brooklyn Bowl on the Vegas strip. Show registrants may make a minimum donation of \$29 to the Endowment for admission to the concert.

The Call of Duty Endowment was cofounded by Activision Blizzard CEO Bobby Kotick, in 2007. It was during a veterans' initiative in Los Angeles, California, when he realized most veteran projects seemed to focus on things such as creating monuments and naming public parks. Few, however, provided the resource veterans needed the most - jobs. His concern led him to lay the groundwork for the Endowment. He cleverly coupled his project with the enormously popular Call of Duty video game brand and his vision came to fruition in November 2009.

Since then, the Endowment has placed more than 25,000 veterans in high quality careers. Despite research indicating veterans actually perform at higher levels and have a lower turnover rate, the unemployment rate for young post-9/11 veterans is 13%. Veterans are typically faced with employers who don't understand their skills and qualifications, and veterans struggle to explain how their military skills, training, and experience can benefit civilian jobs. To help achieve the lofty goal of placing 50,000 veterans back to work by 2019, the endowment supports groups which prepare veterans for the job market, in addition to raising awareness of the value our veterans bring to the workplace.

CONEXPO-CON/AGG & IFPE event will host additional fundraising events for the Endowment including online silent and live auctions with 100% of proceeds helping military veterans find jobs. The benefit auction will be presented with the support of J.J. Kane Auctioneers and anyone wishing to donate can contact **Grant Williams at 205-706-1389**. The online auction will run from January 1 through March 11, and the live auction will take place March 9 in the new Tech Experience at the event.



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In the Eyes of a Rookie

by Betsy Willett, Public Relations Professional

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Early morning flights to late-night dinners, warm welcomes, and a family-friendly environment was just the beginning as I walked into the Convention Center in Las Vegas for the Las Vegas Water Expo and Irrigation Show back in December with the *WWD* Team. I was amazed by the diverse selection of vendors and equipment. This year's attendance was over 10,000 - I was in complete awe. Coming into this week, I was utterly clueless about the equipment and displays I was hearing about. Throughout this entire show, opportunities arose once my feet hit the ground, giving me the chance to jump in when the show kicked-off by being placed just inside the doors getting photos of the exhibit hall opening and the attendees entering. Many vendors took the opportunity to speak with me about various products, equipment, and services.

They were extremely patient while answering countless questions and explaining the importance of everything they do.

I had the utmost pleasure of photographing several vendor booths and their personnel, while also capturing action shots with potential clientele. Even though only a few people shied away from the camera, most were more than happy to strike a pose. One exhibitor in particular, was caught searching the center for Santa's sleigh. After numerous hours of walking around displays, equipment, and vendor booths with shots being captured, I began to notice how many people recognized the famous red blazer. It seemed as though everyone knew what I was there for without asking, and I only recall having to explain to a select few what I was doing, who I was with, and why I needed their booth picture.

Before this week, I had never heard of these vendors, products, and equipment much less seen them, but coming away from this show I feel more confident and informed about this industry. I have always been told the only dumb question was the one not asked . . . well, I asked every question that came to mind and there are more questions to follow. Never before have I had such a learning experience within any type of industry and I look forward to learning more about this one.

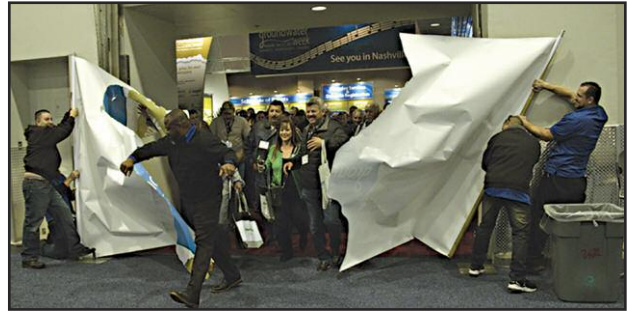


Exhibit hall opening to attendees.



*Schramm hoping to catch a glimpse of Santa's sleigh while at December's show. *WWD* photos.*



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chemistry, temperature, and volume of the fluids produced. Drilling wells and collecting drill cores are a common way to identify where a possible geothermal reservoir re-sides.

Soil sampling is also used in the beginning stages of mineral exploration. This sampling can be used to quickly establish the life of mineralization. Soil sampling can either stop a project dead in its tracks, or give the green light for further disbursement, like drilling. A successful soil sampling will result in a precise drill hole targeting. It is undertaken to define the location and shape of a hidden mineralized structure and to identify any high-grade sections within the structure. Both time and money could be wasted drilling alongside a section which does not have the highest grade zone. GPS technology makes this process a lot easier. The uncertainty of where the actual sample comes from is reduced.

It's not just an earthly project either. Rock and soil sampling has been done on the Moon and even on Mars. The study of rock and soil samples from the Moon continues to provide useful information about the early history of the Moon, Earth, and inner solar system. The National Aeronautics and Space Administration has been using the Curiosity Mars rover to drill formations in an effort to study the planet's past or present ability to sustain microbial life. Curiosity's hammering drill collects powdered sample materials from the in-terior of a rock, then prepares and delivers portions of the sample to onboard laboratory instruments.

No, we cannot use it to party every day, but rock and soil sampling is very useful and there is plenty of information contained in the samples.



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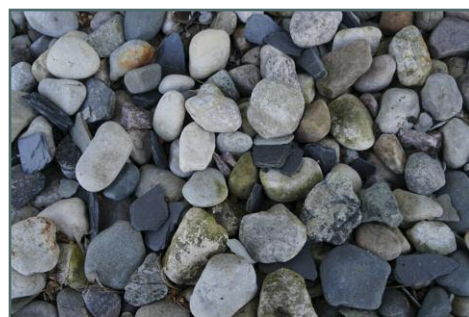
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Good Ole Rock 'N' Soil

*Compiled by the Editorial Staff of
WorldWide Drilling Resource®*

I just want to rock and soil all night; rock and soil sampling, that is. Sampling is the act of cutting small pieces of rock or soil from large rocks or soil. Rock sampling can be used to characterize a geothermal reservoir. It's sampling of exposed potentially mineral-bearing rocks. During this initial sampling, chips are taken and, if positive results are returned, a soil sampling survey is taken. The properties of rock samples provide information for determining whether a power generation or heat utilization facility can be established. Rock sampling is an effective way to characterize many important properties of a geothermal resource. Rock properties determine



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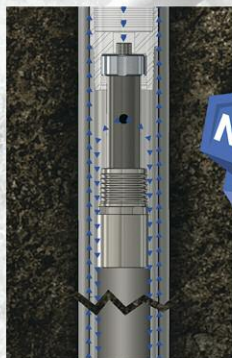
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Geoprobe® 8150LS Rotary Sonic



"We chose the Geoprobe® 8150LS sonic rig because of the design and engineering of the rig, the quality and availability of the tooling, the knowledge and commitment of the Geoprobe® staff, the service department relationships, and the success we've had with the ten other Geoprobe® machines we've owned."Steve Taylor, Owner, Geologic Explorations, Statesville, NC

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A Real Game Changer for the Sonic Industry

Moving things forward. That's what the sonic weighted wireline tooling from Geoprobe Systems® does. Call it raising the bar. Innovation. Game changer. Or outside the box. This method of sampling moves things forward in the sonic industry.

Day in and day out we hear from customers that there are three aspects of their day-to-day operations that require increased attention in order to be competitive and profitable. And our sonic weighted wireline tooling addresses them all!

Those aspects? **Safety. Efficiency. Profitability.**

SAFETY. It's safer because it requires far less tool handling.

Tool handling has a direct correlation to safety. The more tooling is handled the more likely an injury may occur. The weighted wireline (WWL) system eliminates the need to trip rods in and out of the cased hole.

EFFICIENCY. It's more efficient because it's faster than all other methods. When using the WWL, the sample barrel and weight assembly are tripped in and out together with only the use of the winch, so the speed and efficiency of the system becomes more and more evident the deeper you go. Geoprobe® engineers completed a time study on trip in and trip out times (right). Mike Carlin, Geoprobe® Tools Group Leader, says check the numbers regarding efficiency. **"The use of the winch with WWL significantly reduces the time to trip samplers and core barrels in and out of the casing,"** he said. **"The numbers don't lie!"**

"I'm turning 58 years old and I can run our 8150LS sonic all day long! It's easy on me. And I love that the weighted wireline system takes care of the physical aspect and safety concerns."

Robert Keyes • President
Associated Environmental Industries • Norman, OK

PROFITABILITY. It increases profitability because it requires few parts to operate. Overall efficiency correlates nicely to profitability. So does a clean safety record. But the overall cost to tool up for and maintain a weighted wireline system is quite low compared to conventional systems such as 4x6 since it requires so few parts.

Both weighted wireline systems ... SDT45 and SDT60 (for 4.5- and 6.0-in. casing) ... are simple to use. Jed Davis, Tools Engineer, said, **"During a customer training session, it only took one core run for the drill crew to understand the weighted wireline system, and just a few more runs to have it completely mastered. We didn't hit a home**

run this time; we think it was a grand slam!!"

Mike also said the weighted wireline system is not meant to replace conventional 4x6 or dual tube systems. "It has always been our recommendation that weighted wireline systems complement these other soil sampling systems," he said. "We don't suggest going to the field with one tool in your tool box, nor do we recommend that you limit yourself to one sampling system." There are formations where 4x6 works great. The same can be said for dual tube systems, **"But when you can incorporate a weighted wireline system into your project,"** Mike added, **"the benefits far outweigh any costs. You can spend all day taking the back roads to Grandma's house, but why bother when the interstate will get you there twice as fast."**

Probing Times articles on Geoprobe® Sonic Weighted Wireline are available at:
www.geoprobe.com/pt-spring2015 and www.geoprobe.com/pt-fall2015.



Rock core recovered using SDT60 Weighted Wireline Tooling.



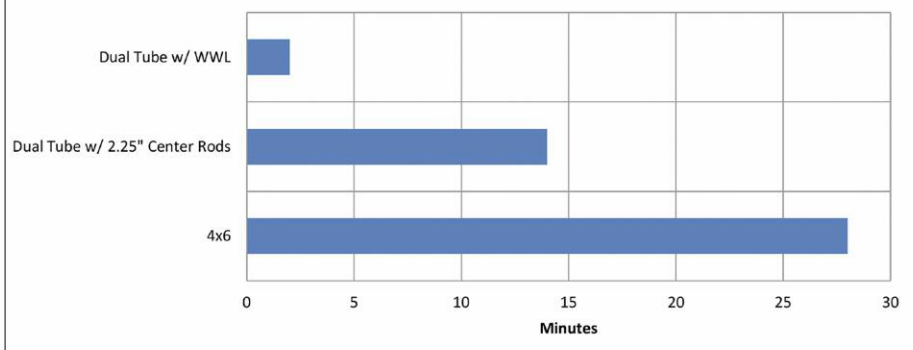
Sonic soil cores are examined in the field by an onsite geologist. The cores were retrieved by running SDT60 and an 8150LS.



Running sonic weighted wireline with SDT45 tooling. (above) Modular weight assembly, with the overshot 'spear' visible inside the weight head prior to being lowered downhole. The modular weight assembly consists of two, 150-lb. weight segments coupled together and a threaded head and overshot spear.

— Faster Tripping Times —

Typical "Trip Out" Times
For Various Sonic Soil Samplers
From 250'



High-quality soil samples in less time! This graph was created by analyzing thousands of feet of various sonic drilling data collected by Geoprobe® engineers. At deeper depths, simple math indicates how much faster the sonic dual tube weighted wireline system can be.



An 8150LS Rotary Sonic, owned by Associated Environmental Industries in Norman, OK, is running SDT60 and a 6.0-in. Weighted Wireline system.

Helping OUR Sonic Customers BE Successful

me he could remove the entire engine from his Volkswagen Beetle in less than an hour.

In later years, Volkswagen went away from the all-encompassing philosophy and, in large part, their customers went away from them. There is a reason cars (and a lot of other things) have numerous gadgets, computers controlling everything (with limited success), and unique one-of-a-kind parts where standard, proven, off-the-shelf parts would work equally well. Various computer-controlled parts mean numerous electrical connections, which is the weakest point in any electrical system. Nonstandard parts mean lower production quantities, which mean higher prices. This is purposely building in unreliability and increased maintenance the car owners, in most cases, cannot do themselves.

An elderly widow I knew had an electrically adjustable seat in her car which had a flimsy plastic switch lever that broke off. The plastic switch lever cost the car manufacturer a few cents to buy, and a metal lever would have made much more sense given this lever would often "catch" clothing as people would get into and out of the car. This widow was told by the car dealer the lever could not be replaced and she would have to buy an entirely new seat for over \$200, plus installation. This, along with a few other similarly needed repairs, cost more than the car was worth at the time, so she had to look for another car.

Along those same lines, why do we need electric car windows? Hand cranks work equally as well moving the window up and down its track. The hand crank needs no power, is very reliable with no motors, switches, and wiring required. Some have maintained the hand-crank windows are safer if the car ends up in water, such as a flood, which could trap the occupants. Most new cars nowadays have electric windows.

Even though computers are a big mystery for many people, computers can be built to be very rugged and reliable, and the same principles apply. They are:

- Use only the components you need to get the job done, and nothing more.
- Use the proper components for the task, and test the finished product thoroughly before releasing it to the public.
- Adding unsuitable or unnecessary components has never been a substitute for diligent research.

Even with computers, almost always, simpler is better.

Britt

Britt Storkson may be contacted via e-mail to michele@worldwidedrillingresource.com



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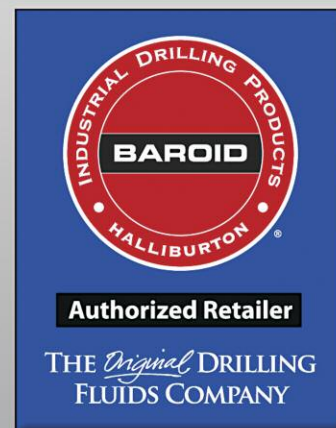
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2015 U.S. Proved Reserves Report

Adapted from a Press Release by the U.S. Energy Information Administration

According to the latest proved reserves report issued by the U.S. Energy Information Administration (EIA), U.S. crude oil proved reserves declined 4.7 billion barrels (11.8%) from year-end 2014 levels, while natural gas proved reserves witnessed a 16.6% decline to 64.5 trillion cubic feet (Tcf). This amounts to a decrease of more than 324 Tcf at year-end 2015. Proved reserves refers to the quantity of petroleum which can be commercially recovered from a known reservoir. Some factors which can affect the amount of proved reserves include current economic conditions, operating methods, and government regulations.

The report, *U.S. Crude Oil and Natural Gas Proved Reserves, Year-end 2015*, also indicated the significant reduction in the average price of both oil and natural gas between 2014 and 2015 resulted in more challenging economic and operating conditions, an important factor in determining proved reserves.

	Crude oil and lease condensate billion barrels	Natural gas trillion cubic feet
2014 U.S. proved reserves	39.9	388.8
Net additions to U.S. proved reserves	-4.7	-64.5
2015 U.S. proved reserves	35.2	324.3
Percentage change	-11.8%	-16.6%

West Texas Intermediate crude oil spot prices observed a nearly 50% decline from \$95 per barrel in 2014, to \$50 per barrel in 2015. The decrease for the natural gas spot price at the Louisiana Henry Hub was more than 40% at 2.62 per million British Thermal Units (Btu) in 2014, to \$4.55 per million Btu in 2015. These massive pricing is-

suces resulted in reduced drilling activity and ultimately, a downward revision in proved reserves across a broad range of U.S. producers in 2015.

Thanks largely to the development of the Wolfcamp Shale and Bone Spring Plays in the Delaware Basin, New Mexico had the largest net increase in proved reserves of crude oil and lease condensate (vapor in a formation which condenses to a liquid after being cooled) of all states in 2015.

Although crude oil and lease condensate extensions to existing fields were highest in Texas and North Dakota during 2015, the new revisions led to both states experiencing a net reduction in proved reserves.

In 2015, Ohio added more than 5 Tcf of natural gas proved reserves, due primarily to the Utica/Point Pleasant Shale play, and surpassed Arkansas and the Gulf of Mexico to become the ninth-largest natural gas reserves state.

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The Search for the World's Hottest Hole

Compiled by the Editorial Staff
of *WorldWide Drilling Resource*®



View from the Reykjanes shore, courtesy of Statoil.

Where on earth would you imagine the hottest hole to be located? Iceland probably wouldn't come to mind just based on the name itself; however, the Iceland Deep Drilling Project's rig is currently drilling into an old lava flow at Reykjanes, with the hope of producing the

hottest geothermal well in the world. The temperatures would range between 750-1800°F (400-1000°C), and experts believe it could lead to a revolution in the energy efficiency of high-temperature geothermal areas worldwide.

The project's main goal is to find out if it's feasible to extract energy and chemicals out of the hydrothermal systems at supercritical conditions. In 2009, the most powerful geothermal well on record resulted from the team accidentally discovering a magma reservoir after drilling a little more than a mile below the surface in Krafla, northeast Iceland. Their sensors indicated a temperature of about 1800°F (1000°C) caused by super-hot vents of steam.

Now the team is drilling a second well, but this time at the Reykjanes site with the plan of producing results on a larger scale. How large? A single well powers 5000 homes, but the team is looking to harness enough power for 50,000 homes.

To achieve this, the drilling will crack into a landward extension of the Mid Atlantic Ridge, where at the appropriate depth, magma driven by volcanic activity and moving from below will meet and heat seawater below the ocean bed. Energy companies and researchers behind the project think the water will be in the form of "supercritical steam", which would be neither liquid nor gas. This supercritical steam would hold much more heat energy, and a well which taps into this steam and brings it to the surface for use by a steam turbine could generate the power needed for 50,000 homes.

Since drilling began, it has progressed slowly but steadily. Valuable rock samples were found as more spot cores were drilled. Once the drill made it to a depth of 10,500 feet, they were unable to get any return of circulation fluid or drill cuttings. It only takes once to drill into a supercritical steam zone, so the team remains hopeful.

If the techniques being used in Iceland prove to be successful, it would open up potential sites for supercritical geothermal resources around the globe since young volcanoes occur worldwide. The geothermal well in Iceland is important not only to Iceland as a world leader in electricity production from geothermal energy, but also to the worldwide economic viability of the renewable energy source.

Editor's Note: In between our print issues, the *WDR* Team prepares an electronic newsletter called *E-News Flash*. Based on readership, this was the most popular *E-News Flash* article of the month. Get in on the action and subscribe today at: www.worldwidedrillingresource.com

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the next day randomly pull out another item and repeat the above process.

At the end of 30 days, put all the items back in the jar and begin the process again. I'm suggesting you spend just 30 minutes a day focusing on a single behavior. Yes, you will go about the rest of your day as usual. The only thing you have changed is you are spending 30 minutes during a 24-hour day on a specific action.

I also recommend you start a 30-minute journal and, at the end of each session, take just a minute and record something, anything you did, thought, felt, etc. during the session.

Just try it for one month and if something in your life hasn't improved - well, call me crazy. However, if something in your life is better or has improved, was it worth several hours a month of your life? By the way, you get a total of 720 hours each month - so it's .02% of your time you spend on this process.

Here are the 30 actions:

Read	Think	Slow down	Believe	Feel
Practice	Plan	Learn	Evaluate	Be
Pray	Try	Help others	Smile more	Dream
Study	Question	Share	Examine	Laugh
Create	Relax	Connect	Listen	Forgive
	Give more		Reach out to others	
Say thank you		Build someone up		Let go of something

Try it for 30 days - what do you have to lose?

In His service,

Tim

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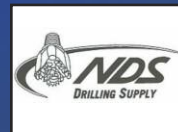
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Effective Marketing cont'd from page 40.

keep things fresh so customers see progress and feel they're working with a leader in the market.

A plan with realistic short- and long-term marketing goals to attract new customers and grow the business can be a great way to keep the advertising focused. Always look to improve and think of new and unique ways to promote the business. Develop new advertising approaches such as creating a new logo or getting a memorable phone number. Keep a file of good ideas, direct mail samples, great ads, and other information, and use it to brainstorm periodically for new ways to gain visibility and drive in new business.

One of the easiest ways to gain visibility is by getting people to talk about what the business does. So, marketing through participation in appropriate industry associations, local and state businesses bureaus, city clubs, and other relevant groups will be a great tool. In the end, keep the message simple and clear while focusing on what the business can do best for its customers. Marketing takes work and resources, but it's an investment meant to grow the business and propel it into the future.

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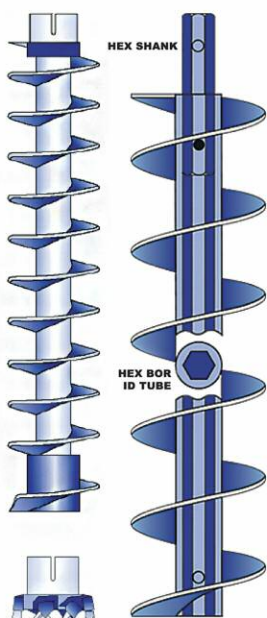
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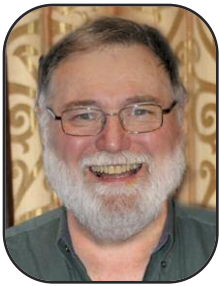


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S.A.E. Pumps

by Bill Corey

I thought this month I might talk about what makes an S.A.E. pump different from a Close-Coupled Motor Drive (CCMD) pump. The most obvious thing is the driver. A CCMD pump has an electric motor for a driver, which has either a threaded or keyed shaft. So the impeller is directly mounted to the shaft of the driver. This is not the case with an S.A.E. pump.

An electric motor pump has certain limitations, the biggest is the rpm (revolutions per minute) at which it can spin. Unless you are using a variable speed drive/variable frequency drive (VFD), you have a two-pole, four-pole, six-pole, or eight-pole motor. Each set of poles decreases the speed at which the motor will turn; therefore, two-pole equals 3450-3550 rpm, four-pole is 1750 rpm, six-pole is 1170 rpm, and eight-pole is 870 rpm. Remember there is slip built into electric motors. With the use of a VFD you can change the speed of the motor and have the pump spin at whatever speed you require.

An S.A.E. pump is driven by an engine, usually a diesel engine, but it could of course be a gas engine if you wanted. Part of the difference between a motor and an engine is how rough it runs. A motor tends to be very smooth, whereas an engine, because of the explosions causing it to run, is rough. Because it is so rough, if you were to put the impeller on the end of the shaft, with the weight of the water moving through the impeller you would be more likely to snap the impeller off the shaft.

An engine is a variable speed device; the more fuel you give it, the faster it spins until it hits the speed which makes it fly apart. Of course, this is not what we are trying to do here; we are trying to run our pump with the engine. Most S.A.E. engine pumps run at about 1400-2400 rpm, some may do more.

Here is why the impeller is not directly connected to the shaft and may snap the shaft - weight. To be straightforward with this, we are looking at 8.334 pounds per gallon of water. If you do the math, 1000 gallons weighs 8334 pounds. What you are doing is pulling the water up to the pump, then changing direction by at least 90 degrees. This is a lot of weight, and if you are picking up the vibration from the engine, you're getting a lot of bounce. If the motor is in its sweet spot, the vibration is minimal. If you have someone who is inexperienced and has the rpm set wrong, it will cause the impeller to bounce and, with so much weight, snap the shaft at the impeller. This usually happens when the person in charge just stops the engine without slowing it down. It can also happen on start-up if you leave the engine in idle too long.



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So to protect the pump, there is something called a flywheel coupling which attaches the engine shaft to the pump shaft. I like to call it a sacrificial lamb, because it is designed to break should the vibration become too much. I've always told my students it is cheaper and easier to replace the flywheel coupling than to replace the pump shaft and impeller. There are a couple of different types of couplings - one mechanical which uses springs to hold the two couplings together and absorb the bounce, and the other has the two couplings vulcanized together by rubber. I don't want to tell you which one to use, but make sure you have them and you understand why they are so important. If you are a rental center and you rent these types of pumps, make sure your customers know why you use a flywheel coupling. And if you are a water truck company, your employees should understand how to use these types of pumps. Hope this helps, and let me know if you have a question.

Bill

Bill Corey may be contacted
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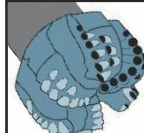
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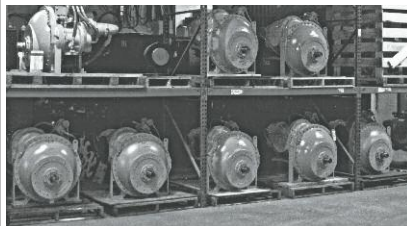
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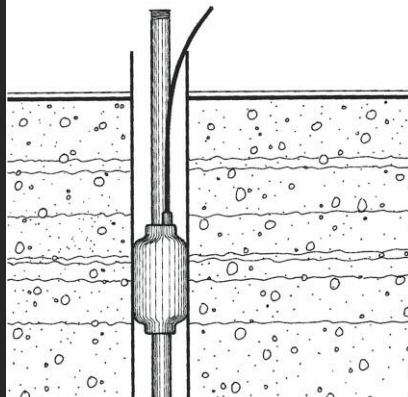
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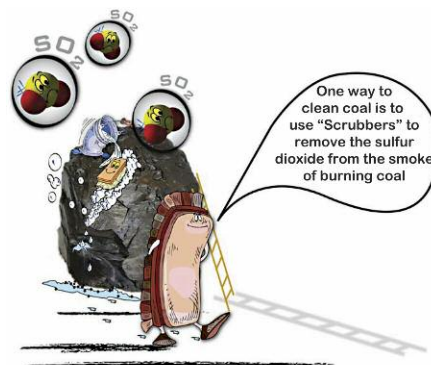
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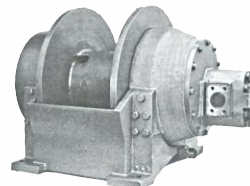
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