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"The goal, every day, is for everybody to get home safe. We don't want any car accidents, any pedestrians getting hurt. We keep our work zone secure." -Kevin Fishback, Electric Conduit Construction

On the job with Electric Conduit Construction

n late May, Planet Underground TV went to Lincoln Park to film and observe Electric Conduit Construction (ECC), a midwestern construction company that offers a wide array of utility construction services. ECC was there to work on a joint fiber optic project and install PVC pipe along the street. While onsite, we pulled aside Kevin Fishback, an ECC Foreman, for an interview. "We're doing a joint project for four different companies here, putting in eight, four-inch PVC pipes on Fullerton Avenue. We're right off of Lake Shore Drive-there's a lot of cars, a lot of stuff going on, so we have two crews from Electric Conduit out here. We've been coordinating with each other throughout the day to make sure we're both getting production done and staying safe."

(continued p. 10)



Installing pipe in such a busy area obviously comes with many difficulties, and numerous safety measures must be taken. Of course, the most important first step is locating the underground utilities before any digging takes place and making sure the marks that the locators leave are accurate. "We have had issues where things have been mismarked. Obviously, when you get a larger scale company for these locates, they have a lot going on-they have to cover a large area, they have a lot to do. It's hard for everybody to coordinate with these prints and to see what's going where," said Fishback. "Some of the smaller companies that are starting to come up I think are doing a better job because it's a smaller force and they're committed to certain areas," Fishback continued. "The procedure for locating on utility jobs around the country is something that has been in dire need of a modern upgrade, and perhaps having smaller companies perform certain locates is a step in the right direction."

Planet Underground TV covered a large section of ECC's project that spanned about as long as a block down West Fullerton Parkway. The construction workers first started to pull up the road where they were going to insert their piping, and took up a large portion of the street, meaning that the busy Chicago traffic would have to be directed to allow for safe and efficient work to be done. "Obviously schools out, there's kids coming into the zoo, so we gotta coordinate with each other and make sure everyone's on the same page. The goal every day is for everybody to get home safe. We don't want any car accidents, any pedestrians getting hurt. We keep our work zone secure," Fishback assured. A small section of ECC's company mission statement reads "our mission is to create a safe and environmentally friendly workplace that lends itself to the efficient and productive completion of each task." When performing utility construction work in a city like Chicago, it's important to prioritize safety for the workers as well as for any passing pedestrians. With dozens of traffic cones and warning signs, the guiding of traffic went smoothly throughout the duration of the project. This is to be expected with ECC, as they've been working in the area of utility construction since 1951.

As the project continued on, several ECC workers found themselves approximately seven feet into the trenches that they dug up in order to accurately install their utilities one section at a time. It was clear to us the longer we were there that every single step in ECC's process is as careful and intricate as some of the most complicated organ surgeries around the world. Once the utilities were installed, the city would repave the road, and nearby Chicago residents could get back to their everyday lives. This was important to ECC, and why they wanted to work on this project jointly with other companies so that everything was installed efficiently and in a timely manner. According to Fishback, this was a good project to coordinate with other utility companies so that they wouldn't have to tear up the road multiple times in the same area. Like anything else, planning for these projects is the key to success, and after 68 years in business, Electric Conduit Construction has demonstrated the experience and commitment to safety that can serve as an example for the entire industry.





the location in question. It showed that work had not begun in work in construction insurance. At my company we frequently see General Liability claims that arise from contractors striking the area until late January 2015, and the ticket was current at the buried utilities. Some claims of this type are straightforward. time our contractor was working. They then produced job records Our insured contractor hit a buried line. They know they hit a showing that their work was along a right of way outside of a gated buried line. They reported the strike immediately and may even community, while the damage location was inside the same gated have assisted in the repair. But then there are other cases that seem community. Not only had they not been working in the area at to come in from out of nowhere. Here's an example: the time of the alleged damage, but they had never worked in the location where the damage occurred. Again, after reviewing our In July 2016, one of our insured contractors got a bill for repairs insured contractor's evidence, the telecom owner declined to purto a buried cable from a collection agency representing a telecom sue the case further, and the claim was again closed with no damutility. The bill was dated December 2014 and alleged that the ages being paid.

damage occurred in March 2014. The bill (for just over \$1700) listed the telecom company's labor and contractor labor as the In reviewing our claim files, I find many cases just like these two. On first blush, successful defense of a damage claim by a contraccharges for which it was seeking to be paid. Once the claim was submitted, one of our adjusters began to work on it. She contacted tor would seem to be a good outcome for the contractor and its the collection agency to ask for evidence showing that our insured insurer. After all, if you can avoid paying for a damage you didn't contractor had damaged the cable described in the bill. The agency cause, there is a real cost benefit, and I've seen cases where alleged then produced some very clear photographs of the site as well as damages are in the range of tens of thousands of dollars. But when

an expired dig ticket for our insured contractor from January 2014. The photographs showed the locator marks and damage off the shoulder of a city street. Sounds clear cut initially, but then our claims adjuster shared the information with our insured contractor.

Our customer determined from a review of daily crew reports that in January 2014 they

2 "The costs associated with repairs to damaged underground facilities are real and owners should be reimbursed when someone damages them. But at the same time, facility owners should not be allowed to 'shotgun' bills to multiple contractors who might have damaged their facility with the potential to collect from any or all of them." -Fred LeSage

had to call in a locate to complete a sewer lateral near the damage with the utility owner comes with a cost. The people involved in location. That's why there was a dig ticket in the system. This work those investigations don't work for free after all. And while they're was done by going down the middle of the road then out to the engaged in the investigation work, they aren't really doing the jobs front of the customer's home. On the day of the alleged damage in the contractor is paying them to do. March 2014, they had been one of four companies that had been How do these "guilty until proven innocent" scenarios come about? In some cases, when a buried utility strike occurs, we know immediately. Telephone or internet service to multiple customers is suddenly interrupted, or perhaps gas or water erupts from the ground. But in cases where equipment nicks the outer sheath of a buried electric or communication line, or perhaps takes a gouge from a gas line but doesn't penetrate it, the damage isn't immediately apparent. The damage has degraded the utility installation and may result in an unexpected failure, months or even years after it happened. When the utility owner engages in repair work in these cases, they may discover that their facility had been damaged by work that occurred in the past. They then begin their investigation by researching dig tickets issued for the area where the damage was discovered. Where they find a ticket or tickets issued for the area of damage, they then pursue the excavator(s) who had called in the ticket(s).

working in that area. Their work had been over 2100 feet away from where the cable was cut. Clearly, the expired ticket and work done by our insured had nothing to do with the damage for which they were being billed. Neither the collection agency nor the utility challenged our insured contractor's defense, and ultimately the claim was closed with no damages being paid. It wouldn't be so bad if this was a one-off case, but it's not. Here's another example. In June of 2015, one of our insured contractors received a bill for repair of a buried telecom line. The alleged damage in this case had supposedly occurred in December 2014 with repairs completed by the telecom company's contractor in March 2015. The total cost for itemized materials and labor to facilitate the repair was about \$2700. Once again, one of our adjusters began working with our insured contractor to investigate the claim. In our contractor's dig ticket history, they found the ticket for

you look deeper, it's really sort of a hollow victory. While insurance will pay for damage repair (material, labor, equipment costs), when a contractor is liable, it doesn't pay the cost of the contractor's internal investigations done to determine whether they were at fault. Time spent by the contractor and its insurer digging up records, interviewing crew members and exchanging information

So, what's wrong with this process? After all, the facility owner if the DIRT Report is correct, for 20% of damages (where there should be allowed to recover for damages to their buried lines when someone else hits them. As one utility representative said at last year's Planet Underground Roundtable, "If the dig ticket shows that you were digging where the damage is found, I think it's reasonable to assume that you did the damage." Well, maybe...

In the cases I described at the beginning of this piece, there was no way the damage could have been done by contractors who called in the dig tickets uncovered by the facility owner, as their work was nowhere near where the damage occurred. And in cases where there are multiple dig tickets issued to multiple contractors, facility owners have been known to pursue damage reparations from each contractor independently. And then there's the data from CGA's annual DIRT Report, the most recent of which shows that around 20% of all damages occur when there is no dig ticket called in. Finally, if a contractor doesn't have sufficient records, or whose employees who were involved have moved on, it can be virtually impossible to defend themselves from the accusation.

Should we do something about this situation? And if so, what? I think the answer to the first question is "yes." The costs associated with repairs to damaged underground facilities are real, and owners should be reimbursed when someone damages them. But at the same time, facility owners should not be allowed to "shotgun" bills to multiple contractors who might have damaged their facility with the potential to collect from any or all of them. Finally,

are no dig tickets) we will never be able to determine who caused them. As to the what we should do, I'll propose these ideas:

1. Facility owners should have to provide more evidence than an old dig ticket from the general area where a damage occurred as a basis for damage recovery. They should have to provide evidence that there actually was work by the accused excavator in the area where the damage was discovered.

2. Facility owners should be required to name all parties from whom they are attempting to recover damages as a part of any *request for restitution from any excavator.*

3. Facility owners should certify that they have not been reimbursed for the same repair by multiple parties as a condition of settling any damage case.

4. Facility owners should certify that their own crews have done no work around a damaged facility.

My suggestions are all directed at facility owners, and I think that is reasonable. The current state of affairs makes contractor excavators guilty until they can prove themselves innocent. The costs associated with damage investigations are real, and they drive up overhead and insurance premiums, which in turn drive up the cost of construction. Those are hidden costs that we all end up paying in the end.

underground to cloud

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CORDLESS INDUCTIVE COUPLER

- Removing the cord permits the user to easily lock the unit inside manholes and switchgears; eliminating theft risks and the need for more than one user to stand watch
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Beyond Street Ticket **Locating Utilities During Excavation**



If digging within a utility's tolerance zone, many state laws require the use of hand digging or non-mechanical methods such as vacuum excavating instead of power excavating equipment.

P rotecting the safety of workers and the public during exca-vation requires a comprehensive are vention. Locating utilities while earth is being moved can assist excavators with physically exposing the utility, offering an additional layer of safety while improving efficiency.

Digging up the ground can be dangerous business. Anyone who works in the underground industry knows the hazards associated with excavation. According to the Common Ground Alliance's 2017 Damage Information Reporting Tool (DIRT) report, 305,799 excavation-related accidents were reported in the United States. It is estimated that the actual figure is much higher—up to **The Value of Information** 439,000 accidents in 2017.

There have been many strides in making excavation safer, including the widespread adoption of best practices and the implementation of the 811 system. Reducing the number of excavationrelated accidents certainly requires all stakeholders to follow the minimum requirements for safety, but to truly make an impact, we need to think beyond the minimum.

One promising approach to reduce the likelihood of a utility strike, is to use a utility locator onsite during the excavation process. Doing so can help verify the accuracy of existing marks, alert the operators to unknown or abandoned structures that may have been missed during the 811 locate, and guide the excavator when digging test holes, which can help improve efficiency.

Arming excavators with as much information as possible about the buried infrastructure in the project area is key to reducing the risk of strikes. Today, best practices and state laws require a utility's horizontal position to be marked out prior to moving

earth. This helps excavators know where to avoid digging. When a utility needs to be found for repair, maintenance, or determine that it is not in conflict with the project, utility markings help excavators know where to dig to expose the utility.

However, having any depth reading before breaking ground-However, utilities go unmarked-or are marked inaccuratelyand during the process-can at least provide an indication of often enough that it presents a serious risk for excavators. From how far below ground the utility is. Furthermore, inconsistent the DIRT report, approximately 17 percent of damages can be depth readings can indicate that the signal on the buried utility attributed to "facility marking or locating not sufficient." And is distorted, which may signify unknown utilities-or that the when attempting to physically expose the utility, digging in the marks for the target utility are inaccurate. wrong place means wasted time and effort.

UP TO 439,000 ACCIDENTS

F ACTUAL FIGURE IS MIL

Michael Twohig is the head of subsurface utility mapping at Using a utility locator onsite during an excavation can both re-DGT Associates, a surveying and engineering firm in New Engduce the risk of utility strikes and improve efficiency immediland. When asked about using locators to verify marks, he reately before and while dirt is being removed. We spoke with a plied that "checking the locate marks before ground breaking is contractor, an excavator, and a subsurface utility mapper about a must." He expanded on his thoughts with the following: locating after utilities have been marked through 811, both "First, I would never begin digging a test hole on paint marked before breaking ground and during the excavation process. by others, as it may be a waste of time or an empty hole. Many Their insights illustrate how this practice can be helpful in difmark out crews are looking to locate to the nearest foot, which ferent scenarios.

Perspectives

305,799

EXCAVATION-RELATED

ACCIDENTS WERE REPORTED

IN THE UNITED STATES

Jim O'Kane is a road building contractor. He believes ground depth tells me to dig off to one side... to see what you are dealing penetrating radar and electromagnetic locating technologies with. It is too dangerous to go straight down on shallow signals." should be available to excavators "to help determine depth of Twohig also told us that using a utility locator during excavation subsurface installations prior to excavation." He explained that is a very common practice. He explained, "I always like to get a some excavators currently hire a locating subcontractor to verify

According to the Common Ground Alliance's 2017 Damage Information Reporting Tool (DIRT) report, 305,799 excavation-related accidents were reported in the United States. It is estimated that the actual figure is much higherup to 439,000.

> horizontal positioning and provide depth readings for utilities that have already been marked, without depth readings, from the 811 process. After the locate, the excavator performs minimal potholing at the start, end, and middle of the marks depending on the length of the job and determines whether the utility is in conflict.

Whether it is beneficial to provide depth readings to excavators is a matter of some debate. Within 811, depth estimates are not required prior to moving earth-as with horizontal positioning, many factors can influence depth readings and result in inaccurate markings. Because of this risk, many contract locators and facility owners have rules against providing depth.

is easy to miss in a small test hole. There is also a major safety reason to check the marks. Very often a utility is shallow and a jack hammer or saw can easily break the line... any very shallow



Above and Below: Using a utility locator onsite while digging can offer some benefits, particularly if the receiver is capable of providing continuous depth readings. Locating instruments with omnidirectional antennas measure the full shape of the signal from any direction. This allows the locator to provide continuous depth, orientation, proximity to utility, and positioning information. Having this information available can guide the operator as dirt is removed, helping to more safely and efficiently expose the utility.



confirmation during the excavation process. If the depth indication is not consistent then it tells me there is the possibility of signal interference and/ or the presence of unknown utilities."

Safe Digging: More Than a Guideline

As with any technology that can assist excavators, using a locator onsite does not replace the imperative for safe digging. Steve Woo, an excavator for HCI Inc., a construction services contractor in California, explained why. Woo emphasized that "locate marks are only an indication that must be validated and understood by the excavator. If the excavator wants to use technology to validate their understanding, it is still their responsibility to determine conflict." He further cautioned that "we must never substitute good judgment and experience with technology. Technology can be useful as an aid, but not to be used as a substitute for safe excavation practices." He is amazed at the abilities of excavators to use hand tools to physically expose utilities without damages, and all without the use of locating technology while digging.

Using locating technology during the excavation process may not always reduce time spent on the job, either. As Woo states, this practice would be "helpful, but also time consuming." Regardless of the value it may bring, requiring the excavator to periodically pause digging so that a locator can be used means it may take more time to complete the job.

What these individual perspectives show is that it is important to assess each job on a case-by-case basis. And for every job, technology does not replace the value of the excavator's training, experience, and knowledge. But when coupled effectively with safe digging, locating onsite during an excavation is worth consideration, and potentially, the effort.

SeeScan is a utility locating and plumbing diagnostic manufacturer based in San Diego, CA. \star

¹DIRT Annual Report for 2017. Common Ground Alliance, 2017. Pg. 4-5.

²DIRT Annual Report for 2017. Common Ground Alliance, 2017. Pg. 5.





GET MORE THAN EMPTY PAINT CANS FOR YOUR EFFORT

Utility Locating Equipment Should Give You More Than Just "Paint Here"

...STAY TUNED



The System Operator

Dmeets

Author: Justin Maloney -National Director of Field Operations, Atlas Field Service

Driving Tomorrow's Energy Safety, Integrity, and Security Needs



It takes strong working relationships and comprehensive mentor/mentee programs to properly address the potential life threatening hazards if details are missed. This is not learned in a university.

Number One: Training

THE CHALLENGES

Today's infrastructure is aging, and much of it is in need of repair and replacement. To accomplish such a monumental task, trained

employees are desperately needed more than ever. Finding and providing these trained employees is growing more and more difficult. Many companies are experiencing the same challenges of a retiring workforce. Often this provides opportunity for growth in companies, however replacing the retiring workforce in the critical infrastructure energy sector has proven to be very chal-



nies invest in mentor/mentee programs, they invest in the integlenging. One reason is the difference in culture and society. Outrity of their infrastructure and security of their assets. It may be side of engineering—operating, maintaining, and building energy the single most important investment a company makes. These infrastructure is physically demanding, requiring long hours and hard work. programs offer an opportunity for a younger worker to be paired with a veteran energy professional and learn their failures and More often than not, there is little to no environment for a worksuccesses throughout decades of service to a given energy sector.

life balance culture, simply because energy never stops. It takes Mentoring a new employee also introduces the new mentee to old so much to keep it running, and today's generation has a reduced infrastructure and old methods in order to recognize problems interest in hard skill sets such as trades while also lacking the soft and troubleshoot them. This can include problems that need adskills to effectively communicate during critical problem-solving dressing when your Supervisory Control Data Acquisition System exercises. Another reason is, many energy sectors suffered a tre-(SCADA) fails and you lose power. What people don't realize, is mendous loss of qualified workers during the 1980s when the that during a bad storm or a catastrophic equipment failure, there economy was struggling, affecting trade growth. As a result, today is a worker out there in the weather elements manually operating we see a large age gap of approximately 12-15 years in employees in the field. This is 12-15 years lost where replacements could have valves, reconnecting switches and manually starting turbines on back up power. been mentored and groomed to meet tomorrow's energy needs.

Many companies have different approaches to addressing mentor/ Replacing an aging workforce involves construction and mainmentee programs. The most important aspect to their success is tenance practices often not learned in degreed programs. Gentiming. A new employee should be paired with a veteran worker erations of Electrical Linemen and Pipeliners learn successtwo to four years before that worker is scheduled to retire. Feedful approaches in the field by trial and error. Putting it bluntly, back from the field and my own personal experience, has shown their practices and tricks of the trade you simply can't learn in that multiple decades of experience cannot be transferred and a textbook. Textbooks cannot predict weather, equipment faillearned in a matter of a few months. Invest in the time for a good ures, external threats, and the certain tics and tocks of operating overlap from older to new personnel, and this will pay dividends equipment one learns by being around it. Trying to teach these in the safe operations of many forms of energy infrastructure skills to new operators, with much of the experienced personnel across North America. retired, now delays projects, increases cost and could affect integrity of systems. Some companies had seen this in the early 2000s IMPROVEMENT IN SKILL VERIFICATION and proactively planned for it by heavily investing in mentor/ AND EXPECTATIONS mentee programs.

SOLUTIONS

Today, much of the energy sector for midstream electrical and pipeline maintenance and construction relies on inspectors to oversee the workmanship of the work being done. They carry cer-A well planned and thought out mentor/mentee program reaps tifications through organizations that have a difficult time veritremendous benefits if well maintained and managed properly. fying one's technical background to justify granting a certificate. Education is important, although pairing it with field knowledge These challenges have created inspectors in many energy sectors as professionals grow, is priceless. In the words of Mike Rowe, that are highly qualified to assess and inspect the work. When you "Work smart and hard." Why is this so important in today's trainresearch these companies who offer these services, you'll quickly ing for energy infrastructure? It's important because it's the fastest see "Hiring for XYZ Inspector." As long as you have the certificaway to build an employee's skill set and to take advantage of imtion, you likely qualify for the position, and may get hired where proving the next generation energy worker.

Our country experienced monumental achievements with Roosevelt's New Deal, with drilling advancements to reach more fossil fuels and developments in new materials that are stronger than ever before. We have also failed in areas where the rapid growth of our North American energy independence has weakened our quality of workers due to lack of time for training. When compa-

"Replacing an aging workforce involves construction and maintenance practices often not learned in degreed programs." -Justin Maloney

you'll find yourself on a job with little to no knowledge of what you're looking at.

Atlas Field Service has always recognized this, and while your certifications and education are important to us, your technical background and attitude is more important to us, because we invest in quality. If you have the technical skills to do the job, what good are they if you don't have the communication skills to convey your level of experience? We vet, interview, and screen our employees through multiple veteran linemen and pipeliners to assess the actual skills many claim to have on fancy resumes often seen in today's industry. We make sure you know what you say you know when you get in the field.

Our AFS employees are paired with a Subject Matter Expert (SME) when they hit the field to assure their level of competency and to also soften the edges if needed. We invest heavily in our employees' technical skills and soft skills to offer a well-rounded employee that we plan to work with for years. The relationships we provide between our Subject Matter Experts and our new employ-

ees is our form of a progressive mentor/ mentee program that has fostered an environment for innovative security vulnerability assessments, pipeline construc-

"Many energy companies are turning to modernization programs to lessen the impacts of aging infrastructure." -Justin Maloney

tion risk assessments in difficult country, and ground patrols that have identified areas of improvement for our clients for long term returns on safe operations.

The need for this approach stems from the development of downhole horizontal directional drilling. As 2008 drew near, it was quickly becoming economical to drill in places like Eagle Ford Shale and The Bakken Shale formations. This was because you needed fewer drilling rigs to reach more oil and gas. The speed of drilling increased dramatically during this time in dissolved formations, disassociated formations and formations where gas was resting on top of the oil.

With this advancement in drilling technology came the need for infrastructure to get the fossil fuels out of the regions and into midstream systems for distribution markets. This began the need for new, large, interstate cross country projects, leading to an industry boom. Well, the boom came at a time where we had a reduction in training field professionals and little time for training a new generation. This resulted in a decade of new hires that boasted resumes reflecting more experience than a 40-year veteran. These resumes were only fueled by fancy Linked In accounts claiming an astronomical amount of experience, although most failed the field assessment test when it came to boots on the ground and requests to explain "this" process as described on their resume. Many could not, as their resumes were constructed with a few key

words picked up on a small project here and there with little to no real-life experience.

The new age professionals that come with an open mind and willingness to learn, with a fair resume and eagerness to grow, those are your investments. The challenge is identifying them in an industry flooded with inexperience over the last decade. It takes a little more time to comb through qualified people and separate fact from fancy wording on resumes. But it's time well spent to build a quality program and a group of elite professionals that want to learn and grow from the best left in the industry.

Number Two: Eco-Terrorism

THE PROBLEM

Currently, throughout the east coast, multiple pipeline construction programs and electrical transmission construction programs are halted or facing resistance to continue due to actions by environmental activists. This is a problem that is caused by a lack of understanding of how energy moves this country forward. It's

a form of ignorance to protest against something without researching the impacts of the actions and delays resistance groups are causing. As new projects are

delayed, such as the Keystone XL, Atlantic Sunrise, and others, the current infrastructure in the ground and across the open plains carrying electricity continue to decay, and they are operating to their engineered life expectancy or past. We have electrical transmission towers operating in this country that are over 100 years old. We have pipelines in this country that were installed during WWII that were constructed under emergencies to protect our eastern seaboard and have served their purpose. Yet, we continue to repair the best we can and push the operational limits of these energy assets to their breaking point because we can't build new. Understanding the technical aspects of wear and tear, including corrosion, weather impacts, 3rd party damages, stress cracking, erosion, etc., easily paints a picture of the environment being more at risk with older infrastructure in the ground and above it. There are increased vulnerabilities to pipeline ruptures causing leaks, and electrical transmission systems failing causing power outages, the longer we delay new construction.

Building new electrical transmission systems and pipelines dramatically reduces the negative impact to the environment by retiring at risk infrastructure still in service today. It also lets professionals build and install with better, stronger materials, more stringent quality regulations, and far safer construction methods relative to erosion protection, water way crossings and stronger materials in High Consequence Areas (HCAs). New construction also minimizes even the potential for damages by installing bet-



ter designed equipment and better engineered plans to accommodate the integrity of the environment and safety of the affected and Current Infrastructure Conditions public long term. The project that environmental extremists are blocking could be the replacement of an outdated pipeline that TEMPORARY SOLUTIONS runs through your neighborhood walking path. Wouldn't you Many energy companies are turning to modernization programs want a new product in the ground that's safer and built to the to lessen the impacts of aging infrastructure. Decades ago, when highest engineering standards available today when your walkolder systems were constructed and put into service, technology ing near it and around it? Many don't see it that way, because wasn't available like today to assess conditions of pipelines and environmental extremists create a culture of unity that promotes electrical systems. As many companies don't feel the permit fights followers and ignores the benefits of educating themselves of how are worth it to build new, they are opting to modernize their curexactly infrastructure is impacted over time that causes the need rent systems. For pipelines, this includes the reconfiguration of for replacements.

Here is an In-service pipeline with reduced operating pressure after a replacement proposal was denied due to environmental concerns. This is a prime example of what preventing new construction can lead to. River weights were installed here to lower the pipe, although a replacement of the section would have been preferred. Permits were blocked in court by environmentalists. The pipe could have been replaced with a stronger wall thickness and better coating to secure its safe operation in this wetland.

Number Three: Modernization Programs



Washed out railroad tracks discovered during a post severe weather right-of-way ground patrol. The railroad company was notified immediately to prevent derailment of trains over 36' petroleum pipeline. Ground patrols helped assist in train safety, public safety and pipeline integrity.

stations and valve mimicking to accommodate new launchers and receivers. These upgrades allow for historically non piggable lines to be pigged. Modifications to old systems allow operators to assess the internal condition of their aging lines and provide valuable feedback to budget and plan-for-integrity dig programs. As the PIG (Pipeline Integrity Gauge) passes through the pipeline, it can identify corrosion, anomalies, and other integrity concerns so that programs can be initiated to replace small sections of the system to maintain its safe operation.

The electrical industry is also modernizing their transmission right-of-way by installing security cameras, weather alert stations, and utilizing unmanned aircrafts to increase the inspection process across rough terrain and miles of electrical systems. While these practices are not bulletproof in securing the services to hundreds of towns and cities, they do dramatically increase the awareness and continuous surveillance of their electrical systems to reduce the possibility of storm outages, increase fire risk awareness, proactively plan for adverse weather to address immediate repairs, and better monitor their exposed systems for malicious behavior by eco-terrorist and disgruntled land owners.

While modernization programs are good for thorough inspection practices of aging infrastructure, it is not an answer to long term

security and safety. Only new construction of emergency infrastructure can introduce the new practices, construction regulations, and improved materials that make today's infrastructure stronger than ever. Modernization programs are merely millions of dollars of temporary band-aids due to the current complexity and cost delays caused by environmental extremists who lack the understanding of the risks they are contributing to.

In conclusion

Training directly impacts the safety and security of energy infrastructure across North America. AFS is investing in the integrity and economic strength of our electrical and pipeline systems by recognizing the importance of comprehensive mentor/mentee programs to overlap field experience and blend the best practices of generations that each bring something to the table. No matter where the energy field goes, one thing is a guaranteed: you'll always need hands on mechanics to pair with technological developments to address tomorrow's safety and security of our nation's critical energy infrastructure. The old fundamentals of field applications are just as important, if not more important, than the latest SCADA developments to streamline efficient operations. Perhaps our greatest mistake is to forget about that, as technology advances forward at lighting speed.

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