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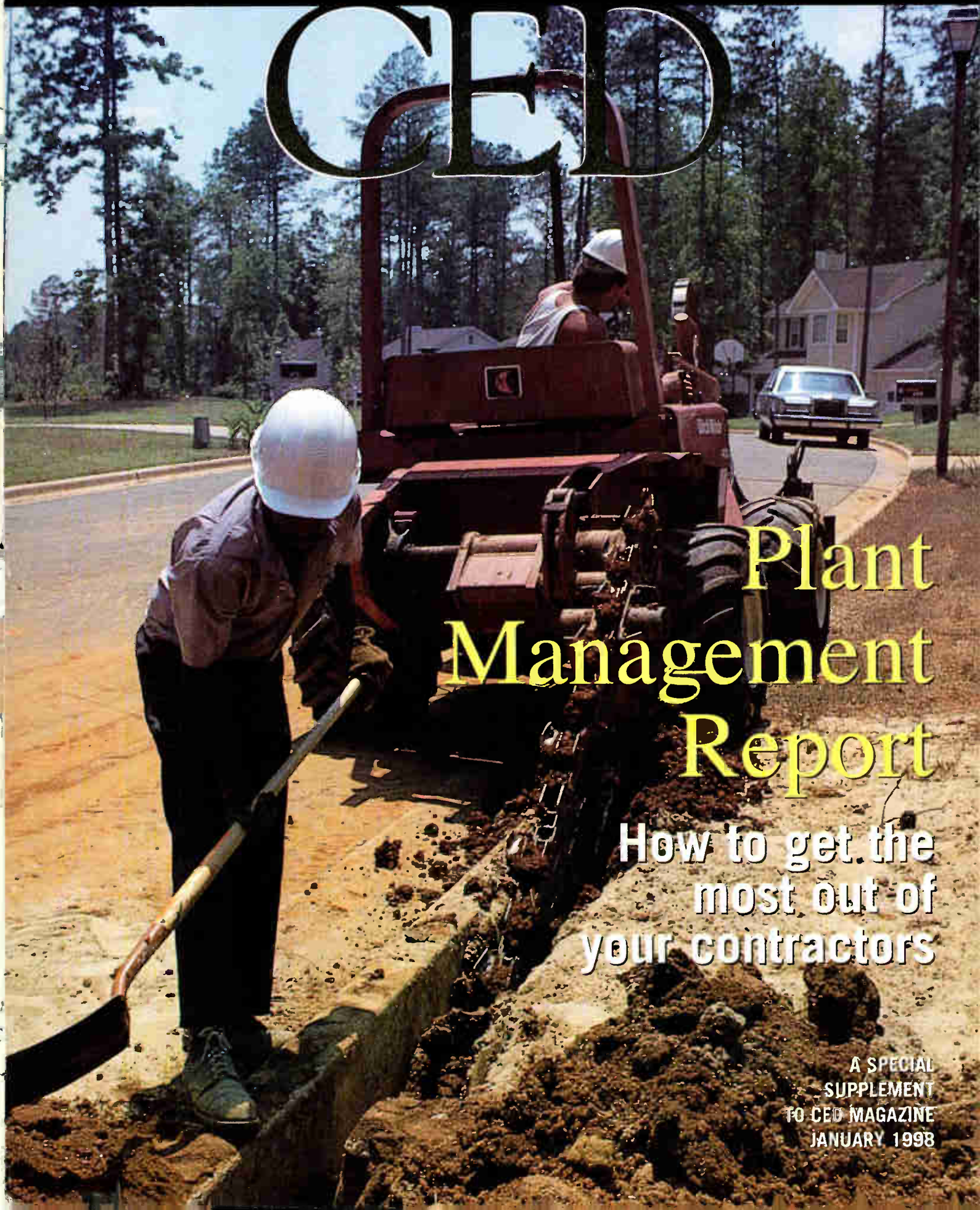

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Making a case for some home-grown talent

ROGER BROWN
EDITOR

The public doesn't understand how exciting this industry can be

I hear it time and again. From cable operators. From construction company representatives. From contractors. From consultants. They simply cannot find good, competent people to design, install, run and troubleshoot their networks.

It's a quiet crisis that runs below the surface of the industry, yet nevertheless threatens to capsize its future unless the issue is addressed. So far, the problem has been recognized; it's time to find a solution.

Attracting people to the cable industry really isn't difficult. On the other hand, when was the last time you asked a bright youngster what he (or she) wanted to be when he grew up, and heard this response: "I want to be a chief cable tech!"? Never.

In the past, it was relatively easy to rise through the ranks of the cable industry as it grew. Bright, intelligent, technical people who were willing to relocate as often as military officers do could simultaneously tour the country and be given increasing levels of responsibility.

At one time, the industry's most senior-level engineers weren't even college graduates. Not to mention names, but some of them are still out there. The only ivy these guys saw was on the outside of the houses in which they performed their first install. Now that the cable industry has matured, those days are long-gone, of course.

But what's stopping these huge media companies from home-growing some of their own talent? Awareness. The general public doesn't really understand how exciting this industry can be–and the opportunities it offers. I think it's high time that changed.

How many cable companies attend local job fairs? How many reach out to technically proficient students at local high schools or community colleges? With a small investment in education, a cable company could essentially recruit its future employees by offering internships and/or part-time jobs while the student is in school. The approach has worked well for some equipment manufacturers–I think the model could be successfully replicated for operating companies as well.

Think about it. Your company markets to the public in order to attract more customers. Why not market some employment opportunities to them as well? Get in touch with your local high school or college. Talk to the teachers. Address the students, showing them the type of opportunities that exist.

If anyone out there is already doing this, drop me a note. Perhaps others can learn from one's success. This is an exciting industry with plenty of opportunity for advancement. Let's tell the world.

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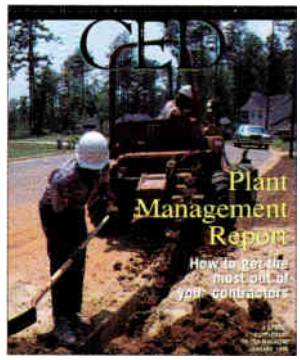

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Reader Service 302

Winning at cable contractor Jeopardy

By Craig Kuhl

In the sometimes murky world of contractors, relationship building and savvy planning can go a long way

For many cable operators who are now in the process of major rebuilds, upgrades, installations and costly maintenance projects, finding reliable, quality contractors and sub-contractors has become more than just a quick read through the classifieds.

The search process requires a series of checks and cross-checks by cable operators to ensure that the contractor has the credentials to do a quality job, and get it done on time. And conversely, that the operator has the resources to finish the job.

Not only has the search for quality contractors been a frustrating exercise for some operators, but once found, contractors who are not screened adequately can cost a company big dollars, and literally stall a project for weeks, or even months.

Ask any cable operator, and they will probably have at least one frightening story of a construction company using independent sub-contractors who were less than faithful to their jobs. While most construction companies are competent and have established on-going relationships with cable operators, there are a number of "phantom" contractors whose work is generally sub-standard, and who can wreak havoc with multi-million-dollar projects.

"There are lots of good contractors, but some will do well in certain projects, while others won't. It really depends on local supervision. That's what is critical," says Wayne Davis, vice president of technical operations for Jones Intercable.

"The problem we have as an industry is if a contractor is doing mapping, for instance, and after 500 miles you realize there's a problem. If you tell a contractor there's this much trenching and this much splicing, you're OK. If you don't, it will cost you in time and expense. Upfront, pre-engineering is critical. You need project management, and you have to QC (quality control) the QC," says Davis.

Controlling the quality of a project on-site is vital to the company's bottom line. Yet, controlling the initial design, engineering and the labor who will work the project is a top priority. Says Davis, "Sometimes there are lots of little contractors all over the place, and another system will hire the same bad contractors. We are building a database of qualified contractors who are available within the Jones companies. That way, we won't end up with bad experiences."

To prevent costly misunderstandings, most operators and construction companies agree that developing an on-going relationship with a stable of contractors is the key. With the explosion in rebuilds and upgrades occurring, a growing number of operators are establishing a list of dependable contractors.

"We have a list of contractors we use based on the type of work they said they could do for us, and we've recently sent about 30 bids to contractors for our 1998 projects," says Marwan Fawaz, vice president of engineering for MediaOne's Western Region.

"We get all kinds of contractors, from indifferent to high quality. And usually, the ones who underbid can't do the job for the cost they promised, and the quality

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Selecting a contractor:

Manpower considerations

By Mark Deckman

In an industry with so many changes and variables, there is one constant that has existed from the early days of cable through the present: that is, the dependency on contract labor to perform much of the work. Whether it be new system construction, rebuilds, installations, design or marketing, a fluctuating work load, combined with challenging deadlines, makes using contract labor a necessity.

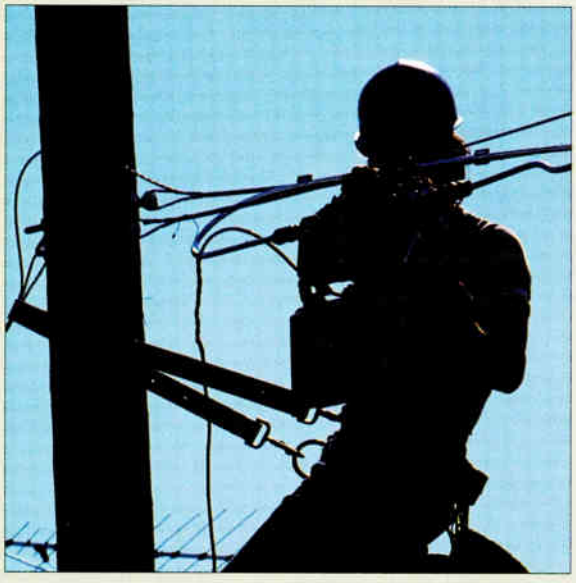
Historically, contractors have gotten a bad rap (albeit sometimes deservedly), but the majority of contracting companies are owned by serious entrepreneurs who face the same daily challenges as the cable operators. In many cases, the contractor faces greater challenges, as he is often brought in as the solution to the cable operator's problems.

The selection of a contractor for any job, whether it be short or long term, big or small, involves more than shopping for price. Once employed by a cable operator, the contractor becomes an extension of that company. They have direct contact with the public and the customers, work in high visibility areas, and often affect the quality of service provided. Considering this, the relationship should be more of a partnership and should be entered into only after sufficient research and due diligence.

Most seasoned cable managers are very capable of performing due diligence on a contracting company. A well-prepared RFP is the key tool in evaluating a contractor's potential ability to perform the job. The contractor's available resources, previous track record, and pricing structure typically are the

standard focus points in the evaluation. This article will focus on a major component of the contracting company's operation; that is, the utilization of independent sub-contractors, vs. employees, in their workforce. The reason this is so important, is the contract labor industry is currently under close scrutiny by two government agencies regarding the use of independent sub-contractors.

Using independent subs is very attractive to a contracting company because the independent sub-contractor provides its own insurance, tools, trucks and equipment. They also don't have payroll taxes withheld. These are huge benefits to the contracting company, because they don't have the expense of payroll taxes, employee benefits, or capital outlays for equipment. The company which uses employees obviously incurs these expenses and has higher operating costs.



The problem is that both the Internal Revenue Service and Department of Labor have launched very aggressive campaigns to eliminate the use of independent sub-contractors. It is primarily driven by the desire to have the contracting company withhold taxes because, historically, there has been a tendency by a large percentage of independent sub-contractors to under-report their earnings. Rather than pursue each of the tens of thousands of independent sub-contractors, these agencies have decided to go after the several hundred contracting companies who use them.

The approach of the two agencies is similar: they audit the contracting company, then notify it that they are reclassifying the workers as employees, retroactively.

In doing so, heavy fines and back taxes are assessed. Depending on the size of the company, this can easily amount to millions of dollars.

The contracting company then either fights it in court, or negotiates a settlement that typically involves drastically reducing the assessment, if the company converts all the workers to employee status. In other words, future compliance is the target.

The majority of companies are opting to negotiate a conversion, rather than get involved in a prolonged and expensive court battle.

What determines whether a worker is an employee or an independent sub-contractor is the degree of control and independence that exists. The following areas, if administered by the contracting company, are cause for reclassification from independent sub to employee status:

1. Training
2. Supervision
3. Providing uniforms
4. Work load quotas
5. Work location (same location)
6. Customers (works for only one).

Considering this, contracting companies are faced with the challenge of running their operation in a way that doesn't jeopardize their workers' status, while providing the level of service the customers demand. This compromise can lead to serious weaknesses within the contracting company and can cause their problems to become yours. A company that uses independent sub-contractors gives up much control in order to preserve that status in the eyes of the IRS

Continued from page 8

suffers. One of the things we need to do is build better relationships with quality contractors. We don't do a lot of that, and we need to do more," suggests Fawaz.

Davis concurs. "It really is a partnership with the contractor, and both parties must work together. When you work with contractors to build headends, they should know what to expect."

Knowing those expectations is critical to the contractor/operator partnership, and contractors face many of the same challenges–timing, planning, costs–that confront the cable industry. Once a contractor is comfortable with the scope and specifications of a construction job, however, the road to a successful project becomes much smoother.

"As a contractor, there should be a common interest, but we don't usually see that from the customer side," says Bernie Czarnecki, president of Cablemasters Corp., a leading construction firm for the cable industry.

Timing, geography and price are the key elements to any project, says Czarnecki. Yet, most operators and construction companies will say it's a trusting relationship that counts most. "Seventy percent of our bread-and-butter comes from anchor accounts. But we've been very careful in choosing our customers. We'll stick our necks out for them, but there needs to be a cooperative attitude. For instance, the customer should visit a current construction site and meet the employees," Czarnecki suggests.

Known quantities

Friendship Cable, which serves 82,000 subscribers through 130 headends and 5,000 miles of plant in Texas and Louisiana, is very familiar with contractor relationships, and uses a stable of known contractors for installations, construction projects, outside line maintenance, CLI leakage issues and outside sales. "Overall, we've had a pretty good experience with our contractors and crews," says Steve Lowe, regional vice president, Friendship Cable.

"We built half the 5,000-mile plant from the ground up, so we have some contractors who have been with us for 10 years, and we've been able to keep them busy for that long. They're prime contractors and the same guys locally," says Lowe.

Some, however, are less fortunate. Massillon Cable in Ohio, for example, is completing a full fiber rebuild, but the going has, at times, been difficult. "It's tough. Most of the crews doing the work are knowledgeable, but they're all from out of town, and keeping them motivated and focused is a challenge," says Neil Travis, plant manager for Massillon Cable. "They just want to get the job done, so they're not worried about how well they're doing the job."

The issue of supply-and-demand is not only in play for Massillon, but is a growing concern for a number of cable operators who are in the midst of rebuilds, or planning them. Adds Travis, "There are lots of

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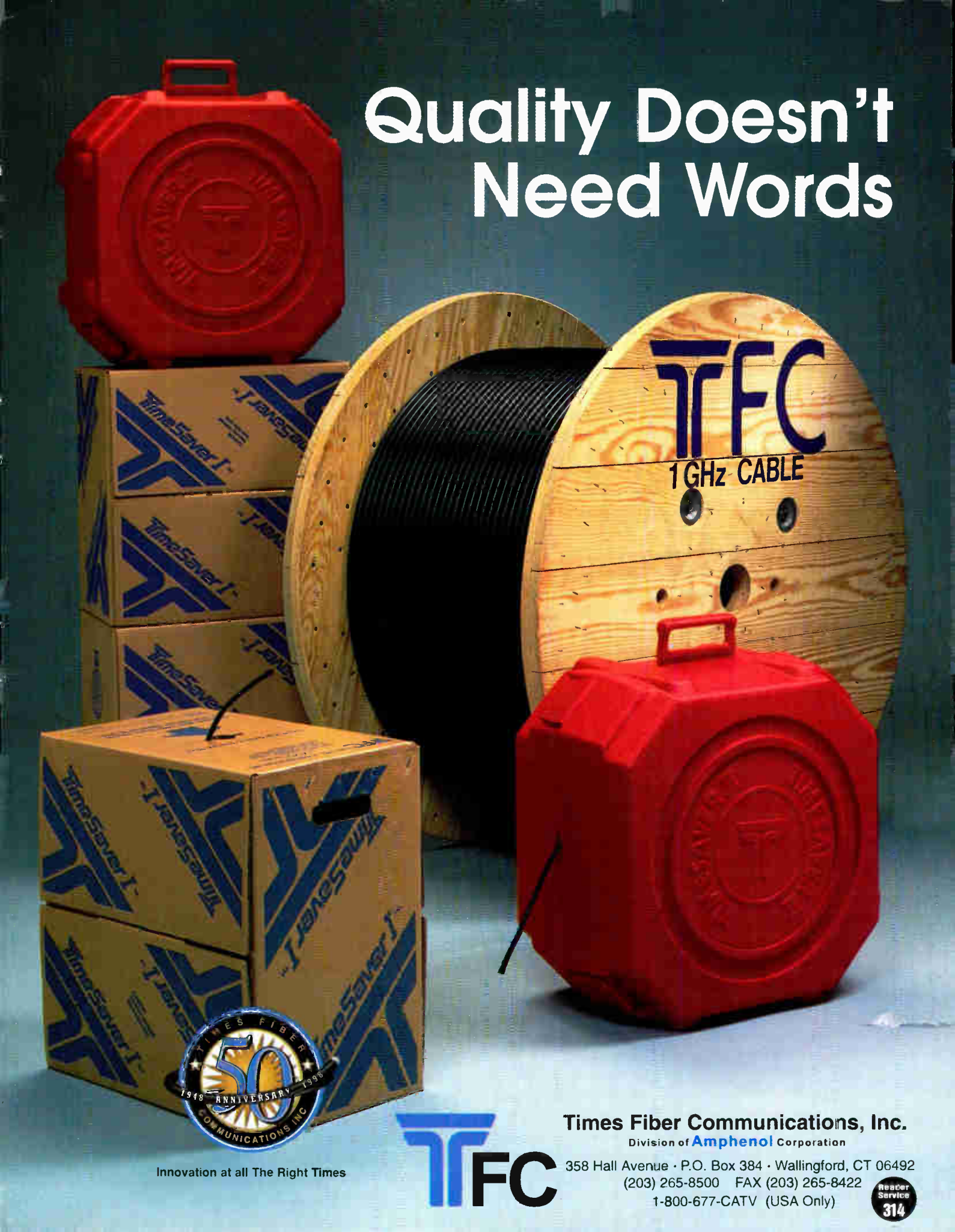

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and Department of Labor. As an example, independent sub-contractors who receive training by the company, will, in the event of an audit, be considered employees.

With this in mind, the contractor selection process should involve a great deal of dialogue regarding the issues of training and supervision. It should include an indepth look at the training manuals, documentation and the program itself. Keep in mind, most contracting companies that utilize independent subs walk a tightrope when it comes to training, in an attempt to satisfy both sides. This usually results in a less-than-adequate training program.

When interviewing a contracting company that uses independent subcontractors, there needs to be serious dialogue that addresses the following:

1. Have they been audited in regard to the use of independent subs, and if so, what is the status? Careful consideration should be given to any company which hasn't been challenged or is presently under investigation. Incidentally, both agencies are completely independent, and undergoing an audit by one, doesn't mean you are safe from the other.

2. How does the company address the issue of training? This can best be answered by reviewing their training program, including manuals, documentation and training schedules, to make sure they actually have a program in place.

3. In light of the campaigns by the IRS and Department of Labor, does the company have plans of converting to employee status in the future?

4. Does each sub-contractor carry an individual worker's compensation policy, or are they covered under the contracting company's? In either event, ask for the company's worker's compensation experience modification rating.

This number is a direct reflection of the claim history, and is another way of evaluating their training program, in terms of safety.

Why should the cable company care about the classification of the contracting company's workers? There are several reasons:

1. A company that is under investigation, or likely to be audited, may be seriously impaired in a manner that affects the work they are performing for their customers. The outcome of such an investigation could impact their future as a business entity, and could conceivably become management's top priority, diverting their attention from your needs.

2. In many instances, the customers of the contracting companies are involved in the investigation as well.

3. Most cable companies don't want any unwanted attention from government agencies through the process of osmosis.

4. The contracting company may be forced to restructure its business while in the middle of a project. The restructuring would increase its cost of doing business. This could bring unwanted rate increases your way, or cause you to make a change in contracting companies in midstream.

5. Contracting companies may go soft on training and supervision in order to protect themselves in the event of an audit. This may exist in a very subtle manner, because many are aware of the conflicts and have hired their own consultants to help them "walk the tightrope."

6. Both the IRS and the Department of Labor have openly targeted the cable industry for investigation and will eventually audit all contractors.

A contracting company that has undergone an audit and been granted safe haven status, or a company that uses employees only, is a cable company's safest bet. Companies that have not been audited or are under an audit presently may bring many problems to the table and should be looked at very closely.

The bottom-line comes down to cost. Generally speaking, the company that uses independent subs will offer the lowest rates; however, there may be some trade-offs in quality or supervision. The company that uses employees will have no reservations about training, supervision, incentive programs and uniform appearance. They may also attract a more mature, seasoned worker because they are able to offer benefits and long-term job security.

In closing, because of the potential impact on the cable company, the issue of independent sub-contractor utilization should be given a great deal of scrutiny and should be a major factor in the selection process. **PMR**

rebuilds, and the demand for splicers, linemen and others is pretty high."

The depletion of qualified contractors and crews is partially the result of the telcos' entry into the cable industry, and their need to dip into the dwindling pool of splicers and other skilled workers. "For years, we grew our own stable of contractors and would try to keep them busy. But about five years ago, the telcos began their entry into the business and took many of the contractors with them. We're now re-kindling some contractor relationships," says Mel Jenschke, senior vice president, engineering for TCA Cable.

The growing demand for these workers is real, insists Czarnecki, and operators who are planning rebuilds, upgrades and other construction projects should take note. "Next year will be a banner year for construction in the cable industry. Maybe the biggest year yet, with the addition of Internet access, digital and data. The demand will outpace the supply. Operators need to recognize that their timeline is now, because they might not find anyone later," he says. And dependence on "labor brokers" can be dicey, especially for projects with little advanced planning.

Lowe

According to Jenschke, TCA subscribes to the "good-relationship-with-your-contractor theory," and won't hire a "labor broker" to fill its contracting needs. "We want a company with people working for it. That's the biggest stumbling block if you work with labor brokers–loose ends. We want our own supervisors and employees working with the contractors."

TCA has divided its company into five regions, which allows it to better supervise construction projects by using its own management teams. "We believe in grooming contractors and maintaining them within our management regions. We have a regional engineer in each region, and that's where the buck stops," Jenschke adds.

Front-end investment

Most operators and contractors agree that stopping the buck, or efficiently using it for a construction project, relates back to a strong relationship between the two parties, along with prudent long-term planning. "All contractors are not created equal. Some may come in at a lower price, but it may cost the project more in the long run. It's frustrating when an MSO looks at price instead of quality. We mop up a lot of jobs because of that," says Czarnecki.

Czarnecki suggests that MSOs get involved in the design and planning stages from the very beginning,

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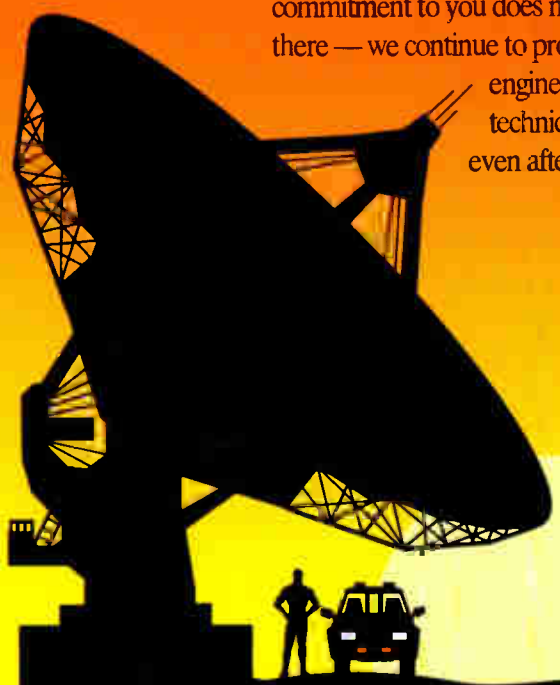

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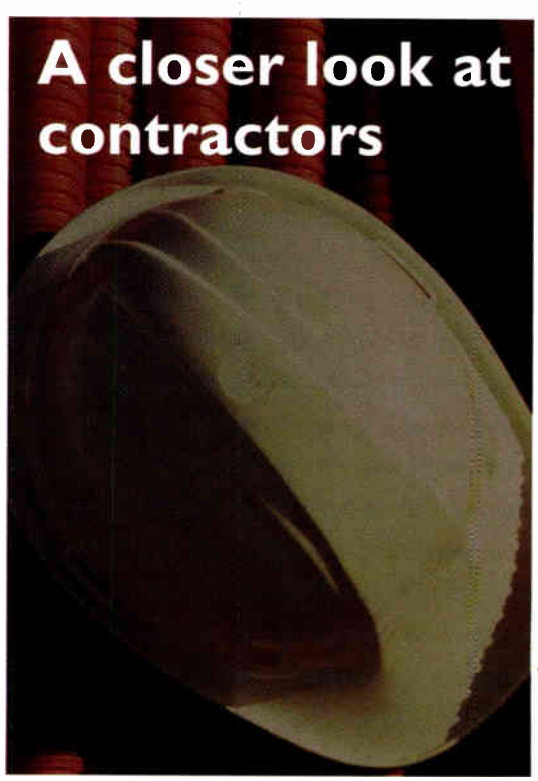
and most importantly, provide a realistic timeframe to complete the job. The alternative, he says, is panic. "Some MSOs do a great job in detailing project specifics like anchoring, grounding and so on. These pre-project specs are really helpful to a contractor. If you brought 10 crews to a project and there's no fiber, what do you do? That's where a good relationship helps. You could move five crews to another project."

To avoid the serious consequences of poor planning and a dysfunctional relationship with contractors, Jones' Davis suggests several steps for operators in securing a quality contractor. Jones is currently embarking on its most ambitious rebuild to date. "We have hundreds of millions of dollars at risk, so before we start, we've done lots of work to qualify good contractors," says Davis.

He suggests the following questions should be asked before hiring a construction company:

- Check the construction company's financial records. Who owns the company? Is it a partnership or a proprietorship? Many times, a bad contractor will re-appear later with another name.
- Does the company have the wherewithal to do the project? A contractor must have a payroll system in place to handle a large project.
- What does the company do, and what are its skill sets? Are they good at MDU or at installation?
- Does it have the right equipment?
- Does it have a facility in place for accounting and other administrative functions?
- Is the company already tied up with large projects that will stress its resources?

Jones, according to Davis, uses an 11-page pre-qualification form with contractors. Once bids are sent to contractors, the company interviews the applicants on-site, with safety a major factor in determining which contractor to use. "We've had some bad experiences with the quality of work of some contractors," says Davis. "And the difference between good and bad contractors is how they fix the prob-



lems. When you bring the problems to them, do they respond?"

Airtight contracts

The initial contact, and contract, with a contractor is critical and will eliminate many of the problems that could occur later. "You must have a good contract, because the responsibility and accountability all flows up to the company," says Mike Heinze, vice president, new business development for Horizon Cablevision.

"We've had projects done improperly, but the contract protected us." In one believe-it-or-not case, Horizon was sued by the owner of a prized donkey. "The owner said that her prized donkey had suffered a miscarriage due to the activity of new fiber being installed. The case didn't go anywhere, though," says Heinze. Nevertheless, the incident shows that operators can never be too careful.

The use of independent sub-contractors by primary contractors has also become a sticky issue for both cable operators and contractors. Contractors who use independent sub-contractors must deal with many of the same issues as cable operators.

Similar to the cable operator/contractor relationship, they face issues such as liability, training, supervision and more as part of the territory which comes with using sub-contractors.

Mark Deckman, an industry observer with ties to both the cable and the construction industries, suggests that when interviewing potential contracting companies, cable operators follow a few notable rules to ensure an open and honest dialogue (see related story starting on page 9).

As demand for contractors and sub-contractors grows, cable operators nationwide will be faced with critical decisions regarding construction projects and the use of contractors to complete the jobs. To accomplish this cost-effectively, experts from both industries agree that good relationship building will go a long way toward doing the job right. **PMR**

Third-party training–A key to staying ahead of the competition

Empowering employees to manage technological change

By James Careless

Never before has the cable TV industry been under such pressure. Pushing from one side is competition: DBS, wireless cable and the telephone companies, all of whom would dearly love to take a big slice of cable's business. Pushing from the other is technological change: the demand to upgrade one-way video distribution systems into interactive networks capable of shuttling digital video, telephony and Internet services at ultra-high-speeds.

Poised precisely in the middle are the industry's engineers: everyone from the newly-hired installer right up to the vice president in charge. They're the ones who are expected to cope with change, to miraculously upgrade their skills to include two-way network management, fiber optic network design and maintenance, and improved customer service.

Of course, the only way to keep up is through training, not just for new employees, but for every single member of the engineering team. That's why the cable industry is continually on the lookout for more and better third-party training support. Thankfully, they seem to be getting it.

NCTI: The training Godfather

It's impossible to consider the issue of "outside" cable training without thinking of the National Cable Television Institute (NCTI). Established in 1968, the Littleton, Colo.-based institute bills itself as "the largest independent provider of broadband communications training in the world." Certainly the size of its enrollment seems to bear this claim out: currently, "in excess of 13,000 students" are taking courses with NCTI, says Dean Don Oden. Over the years, more than 130,000 people have enrolled in its series of self-paced courses.

Today, the NCTI offers six of what it calls technical "career path" courses. Designed to take the novice and train him to climb through the ranks of cable TV engineering, the courses are "Installer," "Installer Technician," "Service Technician," "System Technician," "Fiber Optic Technician," and "Advanced Technician. Considered from a cable system's point-of-view, NCTI's curriculum starts the student at the customer premise end of the network, and works them back toward the headend.

"We allow one calendar year to complete one of our courses on a self-study basis," says Oden. "Hence, the full career path course load could end up taking several years, enhanced by hands-on training provided by the employer." (In addition, NCTI offers "special topic" courses on specific subjects such as testing and measurement, and non-technical courses on customer service.)

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Objective knowledge is just as marketable as hardware

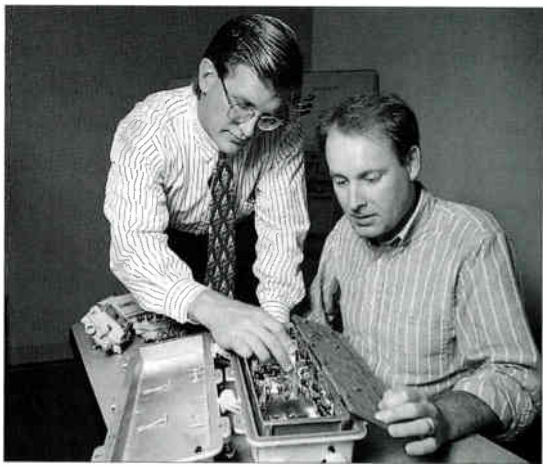
That the NCTI courses make the job of in-house training easier is without question, according to Eric Johnson, a technical trainer with TCI in Grand Rapids, Mich. For him, NCTI course materials are "so, so, so important" in ensuring that his people learn how to do their jobs right the first time. "They break the subjects down into bite-sized pieces," Johnson says of the courses. "I use their material in my classes to teach some modules, and they do an excellent job for me."

Vendor support

Traditionally, equipment vendors have tended to provide training solely for their own products. In addition, that support has sometimes been skewed in their favor, so that students haven't been sure whether they're getting objective facts in class, or just a sales presentation in disguise.

However, in the cable TV industry, a number of companies have realized that objective knowledge is just as marketable as any piece of hardware. That's why they're playing an increasing role in providing training for cable MSOs.

One of these entities is the Scientific-Atlanta Institute (SAI). Established in the 1950s, "five years ago, we recognized that our customers needed more than just product training," says Patti Kitchens, SAI's customer education manager. That's why SAI has responded by transforming itself into a broad-based educational company.



Today's technical training includes not only hands-on instruction, but also, the transfer of networking knowledge. Photo courtesy of S-A.

A case-in-point: SAI has just announced a comprehensive reverse path training program aimed at helping

cable engineers get a firm grasp on two-way network design and implementation. For instance, in the first two-day course, "Reverse Path Implementation," students learn how to install, test, align and troubleshoot reverse path networks. (The courses will be offered in Atlanta starting in 1998, although SAI courses in general can also be staged at customers' sites.)

Another vendor committed to training is NextLevel Systems (formerly General Instrument). It has developed what the company calls its "NETadvantage" suite of training programs. Like NCTI's and SAI's technical courses, these have all been accredited by the Society of Cable Telecommunications Engineers.

Covered in the NETadvantage suite are subjects such as "Broadband Communications Network Overview," "Headend Maintenance and Performance Testing" and "Design Basics." Through topics such as these, the company hopes to provide a curriculum that supports "both NextLevel-specific content as well as general industry training," says Chuck Dougherty, NextLevel vice president of customer accounts. "That's why we've developed a single training organization that supports everything from traditional plant operations to advanced digital technology and service." Like SAI, NextLevel offers either on-site training, or classes located at its new Horsham, Pa. campus.

Training for the digital age

Without a doubt, the biggest challenge for cable engineers is technological change. That's why an MSO like TCI has revamped its curriculum to deal with the new technology, starting with a course it calls "Cable 101." "This course takes the students from every level of the operation through past, present and future technologies," says Mike Mason, TCI's regional director of customer fulfillment and operations in Cumberland, Ill. Having a mix of novice and experienced technicians in the class is important, he adds, because "if you saturate a class with students all at one level, you limit yourself to that knowledge base. That's why we like to draw from all of our systems, bringing in people from the newest installer to general managers."

Cable 101 is supported with teaching staff from SAI, and it's just one course in which Scientific-Atlanta is pushing forward with digital content. In fact, "primarily, we are developing courseware that supports the emerging digital video system," says Kitchens. For instance, SAI has courses covering the ins and outs of converting an analog plant to digital, she says. "In the higher level course, we explore the different kinds of reverse switching technology that exist, and the different transmission systems that are coming onto the market."

For even experienced cable engineers, this is def-

Effective training has to include the human factor

initely new material, and it reflects how the key fundamentals of the job are changing. "There's a definite change in what they need to know," says Kitchens. SAI isn't alone in this. NextLevel is also "trying to take industry engineers used to dealing with RF issues, and train them on digital issues," says Dougherty. "Basically, we're trying to evolve that group into networking technicians," he notes.

Meanwhile, the NCTI also believes that "change is the name of the game," says Don Oden. That's why the institute insists in providing its text materials in ring binders, because "we're continually updating our curriculum." Whenever new material comes out, course graduates can acquire it from the NCTI. In this way, they can keep on top of change, and have updated reference materials close at hand when they need them.

One thing is clear: everyone in the training game knows that the key to success is by keeping up with change. For cable engineers, this means continuing technical education. For the NCTI, SAI and NextLevel, it means constant course revisions.

The human factor

As cable engineers improve their training skills, they become more valuable employees. However, there's a danger in this, because what makes them more valuable to their MSOs, also makes them more attractive to non-cable employers.

What really makes the difference is that today's technical people are learning more than just installing coaxial drops, which has never been much of a transportable skill. Instead, they're gaining the kind of networking knowledge that is just as useful in any large corporation, as it is for two-way cable plants.

This is why effective training–whether from a third-party or in-house source–has to include the human factor. It has to take into account what the students want, as well as the knowledge the company needs to get across.

To succeed on this front, trainers have to treat their students as people in their own right, says TCI's Eric Johnson. "You can't run them in and out of the class like you're running an assembly line," he says. "You've got to remember that you're training individuals, each of whom have dreams of their own. Work with that–work with their needs–and you'll produce better-trained, more motivated employees."

Such effective training instills loyalty, and loyalty matters, particularly at the customer service level. And make no mistake: although the person in the field may be called an "installer," he's as much a customer sales representative as the actual CSRs themselves. That's because it's these people whom the public sees, and who give them the right-or-wrong impression as to what an MSO is all about, says Johnson. To succeed for the company, each engineer has to know not only what to do, but how to do it in a way that keeps customers happy. As well, "They've got to know how to do the right thing right, the first time," says Johnson.

"That's why training is the true lifeblood of this company," he adds. "If we don't train, we die."

Pulling it all together

Taken as a whole, it's easy to see why training is so vital to the cable industry's well-being. It also explains why third-party companies such as the NCTI, SAI and NextLevel are also important, because their only business is to stay on top of training change for MSOs, who are increasingly too busy to do the job alone.

The bottom line: as technology advances, so will the need for more and better training for the cable TV industry. There's simply no way around it. **PMR**

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Telecrafter Products Circle # 301, 317
Supplies drop installation products for CATV, DBS, and wireless operators, single and dual cable fastening products, identification tags, residential enclosures. p. 4, 20

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Lindsay Electronics Circle # 310
Our revolutionary new technology creates 1 GHz communication amplifiers, passives, taps, and subscriber materials to solve system problems before they become subscriber problems. p. 24

Times Fiber Communications, Inc. Circle # 314
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ITOCHU Cable Services Circle # 303
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TeleWire Supply Company Circle # 315, 354
TeleWire Supply is a leading nationwide distributor of products needed to build and service a broadband communications network. p. 40, 31

Sprint North Supply Circle # 355
Sprint North Supply's Materials Management Services include Engineer, Furnish & Install, Vehicle Provisioning, CPE Fulfillment, Project Management, and Model Programs. Reduce your cost to compete. p. 35

Fiber Optic Equipment

Amphenol Circle # 352 p. 27

Headend Equipment

Dawn Satellite Circle # 351
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P.K. Technology Circle # 307
p. 17

Riser-Bond Instruments Circle # 309
Manufacturer of TDRs with unique and exclusive features to locate and identify faults and conditions in metallic two conductor cable. p. 23

Trilithic, Inc. Circle # 350
Trilithic manufactures test equipment for the CATV and LAN industries and components for aerospace and satellite communications. Key products are SLMs, leakage detectors, and a comprehensive line of return test equipment. p. 39

Wavetek Corporation Circle # 302
Manufactures equipment for CATV, telecommunications, wireless, and general purpose test. CATV equipment includes signal level, analysis, and leakage meters, sweep and monitoring equipment. p. 6-7

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Striving for return path perfection

Operators combine skill, ingenuity and an increasing amount of new technology to establish and maintain a viable return path

By Michael Lafferty

In a perfect world, everyone would have a high-speed cable modem that would take them on blindingly fast forays into the Internet ether virtually any time they wanted. This transparent technology would revolutionize how customers interact with each other, their local communities, and the world as a whole.

Unfortunately, that level of two-way data perfection is a long way off.

In essence, the return path is a work in progress. But as operators rush into the data void, they're learning a lot, and manufacturers are rushing along with them to develop the tools needed to make return path activation and maintenance, if not a snap, at least a heck of a lot easier than it used to be.

Getting up-to-speed

One of the country's largest, if not *the* largest, deployments of a high-speed data service is taking place in the greater San Diego area. That's where an aggressive Southwestern Cable, a division of Time Warner Cable, has poured on the steam to bring its 225,000-subscriber system up to return-path snuff. The company reports it's currently delivering its high-speed RoadRunner service to 6,300 subscribers.

Trilithic's SSR-9580 Field Unit

Jim Smith, plant maintenance supervisor for Southwestern, says his learning curve began almost immediately when he began his rebuild, and it continued on through the return plant activation. "We went from hub system to hub system building this thing as fast as we absolutely could," says Smith. "During the retrofit, we installed all the proper pads and equalizers per the design for forward and return path. So we headed that way from the git go."

After Smith and crew built each node, they rough balanced the return, opting to come back later to sweep the return path.

"One of the things we learned was to make sure our return path receivers were properly aligned, so that everything from the return path transmitter to the receiver was properly balanced, says Smith.

"We used a modulator and pumped about 40 dB into this thing at 37 MHz. And considering the test point loss, and the coupler loss and so forth, we inserted that signal at the return path common test point at the node. Then we measured at the return path transmitter and padded for 25 dB at that point. We would also balance the gain at the return path receiver to 25 dB.

"So, we know we had a good telemetry starting point with our sweep signals, and then went ahead and got a reference at the node and basically swept the return path. We're using an Augat amplifier and an Augat node, the Augat mini-node. And there aren't any controls for adjusting gain or tilt. So, there's not really any sweeping per se in the forward, or really in the return. It's basically more of adjusting for unity gain in the return. And adjusting forward levels and padding and equalizing it appropriately. That's what our sweep program consisted of. And I basically consider that the return plant activation phase of our construction project."

Problems are inevitable

"We've run into numerous problems in the return path," says Smith. "We've filtered everything using high-pass filters. We're hoping everything we're seeing is plant related. Obviously, there's an MDU here and there that may not be filtered 100 percent. But, for the majority of it, we're looking at plant-related problems.

"Initially, we would look at an analyzer off of a group. At the combining at the hubs, there's a test point

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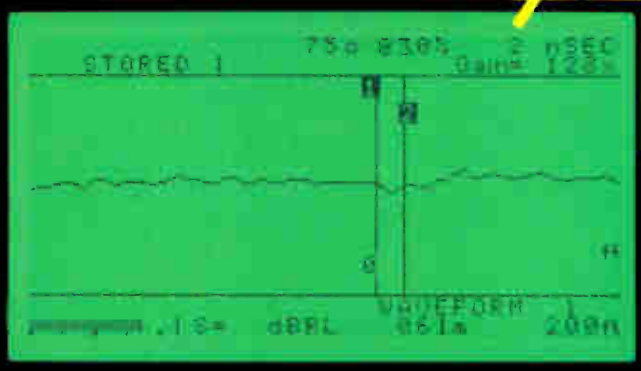

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I could use to take a look at all the nodes as they're fed into a router for our modem service. We've grouped five nodes together into each port on the router."

"As far as craftsmanship goes," says Smith, it's really important how the thing is put together. You figure if the bulk of your equipment out there is cable and connectors, it's going to be a big part of where the failures are if it's craft-related. So, it's really important that connectors are put together properly.

"We're also using one of the extended reach type cables now. It's got a thinner shield, and it wraps really nicely in a pedestal."

Up until recently, Smith and his crew have been using the time-tested method of setting up an analyzer in the headend and matching it with a TV to track down trouble. Not only is the method awkward and service destructive, it stretches his field staff's skills and points to another skill his staff is going to have to acquire to keep data moving across the system, he notes.

"I've got an analyzer in each hub," explains Smith, "connected to either the return path receiver of the node in question or the group in question. We utilize an analyzer with a modulated output and re-insert that in the system so that it can be caught back out in the field.

"(The tech) simply isolates it by pulling return path pads. If he has a bridger leg or whatever he's got a problem on, all he has to do is break service and see if that problem goes away. If it does, he knows that he's got to get in a truck and do some troubleshooting. Then it's just a process of isolation. But, it's a destructive test, because you have to break service to actually do this."

Smith says that while his headend technicians have well-developed analyzer skills, the field techs, who he reports are some of the best-trained he's ever worked with, don't have similar analyzer skills. He's hoping to correct the situation with more training. But, he says, with data service spreading throughout his system, he sees another area where his crew needs to expand its testing skills.

Tektronix' RFM151

"In addition to the analyzer," says Smith, "the other piece of test equipment we're going to have to get a lot more familiar with is the laptop.

"If a guy calls up and says he's got a problem on Cinemax and verifies it at the tap, and I roll out, the first thing I'm going to do is connect my TV set to the tap and verify that the

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problem is on my plant. and then start troubleshooting.

"I don't have the capacity to do that when the subscriber's complaining of packet loss on his data system or PC. The first thing I've got to do is get a test modem and hook it up to my laptop, and start doing some ping testing. I think with any data service or system, whether it's something like RoadRunner or maybe even IP telephony, that laptop is pretty much imperative."

Smith reports he and his staff are in the process of upgrading their testing techniques and equipment. "Instead of buying a $40,000 modulated output analyzer for every hub site or every tech we have on staff," says Smith, "we've gone with the Trilithic product, which is a basic return path analyzer that has the ability to have multiple inputs. With it, you've got eight ports per transmitter, and you can select which port you want to view via the handheld unit in the field."

Return path sampler

While the list below is far from complete, it gives a good idea of the growing amount of technology available for return path activation and maintenance. (All prices are approximate and subject to change.)

Company/equipment	*Price range*
Avantron Technologies	
AT2000R Field Spectrum Analyzer	*$10,000-$11,000*
AT2000HM Headend Monitor	*$7,000-$8,000*
Electroline Equipment Inc.	
ClearPath Module CPM-1	*$150*
ClearPath Test Point Selector (TPS)	*$3,000*
HP Calan	
3010R Remote Sweep/Ingress Analyzer	*$6,070*
*3010H Headend Sweep/Ingress Analyzer**	*$6,070*
*(*forward/reverse sweep in same headend box)*	*(+$3,000)*
Tektronix	
Signal Scout RFM151 Portable RF Analyzer	*$2,350*
2715 Cable TV Spectrum Analyzer	*$15,900*
Trilithic	
9580 SST Headend Unit	*$2,495*
9580 SSR Field Unit	*$1,495*
Guardian RSVP Return Path Evaluator	*$395*
Guardian IsoMeter Return Path Shielding Tester	*n/a*
Wavetek Corporation	
Model CLI-1750 Combination Meter	*$1,500-$2,000*
Model LST-1700 Signal Transmitter	*$1,500-$2,000*
HCU1500 Modular Controller	*$500-$700 per test point*

Oh, Canada . . .

Meanwhile, north of the border, one of Canada's more aggressive operators is supporting and expanding its two-way services with an addressable noise location system. Videotron Ltd. reports it passes between 400,000 to 500,000 homes with two-way activated plant and plans to boost that total to nearly 900.000 by the end of next sumnier.

"When we started," says Yves Picard, director of new product development for Videotron, "we didn't have any type of bridger controller. And the only way we could do anything was (to) disconnect each distribution line to see what the effect will be at the headend. It became so complicated, it doesn't make any sense to maintain the plant like that.

"You have to have something automatic. because when you have ingress, you need to find exactly which branch is defective and try to isolate it."

Picard says they don't generally use filters, except in those cases where they can't get into a home to correct a problem. Instead, he deployed Electroline's ClearPath system to assist in ingress control and resolution.

"We have one ClearPath unit for approximately 125 to 150 homes. We've set up 1,000-home cells. It isolates the distribution line from the trunk, and that's good enough for what we have to do now. And we have a process with a Calan 3010 where we're sweeping each cell on a regular basis.

"So we're using an addressable tap, but in the reverse. Each cell is connected to one of the outputs, usually. And the input goes to the Calan, and we're sweeping all the cells each day."

Once the system is in place and daily sweeps have begun, says Picard, ingress occurrences are fairly low, rather predictable and generally quickly resolved. "We might (typically) have two or three cells a day where we could have problems," says Picard. "It's a lot better than we had originally expected. In fact, we combine around 10,000 to 12,000 homes for each return on the cable router for high-speed Internet.

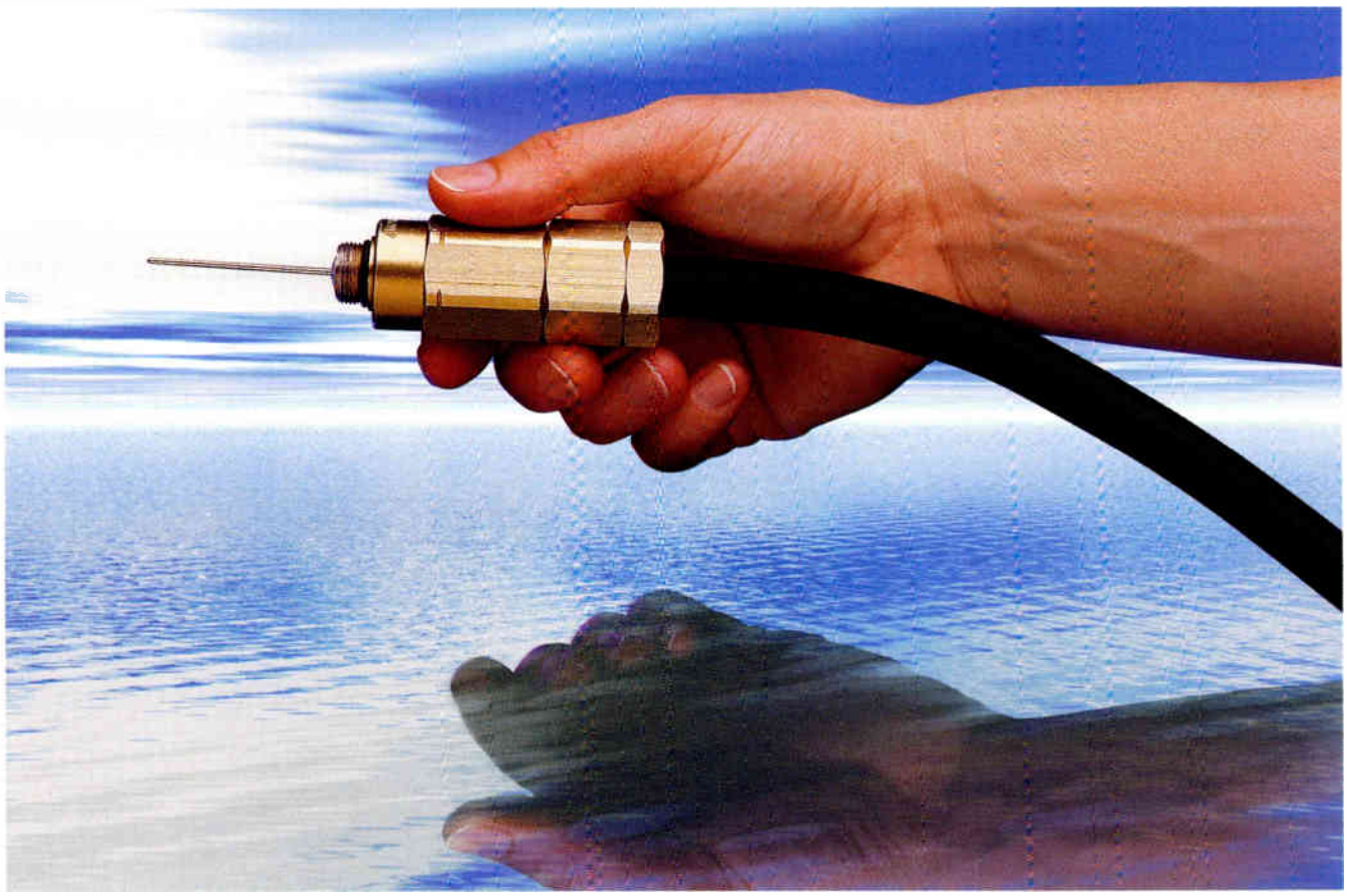
"We're able to isolate the worst part and send people there to check all the connectors and other things with all types of tools like detectors. They can be very fast in doing that. And most of the time that fixes the problem. Because after a rebuild, there's always some loose connectors."

Just the beginning

While return path activation and maintenance, as far as the industry is concerned, is still in something like its crawling stages, there's a wealth of experience being quickly compiled by a host of operators. At the same time, more and more manufacturers are taking the lead in developing new and more cost-efficient test equipment and systems aimed at the return path (see figure).

With a little luck and a lot of work, it may not be long before return path activation and maintenance is a mature "science" that's not only well-established, but taken for granted. **PMR**

No Reflection



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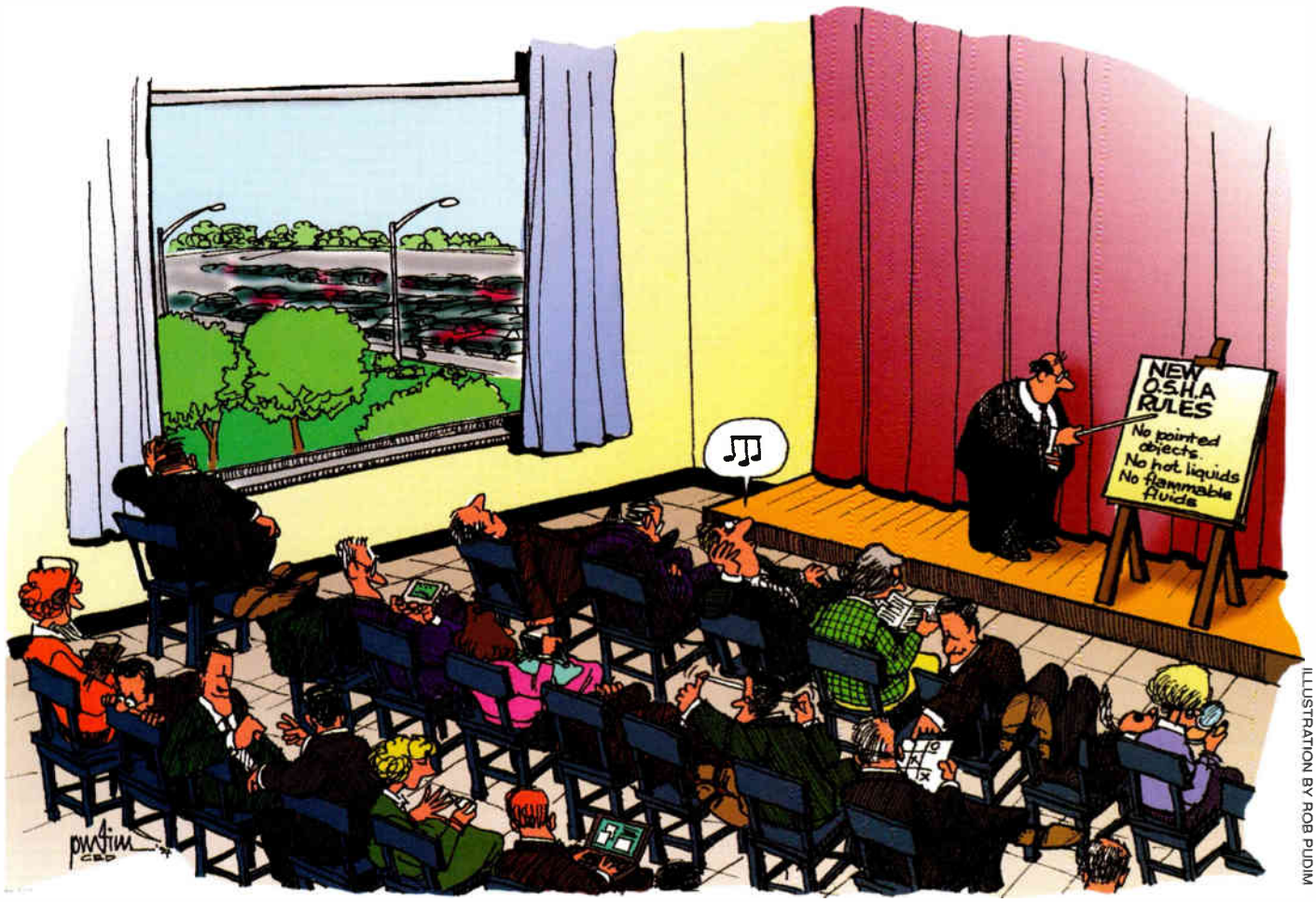

ILLUSTRATION BY ROB PUDIM

How to have successful meetings

10 tips for making your next gathering more effective

By Dave Wiggins, Human Resources Consultant

One, two, three. YAWN! Inefficient, unproductive meetings may be the single biggest time waster in both business and government. In one poll, 90 percent of managers said half the meetings they attended were either unnecessary or a complete waste of time. While nobody loves them, meetings are an inescapable part of the modern workplace. For most, attendance is often mandatory.

Do you have meetings often? If so, conduct an anonymous poll of those involved and ask them a simple question: "Are most of our meetings necessary and productive, or are they usually a waste of time?" You may be surprised by the response.

Meetings are quite costly in both money and time. For example, if eight employees at a company meeting earn an average of $30,000 per year, and they meet for 90 minutes, the cost of this little assembly is about $180 in salaries, plus the expense of transportation, meals, sending out memos, faxes, etc. Of course, other tasks go undone while the attendees are

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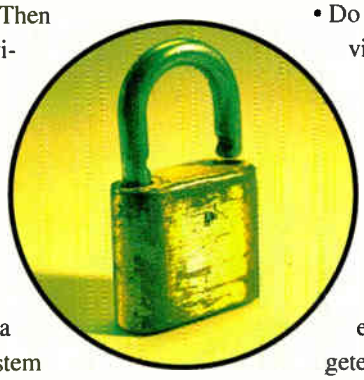

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CABLEfile

The meeting that appears essential Monday sometimes loses its urgency by Thursday–so cancel it!

talking, listening and being bored to tears. If a meeting is to take place, it should be both necessary and effective, or it should not be held at all. Here are some tips and techniques to make your meetings more productive.

1) Know where you're going. What do you want to accomplish between the beginning and the end of the meeting? What is the purpose? You should always have a specific, clear objective whenever you participate in a meeting; i.e., come up with a plan of action, brainstorm a long-standing problem, educate, inform, etc. Whatever it is you want and need to accomplish, make sure you, and everyone at the meeting, are clear on why you are getting together. Meetings without a clear purpose are meetings that become a waste of precious time.

2) Have a set agenda. The cause of failure in almost every endeavor comes from a lack of thoughtful planning, and meetings are no different. Put together a simple outline before everyone arrives, and stick to it. List all of the topics you need to discuss and the amount of time you will spend discussing each issue.

3) Limit attendance. Meetings get less productive as the number of attendees increases, so be selective when choosing who will attend. Also, ask yourself if it's really necessary for everyone to stay through the entire session. If not, have part-time participants who can come and leave without staying the whole meeting.

4) Stay focused on the subject at hand. Meetings are always more effective when a leader controls the direction of the meeting and keeps everyone focused on the agenda. Even the best-intentioned participants will start discussing topics unrelated to the issue at hand, and an effective meeting leader will politely stop such digressions quickly.

5) Be prompt! If a meeting is scheduled to begin at 8 a.m., start at 8 sharp, not at 8:05 or 8:10. Some people have a bad habit of arriving late, and to make those who arrive on time wait for those who do not is both unfair and inconsiderate. When people know that your meetings start promptly, they will arrive on time more often. Be punctual and begin every meeting on time, every time!

10 steps to great meetings

1. Know where you're going.
2. Have a set agenda.
3. Limit attendance.
4. Stay focused on the subject at hand.
5. Be prompt!
6. Have a deadline.
7. Schedule intelligently.
8. Stand and deliver.
9. Heaven (and everything else) can wait!
10. Kill it.

6) Have a deadline. Meetings should not only begin at a precise time, but end on time, too. Time limits create a sense of urgency, and meeting participants will usually react by concentrating on the issues at hand, avoiding idle chatter, etc. Deadlines will encourage the attendees to be more efficient and effective, especially as the end of the meeting approaches.

7) Schedule intelligently. The best times for meetings are at 11 a.m. and 4 p.m. People are more likely to focus on the subject at hand before lunch and around quitting time. However, try to avoid scheduling meetings right after lunch. Most people experience an energy dip right after a meal, and the larger the meal, the less their ability to pay attention and participate.

Also, the best time to schedule a future meeting is at the end of one. Rather than making phone calls and sending letters announcing an upcoming meeting, set a time and place to meet again while everyone is together.

8) Stand and deliver. If you want to have a brief, "no-fluff" meeting that lasts no more than 10 minutes, do not seat yourselves. Have everyone stand during the meeting. There is a correlation between comfort and the length of conversations, and standing up is less comfortable than being seated.

9) Heaven (and everything else) can wait! Never, ever permit an interruption during a meeting unless there is an emergency. Every minute the meeting is disrupted is a minute lost for everyone in attendance.

10) Kill it. Is your next meeting really necessary? The meeting that appears to be essential Monday sometimes loses its urgency by Thursday. If the need for a meeting does not seem as great as it did when you originally planned it, please do everyone a favor. Cancel it! Remember, no one likes meetings, and they will not be angry at you for calling it off. **PMR**

About the author

Dave Wiggins is a speaker, trainer and consultant on issues of management, sales, workplace innovation and customer retention. He is the author of *Time Management for Busy People: The Crash Course,* and two other books on business issues. Wiggins lives and works in Lakewood, Colo.

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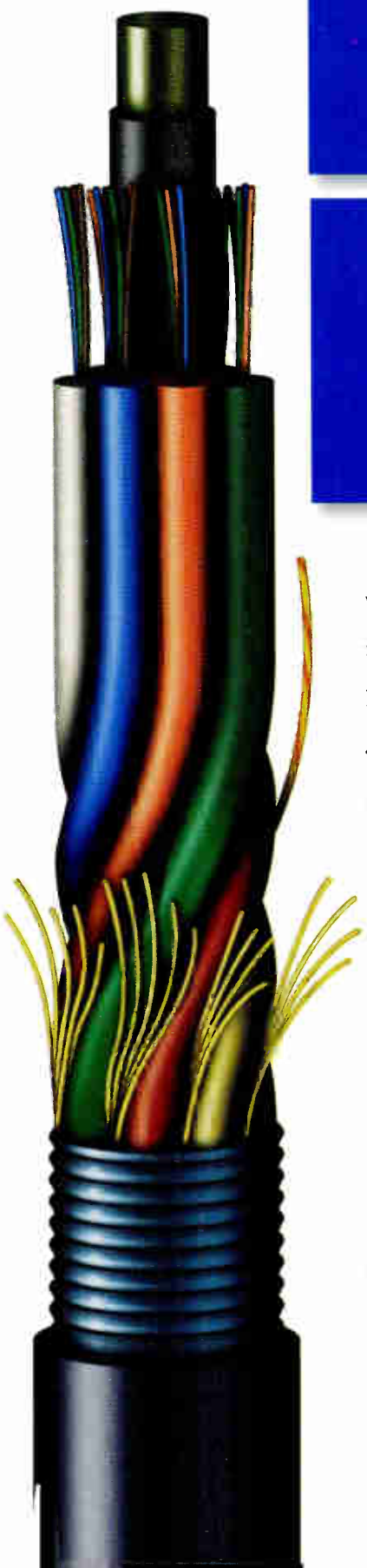

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Reader Service 354

To harness, or not to harness

Industry professionals work out kinks in fall protection regs that kick in January 1, 1998

By Michael Lafferty

All the recent hullabaloo about the deployment of high-speed data services has overshadowed a lot of other activity in the industry–activity that not only makes data services possible in the first place, but activity that deals with some real life-and-death issues in the industry.

For the past year or so, a group of dedicated safety professionals has been meeting amongst themselves, and with various officials from the Department of Labor's Occupational Safety and Health Administration (OSHA) to try and figure out what safety standards the cable industry needs to meet when it comes to construction and maintenance of its systems.

Hampering the effort is a complex code of regulations that often, upon review, seem to conflict, contradict or simply don't make sense to the uninitiated (or the seasoned professional, for that matter).

The group of industry professionals that took this task to heart, and to OSHA itself, includes operator and telco representatives, safety equipment manufacturers and safety consultants. The group includes Dave Bitter of Essential Safety Products, Edwin Downey and Paul Thompson of US West Inc., John Dunn of Johnson & Higgins of Colorado Inc., Rich Holston of Mobile Tool International, Doug Knapp and Craig Shur of DBI/SALA, Kevin McDevitt of Jones Intercable, and John Young of Time Warner Cable.

Rules, regs and money saved

Heaven knows, there's no shortage of regulations when it comes to the federal government. In the last few years, OSHA in particular has been the target of a number of attacks from Congress and other interest groups that would just as soon see the "intrusive, meddlesome, Big Brother" agency (take your pick depending on your mood and/or politics) severely diminished or shut down for good.

While there may be considerable debate about the agency's methods, rules and regulations, there's little argument on its ultimate goal of promoting safety in the workplace. And that's not all bad. For those in the know, that emphasis on safety can have some real bottom-line results.

"We're trying to meet our responsibilities under OSHA," says John Young, safety and fleet manager for Time Warner Cable's Construction Division. "It's just good business. We've saved over $3 million in two-and-a-half years with safety programs. We've cut our average workman's comp costs per employee from over $2,400 to a projected $167 by the end of this year. We've reduced our OSHA recordables by 70 percent in two-and-a-half years. We're simply operating safer."

Young believes the proactive work he and his peers have been doing to clarify regulations, on such things as fall protection and prompt rescue, before they take effect, is a natural process as the industry moves to launch new services and take on more responsibilities as telecommunications providers.

"We're trying to set industry standards and work with the SCTE and the Utilities Division of the National Safety Council," says Young. "This particular project here is just one of the ways we're trying to do that and mature as an industry. That's because we understand it's good business. It can save us money in workman's comp claims, downtime, and damage to company equipment. It also helps our public image.

"It all helps. It's good business all the way around. And beyond all that, it's good for our employees. We have a very proactive concern that when somebody

works for us, they can go to work, work safely and go home to their loved ones in one piece at the end of the day. And I think that's a sign of our maturity."

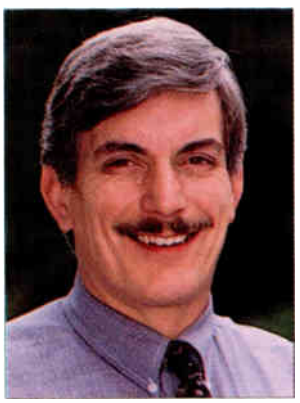
You talking to me?

When it comes to workplace safety rules, a company first has to figure out which rules apply. For cable companies, that's not as easy as one would think. OSHA has rules that apply not only to general construction activities, but to telecommunications operations in particular. One company's maintenance activities could very well be construed as construction activity by an OSHA regulator. The result could be an OSHA citation that could require a great deal of time, money and effort on everyone's part to clear up.

Young and his peers want to avoid that. In this most recent round of rule implementation, there were serious questions as to whether cable's outside plant activities were covered by the construction part of the code of federal regulation (29CFR1926) or whether those activities were covered under the telecommunications section (1910.268) of the code.

According to 1910, construction work is defined as "work for construction, alteration, and/or repair, including painting and decorating." A few paragraphs later, it expands on the definition to include "the erection of new electric transmission and distribution lines and equipment, and the alteration, conversion, and improvement of the existing transmission and distribution lines and equipment."

Young and his cohorts, after studying the existing definitions in the code, felt that those definitions really didn't address what cable workers do on a day-to-day basis. "Most regular cable work is not construction," says Young. "It's maintaining the existing plant."



John Young

The crux of the problem is that if certain work is classified as "maintenance," then workers in aerial lifts could continue using belt and lanyard systems as protection against accidental falls. But, if certain work is considered "construction," then operators have to adhere to more exacting requirements for a "personal fall arrest system."

The difference is critical. This new system requirement specifies a number of things, including the fact that effective January 1, 1998, body belts are not acceptable as part of a personal fall arrest system. The 1926 code goes on to explain the specifics of such a system that includes locking snaphooks, and that lanyards and vertical lifelines shall have a minimum breaking strength of 5,000 pounds. According to the code, the system should also "be rigged such that an employee can neither free-fall more than six feet, nor contact any lower level;" and "bring an employee to a complete stop and limit maximum deceleration distance an employee travels to 3.5 feet."

In effect, the 1926 stipulations require a full-body harness, as opposed to a simple, albeit rugged, belt device at the waist. It defines a harness as "straps that may be secured about the employee in such a manner that will distribute the fall arrest forces over at least the thighs, pelvis, waist, chest and shoulders with means for attaching to other components of personal fall arrest system."

Young and his colleagues readily acknowledge the superior protective capabilities of a body harness over a belt. "Let's say," says Young, "you've got a belt and some sort of expansion lanyard. You fall four feet, and it jerks you to a stop. It can cause internal bleeding, damage to kidneys and other organs. It will cut you right in half in about a minute-and-a-half or two minutes. We'll put people in one and just let them hang them there. They last about 30 seconds before they're begging to be let down. If it were a full-body harness, you could hang there for 20 minutes, and you'd still be OK. That's because it distributes everything across your whole body."

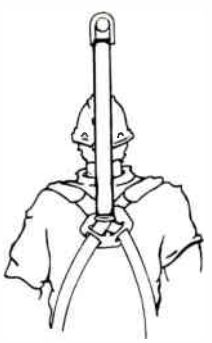
But confusion reigned. Is cable work construction, maintenance, or something in-between? The Denver-based safety group decided to go to the top to get some answers. In September, it spent a day with Roy Gurnham, head of OSHA's Directorate of Construction.

"We had people from four major MSOs describe to him what they did," says Young. "When we go out and we do an upgrade, we put in new equipment. We're not replacing a piece of equipment with the same piece of equipment necessarily. We put in new ground power units, upgrading to 60 or 90 volts. We do put up some new cable, but most of it is fiber now." Young says Gurnham judged it all to be construction according to the code, no matter what.

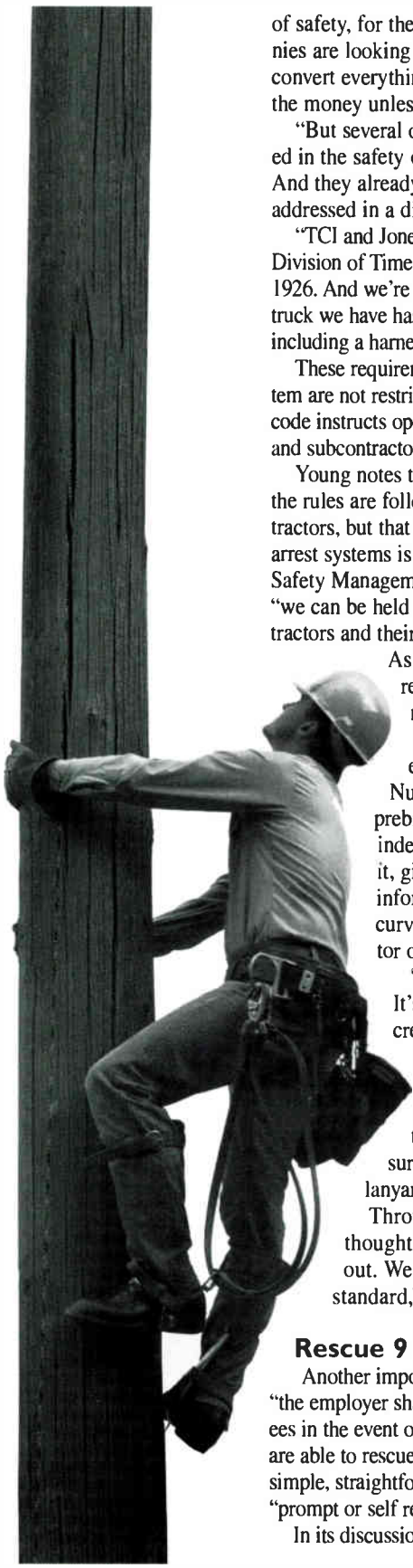
Shortly after the September meeting, though, Young received correspondence from Time Warner's division in Atlanta which had also queried OSHA's regional office on the belt vs. harness issue. The regional OSHA officials in Atlanta felt 1910.268 applied in all situations. The group contacted Gurnham again and explained the conflict. He, in turn, assured the Denver group that 1926 did apply to construction activity of normal cable operations, and that harnesses would be required as of January 1. He also said a uniform understanding of the code as it pertains to the cable industry would be distributed and implemented within the agency and a "clarification" letter would be out in early January.

Upping the ante

Of course, new requirements mean new equipment. And that means added expense. Young estimates harness conversion will cost around $150 per aerial truck. He and his peers, however, do believe it's money well-spent. "Well, professionally," says Young, "everybody said the requirement for a harness and one of the special lanyards that expands was the best thing, in terms



Full body harness (L2000-ESP) developed by Essential Safety Products and DBI/SALA. It's designed to be worn throughout the day, if needed.



of safety, for the people. However, a number of companies are looking at a large capital outlay in order to convert everything. So they're a little hesitant to spend the money unless it is clearly required.

"But several of us argue that if you're really interested in the safety of your people, it's the best way to go. And they already have to have lanyard now (which is addressed in a different code).

"TCI and Jones, and speaking for the Construction Division of Time Warner, all feel we will have to go with 1926. And we're all moving in that direction. Every new truck we have has a complete fall protection system in it, including a harness and the lanyard."

These requirements for a personal fall protection system are not restricted to operators alone. Young says the code instructs operators to make sure their contractors and subcontractors adhere to the rules as well.

Young notes that operators not only have to ensure the rules are followed by their contractors and subcontractors, but that proper training in the new personal fall arrest systems is carried out as well. "Under the Process Safety Management Rule under OSHA," says Young, "we can be held liable if we don't ensure that our contractors and their subs meet these safety standards also. As a carry-through on that in terms of our responsibilities to contractors, we have a number of things going on.

"Number one, we're reviewing existing contractors' written programs. Number two, we have questionnaires in prebid packages. All of that goes back to an independent safety consultant, who reviews it, gives it a raw score, adds certain other information to it and puts them in the bell curve. Then they let us know if the contractor or subcontractor is OK.

"We also do an operational field audit. It's a written form we fill out on both our crews and contractor crews. We're modifying it right now because it's not comprehensive in terms of dealing with fall protection. So we're expanding it to cover the current standards and make sure they have the locking snap hooks, lanyards and a fall protection program."

Through it all, the MSOs are sharing their thoughts and views. "We're helping them out. We're trying to get all of them up to standard," says Young.

Rescue 911

Another important part of the 1926 code states that "the employer shall provide for prompt rescue of employees in the event of a fall or shall assure that employees are able to rescue themselves." While it appears to be a simple, straightforward statement, implementation of this "prompt or self rescue" provision is another thing.

In its discussions with OSHA's Gumham on the matter, the Denver group noted that many self rescue scenarios were unfeasible, if not cost-prohibitive at this time. Young reports that while the language of the provision itself is vague, a sort of a stop-gap solution has been reached for now, while other options are being investigated.

"It just says prompt or self rescue," notes Young. "They've never defined what prompt is. Is prompt an hour, or five minutes? What did we do before all of this? If the guy fell out of the bucket and was hanging there, generally someone came along and asked, 'You OK?' Somebody is going to see that.

"What we're going to do now is set up something administratively. We're going to say, 'If you're going up, call in and tell us you're going up, and that you'll be down in 20 minutes or whatever. Then call us when you're down.'

"We're also looking at some other things. For those of us who operate in large cities and metropolitan areas, which a lot of us do, some technology might work particularly well. One would be a motion-type alarm where you can set the time, and if you didn't move for over a half-hour or whatever, it would send an alarm back. It tells you who the worker is and everything else. We also have supervisors who can go out and check. It's just a radio call.

"There's another thing that will beep you periodically and all you have to do is press a button that says you're OK. Then, if you don't press back, it sends a signal back. There are also ones they make for people in big cities like New York, where you can just tap something in your pocket and it sends out an emergency signal over local airways.

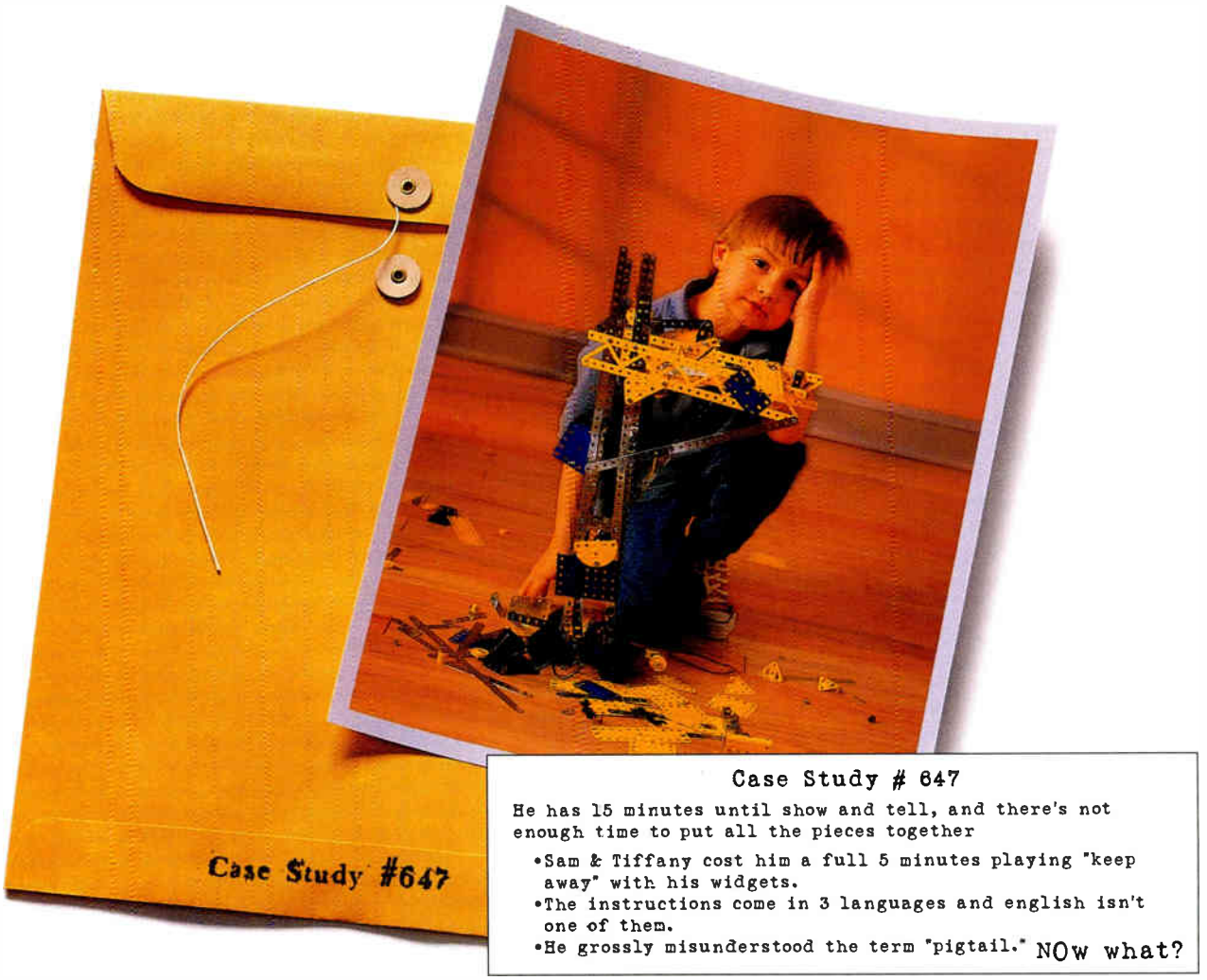
"So, we'll find something that works a little bit better. But for the time being, we'll set up an administrative policy on that. And that is acceptable to OSHA. We've already run this by them verbally."

Getting up-to-speed

Young notes that meeting OSHA rules is never an easy task. "When you're not familiar with it," says Young, "it's really tough to assimilate." But, he says, the task is less difficult these days because the agency itself is more cooperative. "Gurnham has been very responsive," says Young. "He's probably one of the best people I've ever talked to. And OSHA is becoming more flexible, more business-friendly too. They're really working better with us."

The Denver group is passing along that cooperative attitude by working closely with the SCTE's Safety Committee to revise its Health & Safety Handbook to reflect the new rules. It's also working with the Utilities Division of the National Safety Council and the American Society of Safety Engineers to get the word out.

This proactive, "get-things-settled-before-it-all-hits-the-fan" cooperative effort between the public and private sectors goes a long way toward helping operators get needed work done, while providing a safer workplace for those who actually do the work. **PMR**



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Reader Service 355

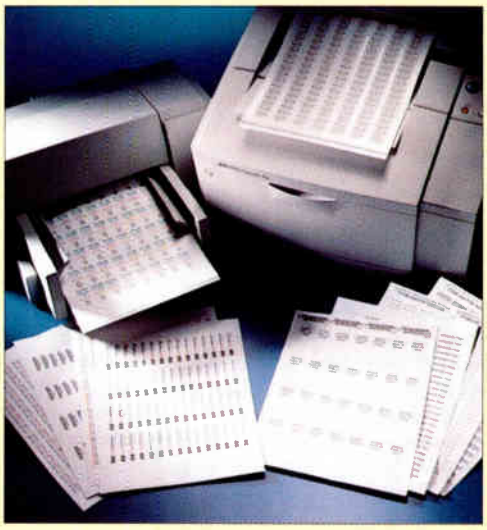
Cable reel holder

WOOD DALE, Ill.–Senior Industries Inc. has introduced the Handi-Reel, a lightweight (4.5 pounds), portable reel holder that can dispense a variety of wire and cable on reels up to 25 inches in diameter, up to 16 inches in width, and weighing up to 200 pounds.

Senior Industries' Handi-Reel

The aluminum frame is made of 7/8-inch tubing with a 5/8-inch solid reel spindle. The reel holder features plated steel mechanisms for durability; anti-skid, no-scratch foot pads; a safety lock spindle latch; and zero maintenance.

Circle Reader Service no. 326



Tyton Hellermann's ink jet labels

Ink jet labels

MILWAUKEE, Wis.–Tyton Hellermann has announced the availability of its line of labels for use on ink jet printers. Different materials and label sizes accommodate various applications, including those for cable, wire and components.

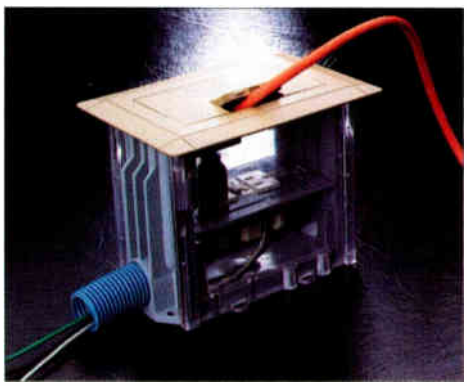
The labels are supplied on 8.5-inch x 11-inch sheets for use with standard ink jet printers, and can come with a topcoating formulated for ink anchorage and fast-drying printing when using pigment-based inks.

Circle Reader Service number 325

Floor box

CLEVELAND, Ohio–Carlon Telecom Systems has introduced its new modular floor box that expands easily in the field from a single gang up to a two or three gang application. The rectangular floor box, for telecommunications applications, is made from a durable, non-metallic construction and provides long-term reliability.

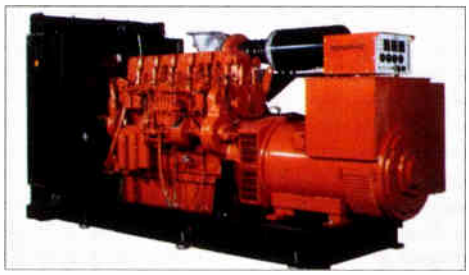
Circle Reader Service number 327



Carlon Telecom Systems' floor box

Generators

WAUKESHA, Wis.–Generac Corporation has introduced an increased range of generator sets to include up to 1 megawatt. The new product offering includes generators rated for standby applications at 400, 500, 625, 800 and 1,020 kW. All of these models use fuel efficient, low-emissions, four-cycle



Generac Corp.'s generator

engines, which provide extended life for the generator set. Additional features include an electronic isochronous governor, an automatic voltage regulator (AVR), a permanent magnet generator excitation option, control systems, and a cooling system.

Circle Reader Service number 328

Ladder rack

SALINAS, Calif.–Tailgater Inc. is introducing Power Rack, designed to automatically deliver a ladder down to the operator's comfortable access height and put it back on top of the vehicle, which eliminates user back strain. Made of anodized, extruded aluminum for

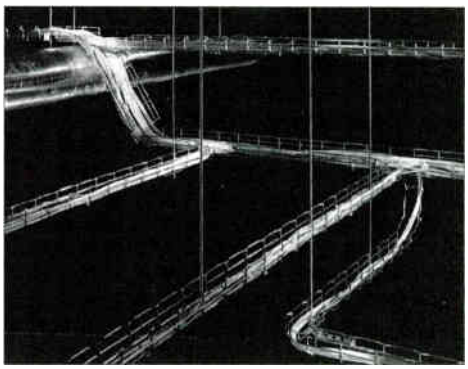
Tailgater's Power Rack

weight savings and weather resistance, the Power Rack is easily installed and works from the vehicle's electrical system. The ladder is automatically secured to the vehicle for highway travel with a safety latching system.

Circle Reader Service number 329

Cable management

PINCKNEYVILLE, Ill.–GS Metals Corp. has announced Flextray Cable Management Systems, created to provide solid cabling support with "enviable" twist-and-bend capabilities. Snip and bend obstacle avoidance, with-



GS Metals Corp.'s Flextray

out the need for any special parts and pieces, allows quick and economical installation, says

the company. The systems are targeted toward creating plenum runs for fragile Category 5 and fiber optic cabling.

Circle Reader Service number 330

Tool kits

PHOENIX, Ariz.—Jensen Tools Inc. is offering two new German-made GripKit Tool Kits and its jumbo LAN Installer's Kit.

The GripKit tools are machined and heat-treated to high standards, and quality tested to stringent standards, says Jensen. The 17-piece and 34-piece kits feature the "Grip Plus" handle and all the adapters, extensions, bits and sockets needed. Each tool assortment is housed in a compact, rugged, metal carrying case.

Jensen's LAN Installer Kit

The LAN Installer's Kit provides all the tools and test equipment needed to install coax network, twisted pair and phone cables.

Housed in a rugged case with die-cut foam inserts, the kit includes: two Crimp-Master frames; RJ-11, RJ-45, RJ-58-59 and RG-8 die sets; coax cutter, flat satin cutter-stripper; center conductor trimmer; two Pro-Ax coax strippers, twisted pair stripper; punchdown tool with 66 and 110 blades; Phillips screwdriver; RJ-11 and RJ-45 outlet testers; Pathfinder cable tester; wiring verifier tester with four remotes; tracer probe and outlet tester with ESD wrist wrap.

Circle Reader Service number 331

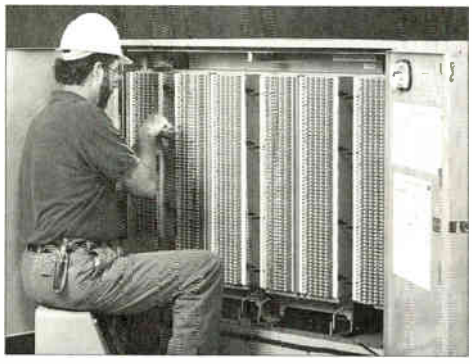
Enclosure cabinets

LOUISVILLE, Ky.—3M has introduced a new series of customized cabinets that accept any copper, coax and fiber optic combinations.

Housing from 300 to 5,400 pairs with ample space for splicing, the 4220 Series cabinets can expand to accommodate growth or changes with the installation of additional frames. Cable installation is also simplified by the removable skirts and backs, split cable ports and drop-down interior frames.

Sensitive electronics, wiring and connections are protected with sealed, lockable doors, while weather stripping and ventilation flow protect the interior from dust, rain, snow and condensation. The 4220 Series cabinets are available in four sizes.

Circle Reader Service number 332



3M's 4220 Series cabinets

Riser-Bond's Model 1205CX TDR

Cable fault locator

LINCOLN, Neb.–Riser-Bond Instruments has introduced its Model 1205CX Metallic TDR, Cable Fault Detector with a new sub-nanosecond pulse width for increased sensitivity.

The sub-nanosecond pulse width feature has been included with the Model 1205CX to enable users to identify very small, often unsuspected faults that may be within inches of each other. The Model 1205CX has been designed to troubleshoot and locate faults in all lengths of trunk, distribution and drop cables.

Circle Reader Service number 334

Cable markers

HOUSTON, Texas—VIP Products has introduced two new cable marker products. The Grabber Cable Markers have been designed for durable, long lasting identification of fiber optic cables. Bright orange with black lettering, the legend is repeated in alternative directions for 360-degree readability.

They are available in lengths from 4 to 8 inches, and widths to fit cables with outside diameters from 3/8-inches to 2 inches. They are constructed of a specially-developed vinyl that will not lose its color or uncurl after years of exposure.

The company has also introduced its Hefty-Poly Markers for cable identification above or below ground. The markers, which can be conveniently attached to innerduct, conduit or fiber optic cables with self-locking ties, are either bright yellow or bright orange. They come in four sizes, ranging from 1-1/2 inches x 3/4 inches to 6 inches x 4 inches. In addition, stock markers are available with legends for cable TV, telephone or data cable applications.

Circle Reader Service no. 333

VIP's Grabber Cable Markers

VIP's Hefty-Poly Markers

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