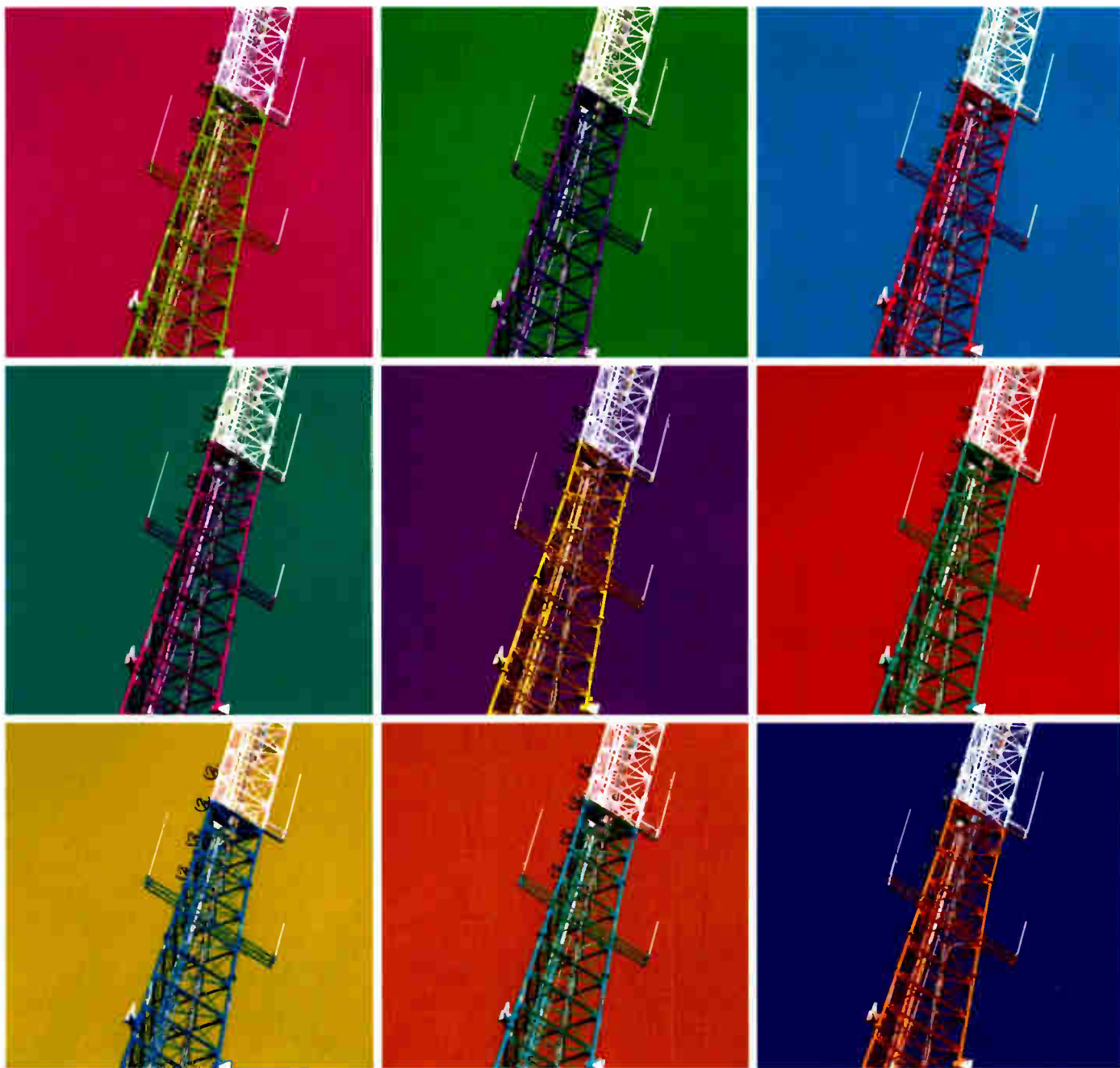


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Photo courtesy of Buckingham Manufacturing.

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After failing a structural analysis this truss-leg self-supporting tower located in the state of New York was reinforced using Structural Components' VERTx system. The reinforcement ensured that the tower would support the additional loads specified by the owner.

Photo courtesy of Structural Components

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I'm impressed...

... with the SWAP program and the continued success of the state associations. As you read this, I've probably already embarrassed myself in front of 200 or so people at the DC/MD breakfast on Valentine's Day. I get to



"wow" 'em with a short presentation on the battery backup requirements. So, just a short "way to go," folks, with the state SWAP efforts!

Response to my declared "year of education" is a little slow, but serious. I've been updated on efforts within the

TIA committee on Structural Reliability Task Group regarding tower fall radius. I've reviewed Ice Fall information—looks like the U.S. Army Corps of Engineers has "the" document on that topic. Email me if you would like a copy of what I've prepared.

I see a divide

I've been almost preaching here about a looming "siting divide" between legacy networks and emerging WiMAX and other networks. As demand for sites rises, and the cost of the base station hardware decreases, the willingness of a carrier (don't think only of existing cellular and PCS car-

The demand for sites is going one way: much, much higher.

riers) to deploy multiple sites with favorable deployment and rent costs will make economic sense to the current "must-have" tall traditional cell tower. I'm beginning to change that vision just a little. The demand for sites is going one way: much, much higher.

The pending cell site power backup

requirement is going to be tough for a lot of companies to comply with. Ground space is already at a premium at many cell sites, and the problems with backup power on rooftops and in dense urban areas are already significant. While many buildings already have generators, most do not make that power available for tenants.

I've had reason to visit many buildings lately to negotiate the construction of a new network for which I'm consulting, and to provide sub-contractor services for existing carriers. As with the neighbor kid whose baseball lands in the flowers, the first few times the ball is returned politely, then more firmly, then maybe with disgust, and later perhaps not at all. I'm seeing more and more landlords reach the point of "disgust" with our industry—the constant modifications, the sub-contractors, the parking, the noise and changing requirements. Many more requests, and I am not sure I'm going to get my ball back. I also find many potential landlords who are thrilled at the possible income. I just wonder what we are going to do to keep the relationship positive after five years.

So as the site demand continues to increase, and we push out to new sites, I also see the possibility of a "super site" emerging. Rooftop management has been the industry's stepchild because the financial relationship with the building does not provide security to the investor the way a traditional tower site does. However, as the need for improved infrastructure and service at the rooftop increases (backup power, managing services and contact to keep the management of the building happy), I wonder whether a company may emerge that is more of a hybrid tower firm and services firm, such as a services firm that follows more of the European model where technicians service multiple carriers' equipment, gaining efficiency and lower costs for everyone.

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Life of the Party

Someone will be having a conversation with me at a state wireless association meeting and, looking past me, he might say, "Excuse me, but I have to go talk with Susan. She's with a carrier." You could say that it means what I was saying wasn't that interesting. But some people will interrupt *themselves* in mid-sentence to go speak with a carrier representative. Most



of us find what we ourselves are saying is pretty darn interesting, so a self-interruption must be for something pretty important.

And it is. For many people in the wireless infrastructure industry, the carriers are where the business is.

They seek out the carriers at conventions. They look for them at receptions and luncheons. If not enough carriers are represented at industry functions, some consider the affairs to be less successful than they otherwise would.

So it is that the relative health of the carriers doesn't go unnoticed. Sprint Nextel, for example, made news lately when on January 18 it announced that it is losing customers. By the numbers, the company reported that in the fourth quarter of 2007, it added 500,000 subscribers through wholesale channels, 256,000 Boost Unlimited users and 20,000 subscribers among its affiliates. Those gains were offset by net losses of 683,000 post-paid subscribers and 202,000 traditional pre-paid users.

The shift in Sprint's fortunes was enough to make its stock price plunge by 25 percent in one day.

The company said it would lay off 4,000 workers and close 125 of its 1,400 retail locations, about 8 percent of the total.

Speaking in public venues and citing

mostly information previously issued in press releases and investor reports—which is how officials of public companies generally have to confine their remarks to avoid running afoul of regulators—the CEOs of the largest tower consolidators said last year that they saw good times ahead for about a year or less. That was, they said, because it is difficult to predict what carriers would do much farther in the future than that, and sometimes less, not because they *expected* trouble.

Where Sprint as a wireless carrier faces difficulty, Verizon and AT&T's wireline businesses couldn't be more robust. Verizon Communications is spending \$18 billion over six years to install high-speed fiber-optic lines into customers' homes. Shares in the two companies rose more than 15 percent in 2007. Two cable competitors, Comcast and Charter Communications, have seen their shares plunge by double and quadruple that percentage. Many people don't want more wireline telephones. They want television and high-speed Internet, and maybe the convenience of a bill from one company. Does that sound familiar?

Not long after the New Year began, values of shares exchanged on bourses

around the world took a tumble. Talk of an economic recession made headlines. During any recession, business overall suffers, yet there are pockets of growth that buck the downward trend.

Although the demand for television on larger screens in the home does not yet appear to be matched by demand for television on smaller screens on portable devices, the expectations for high-speed Internet service on those portable devices appears to match the expectations of Internet service delivered via "wire," including fiber, in the home and office.

Whether that demand will be sufficient to justify the torrid pace of network construction is the question. Carriers have grown accustomed to adding 3 million to 5 million new subscribers per quarter, but with U.S. wireless service penetration reaching 85 percent or more, the pace of overall subscriber gains could dip for all carriers as it has for Sprint.

One thing seems certain: Regardless of whether the money being spent by wireless carriers remains extra-large or it becomes somewhat less than extra-large, the wireless carrier representatives are going to remain the popular attraction at anyone's party. **agl**

Picture of the Month:



Canada geese enjoy the winter weather as the suburban government enjoys revenue from the land lease for a cell tower on suburban park property favored by the geese. Photo by Cathy Briles.

by Don Bishop, Exec. Editor
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World Radio History

Site Construction

by Jacqueline McCarthy, esq.



Site operators must navigate through an increasingly complicated regime of local, state and federal regulatory approvals

before site construction can even begin. PCIA's government affairs team focuses on pursuing improvements in legislation and regulation that make wireless infrastructure deployment faster, easier and more cost-effective.

We also strive to provide our industry with education, information and other tools to obtain approvals more efficiently.

Our federal regulatory and legislative initiatives show promise for developing industry-friendly policies. On Dec. 10, 2007, PCIA filed a *Motion to Intervene* in a challenge to the FCC's back-up power order requiring batteries or generators at all wireless facilities. PCIA also participated in its members' filings in the litigation. Our involvement here affords us with the opportunity to express the order's structural infeasibility. The *Motion* also affords us with standing to explain how the one-size-fits-all requirement of 8-hour back-up power equipment at all wireless facilities, including distributed antenna systems (DAS), fails to account for the diversity of wireless site types and could lead to the de-commissioning of sites

where compliance is infeasible, thereby conflicting with the goal of ensuring reliable wireless coverage.

Other federal regulatory issues remain active for our government affairs team. We are pursuing updates to the FCC's Part 17 reporting requirements, which do not address the remote monitoring systems used by most site operators, through outreach with FCC decision-makers on the subject. In December 2007, we submitted comments to the FCC's Joint Advisory Committee on Health Care Communications explaining wireless infrastructure's critical role in a robust wireless network. The advisory committee is a working group that will testify before Congress this month on the establishment of reliable communications networks for emergency health-care providers. We expect to provide comment on upcoming FCC rulemakings regarding pole attachment regulations, with a focus on promoting shared use of structures through more equitable processes for wireless attachers. In response to PCIA's leadership in the Colo-Void Clause Coalition's advocacy toward the easing of FAA "frequency-add" filing requirements, the FAA issued a revised policy statement in November that exempts Advance Wireless Service and Broadband Radio Service frequency bands from filing requirements when such bands are added to previously-approved structures. We will capitalize on

this regulatory victory to pursue additional relief from the FAA's most burdensome requirements.

PCIA's committees work to improve regulatory compliance methods. For example, our NEPA/SHPO Working Group, a section of our Regulatory Affairs Committee (RAC), has outlined process improvement suggestions in the Nationwide Programmatic Agreement and is strategizing on how to implement its best practices. Our First Responder Outreach Working Group, another RAC section, is considering opportunities to engage with the important constituencies of emergency communications officials and first responders – fire, police and emergency medical services – to educate them about wireless facilities, and to establish positive relationships in local communities. Our Technology Committee is spearheading an RF Signage Standardization Group, which will provide best practice standards for site signage related to RF emissions and equipment. The Technology Committee is also developing a carrier mapping matrix that describes current equipment manufacturer specifications; this will serve as a valuable resource for site operators and vendors alike. The Technology Committee welcomes further site operator participation in these efforts.

PCIA, together with the State Wireless Association Program (SWAP), has

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<p>Tower Site Solutions, LLC has conveyed the assets comprising 7 Towers in Georgia and South Carolina</p> <p>to Optasite, Inc.</p>	<p>CitySwitch LLC has conveyed certain tower assets in Georgia and Indiana</p> <p>to SBA Towers II LLC</p>	<p>Horvath Communications, Inc. has conveyed the assets comprising 9 Towers in Indiana and Ohio</p> <p>to Optasite, Inc.</p>	<p>Big Bend Towers, LLC has conveyed certain tower assets in Florida and Georgia</p> <p>to SBA Towers II LLC</p>	<p>Eastern Shore Wireless Company, LLC has conveyed a PCS license in Salisbury, MD representing approximately 195,000 Pops</p> <p>to Verizon Wireless</p>
<p>Tower Acquisition has agreed to convey certain tower assets</p> <p>to SBA Towers II LLC</p>	<p>Independence Media Holdings has conveyed certain tower assets comprising 3 Towers in Illinois</p> <p>to Optasite, Inc.</p>	<p>Master Towers, LLC has sold one tower in Eugene, OR</p> <p>to SBA Towers II LLC</p>	<p>4253311 Canada Inc. has conveyed its WCS licenses</p> <p>to NW Spectrum Co.</p>	<p>Prime Sites, LLC has sold one tower in Neenah, WI</p> <p>to SBA Towers II LLC</p>
<p>TriCo Wireless PCS, Inc. has conveyed certain PCS licenses in Minnesota representing approximately 414,000 Pops</p> <p>to Nsighttel Wireless, LLC</p>	<p>Highland Cellular Holdings, Inc. has conveyed certain PCS licenses in Ohio representing approximately 400,000 Pops</p> <p>to Centennial Communications Corp.</p>	<p>Leap Wireless Liquidating Trust has conveyed its PCS license serving PacifiB, C O representing approximately 324,000 Pops</p> <p>to Commnet Wireless, LLC</p>	<p>TriCo Wireless PCS, Inc. has conveyed its PCS license in Missouri representing approximately 194,000 Pops</p> <p>to Crossroads Wireless, Inc.</p>	<p>TriCo Wireless PCS, Inc. has conveyed certain PCS licenses in West Virginia representing approximately 180,000 Pops</p> <p>to Verizon Wireless</p>



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also pursued numerous initiatives to promote site deployment and construction through state and local policies favoring robust wireless infrastructure. In November, New York State Senator Betty Little spoke at a New York State Wireless Association policy event about the critical need for improved wireless infrastructure in her district, which includes portions of the "Northway" connecting New York and Montreal. Also in November, we explained the importance of wireless infrastructure to municipal leaders from across the nation at the National League of Cities annual convention. In December, we testified with our members, and with the Maryland DC Wireless Association against a proposed anti-siting bill that would prohibit wireless facilities on certain school property in Montgomery County, MD. In January, we spoke to the Vermont Telecommunications Authority on how wireless infrastructure can play a role in meeting the Authority's ambitious goal of providing statewide broadband access to all citizens by 2010.

PCIA and SWAP promote siting legislation at the state level. This legislation provides for co-location "by right" – i.e., without a public hearing – standardizes fee and application structures across municipalities, and limits the authority of municipal consultants. In response to 2007 pro-siting legislative enactment in North Carolina, PCIA, together with the Carolinas Wireless Association, is working with planners and municipalities to explain the effect of the legislation, and to encourage ordinance revisions that comply with the legislation. We plan similar outreach in California, Florida and Hawaii, which are states in which siting legislation has been passed in recent years. We expect to pursue siting legislation in Alabama and South Carolina during the 2008 legislative sessions, and in both cases, state wireless associations will play a critical role in providing grassroots organization and contacts. PCIA will also monitor the feasibility of siting legislation in states such as Georgia, New York and Michigan.

We believe that increased understanding of our industry will

encourage policy-makers to establish more deployment-friendly laws and regulations. In all our interactions with government officials, we seek opportunities to explain the benefits of wireless infrastructure. We actively engage with governmental decision-makers at all levels to educate them about how wireless infrastructure is necessary for safe, vibrant and connected communities. **agl**

Jacqueline McCarthy, esq., is director of government affairs at PCIA – The Wireless Infrastructure Association, Alexandria, VA.

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Staying Grounded

‘Buy land. They ain’t making any more of the stuff’ —*Will Rogers*

by **R. Clayton Funk**

Johnny Multiple, our favorite tower developer, receives a call one day from his buddy Ernie Engineer at Perfect Coverage Wireless.



“Johnny, since we didn’t sell our towers for whatever reason, we’ve been given the go ahead by corporate to start building more sites. Can you help by building some towers for us in the State of No

Zoning?” asked Ernie.

“Do one-legged ducks swim in circles? Of course I’ll build them for you!” exclaimed Johnny, already thinking about how much these towers will be worth when he sells them.

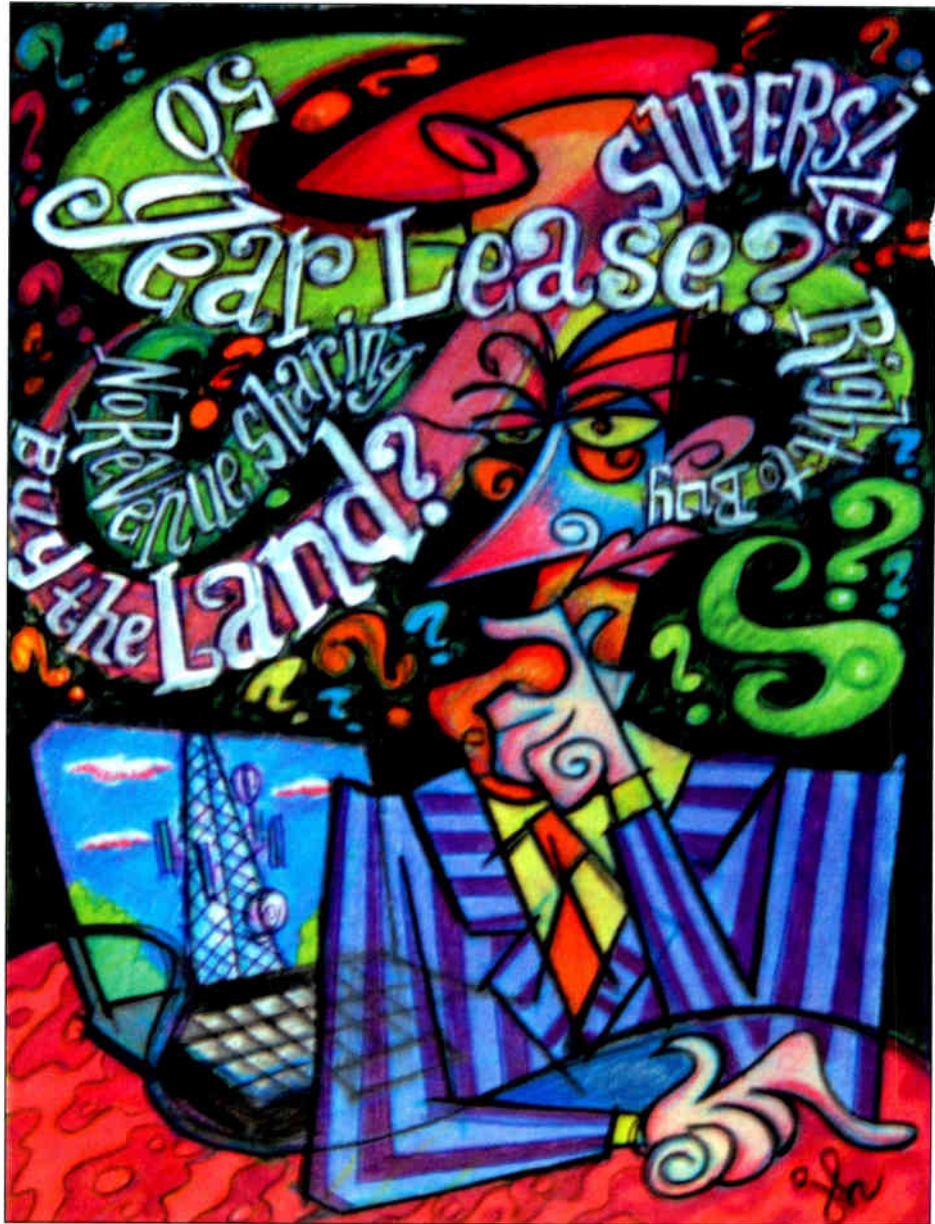
“OK Johnny. But hey, a quick heads up. If you lease the ground under the tower, my guys tell me I have to review and approve every ground lease under

When selling towers for clients, one of the key value drivers is the underlying ground beneath the towers

our sites where we either have someone build the tower or where we collocate. Other than that small change we’re good to go. I’ll send over the search rings later today. Aloha!” Johnny cheerfully ends the conversation before hanging up.

This is a new one for Johnny. The ground leases? Who cares about the ground leases, he asked himself? After all, his customers used to ask about and focus more on having a

14 above ground level



structurally sound tower, easy access to the site, and a clean compound. So Johnny calls Ned Negotiator at Ethical Experienced Intermediaries to get his perspective on it.

“Oh Johnny, it’s not only carriers who are looking closely at this aspect of every tower. When we’re selling towers for clients, one of *the* key value drivers is the underlying ground

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Ernie Engineer's 'Ground Rules'

1. If you can buy the land, do it. It might cost you some money on the front end but will almost always pay off in the future.
2. If you can't buy the land, obtain a long-term ground lease: 50 years.
3. In the lease agreement, obtain the right to buy the ground under the tower in the event the ground owner wants to sell the site.



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4. Acquire as much ground as you can in the initial negotiations. If available, acquire enough land for a 100-foot by 100-foot compound.

5. Avoid revenue sharing provisions.

beneath the towers,” said Ned. “In fact,” he added, “I think it will continue to be a huge focus as landlords become more and more savvy about the value of towers for not only carriers but also companies who focus on owning towers.

“Tell you what, Johnny. Grab a pen and some paper. I’ll give you, in somewhat of an order, the key things to consider when out in the field trying to acquire land for a tower,” Ned said, before launching into his analysis.

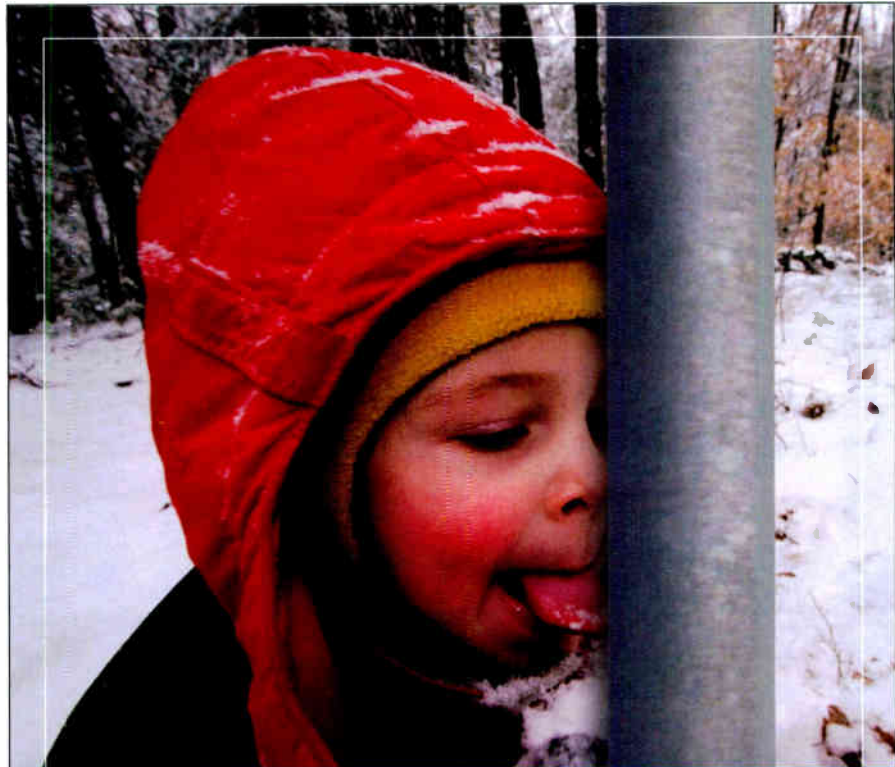
“First and foremost, if you can buy the land, do it. It might cost you some money on the front end but will almost always pay off in the future. As a good rule of thumb, figure out what anywhere from 8–10 years of a ground lease would cost you and offer up to that in a lump sum to the current ground owner. Once that ground owner starts getting the “mailbox money” of a ground lease being paid by a tower owner it is much more difficult to get them to sell the land to you. If you can’t buy the land, try to get a perpetual easement or some other

form of absolute rights to the ground.

“Second, if you can’t buy the land get a long-term – and I mean *long-term* – ground lease. Some of our first clients had ground leases that, when originally negotiated more than a decade ago, had multiple 5- or 10-year terms that ran

If you can, obtain initial 10–30 years terms and multiple renewals that bring the ground lease out to 50 years

out to 30 years total. Well, it is amazing how quickly 10 years has gone by. Now our clients are looking at having



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Use language in the agreement to have the ground lease transferrable without landlord consent

to start getting additional terms to last beyond 30 years since wireless is showing no signs of slowing down in

the need for tower space. If you can, obtain initial 10–30 years terms and multiple renewals that bring the ground lease out to 50 years.

“Third, in the lease agreement, obtain the right to buy the ground under the tower in the event the ground owner wants to sell the site. There are some companies

out in the market as we speak simply trying to buy the ground under towers so that they can control the underlying site upon expiration of the ground lease. It protects your business interests to be able to own the land if the ground owner no longer wants to own the property.

“Fourth, acquire as much ground as you can in the initial negotiations. It is much better to have more land owned or leased than you need vs. running into a situation where you have to go back to the ground owner and obtain more land for your customers. If the space is available, a 100-foot by 100-foot compound should be more than sufficient. If you can’t acquire that much ground, obtain the maximum amount possible under the agreement.

“Fifth, it might go without saying but do whatever you can to avoid revenue sharing provisions. If you must, and I know sometimes it cannot be avoided, try going for revenue sharing starting with the fourth tenant, or settle for one-lump sum payment vs. a recurring payment to the ground owner. Again, try to negotiate whatever you can before having to settle on paying any revenue share to the ground owner.

“Finally, there are some other good rules of thumb to consider. If you have escalators in the ground leases, try to keep the rate of the escalators at or below where the tenant leases escalate. And if you can, use language in the agreement to have the ground lease transferrable without landlord consent, or at least such that an assignment may not be unreasonably withheld by the landlord,” Ernie said.

“Whew!” exclaimed Johnny, his head spinning at all these details “Is that all? Anything else to add?”

“Oh, one more thing,” added Ned. “All this ‘free advice’ is going to cost you lunch. I just looked at my watch and noticed it’s 11:30am. Where should I meet you?” **agl**

Funk is vice president of Media Venture Partners, San Francisco. His email address is cfunk@mediaventurepartners.com.



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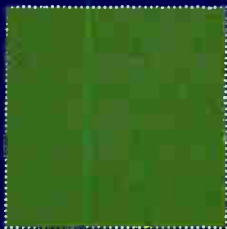
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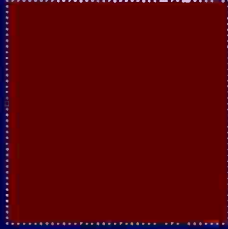
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Backup Power Rule: Generating Problems?

by Julia Custer Norris



The landfall of Hurricane Katrina in Louisiana and the resulting flooding, especially in New Orleans, revealed several critical faults in the wireless communications network: dependence on commercial power, dependence on landlines, and lack of sufficient backup systems. As the wireless communications industry scurried to repair a broken system, communication in the region was disrupted for weeks. In response to the communication failure, FCC formed the Independent Panel Reviewing the Impact of Hurricane Katrina – called the “Katrina Panel” – to study the effect a large disaster such as the aftermath of Hurricane Katrina has on communications infrastructure.

Under the rule, cell sites, both new and existing, are required to provide eight hours of emergency power via generators, batteries or fuel cells

One of the most controversial parts of the FCC’s June 2007 *Katrina Panel Order* – the “backup power rule” – implements the agency’s interpretation of the Panel’s recommendation on the subject. The rule requires remote cell sites powered by commercial power to also be equipped with eight hours of backup power. Under the rule, cell sites, both new and existing, are required to provide eight hours of emergency power via generators, batteries

20 above ground level

The Maryland-DC Wireless Association on behalf of its members and the industry has serious concerns re the FCC Katrina Panel Order, especially pertaining to the topic of eight-hour backup power requirements at cell sites. The reality is that the order failed to consider the real world challenges of compliance. We believe that the public and all involved parties would best be served by striking the order and working collaboratively to draft a plan that could both be implemented and meet the overall FCC goals on the topic.



David Yacoub, president Maryland-DC Wireless Association

or fuel cells. Therefore, existing sites may be required to obtain new permits, redo site inspections and structural engineering analysis, renegotiate leases, ensure compliance with legal requirements, evaluate backup power needs, and order and install the necessary new equipment. A bigger problem, however, may be where to put the new power systems.

Before the backup power rule, typical backup power provided two hours of emergency service with a 100-gallon fuel tank. However, eight hours of backup power may require upwards of a 500-gallon fuel tank. In response to comments received on the logistics of this requirement, the FCC suspended the backup power rule on Oct. 5, 2007. The rule originally was to become effective Oct. 9, 2007.

Katrina panel findings

The panel noted in its June 12, 2006 report (*Report and Recommendations*

of the *Independent Panel Reviewing the Impact of Hurricane Katrina on Communications Networks*) that “the majority of the adverse effects and outages encountered by wireless providers were due to a lack of commercial power or a lack of transport connectivity to the wireless switch.” The panel recommended that all local exchange carriers, including incumbent local exchange carriers and competitive local exchange carriers (collectively, LECs), and commercial mobile radio service (CMRS) providers adhere to a voluntary “best practices” method to ensure emergency power during a disaster.

However, the FCC determined that a voluntary acceptance of the rule left too much room for interpretation. “Had we adopted a general backup power requirement that did not meet a minimum amount of backup power, we would have risked creating an illogical and meaningless requirement that would have allowed providers to have only one minute of backup power.” The FCC responded by requiring a

24-hour backup power minimum for sites located in central offices, and an eight-hour minimum for other locations such as cell sites, remote switches and digital loop carrier system remote terminals.

Environmental considerations

In the April 2007 AGL, "On the Green" tackled the issue of EPCRA reporting for backup battery storage. We reported that storage of batteries, diesel, propane, and gasoline (or any other hazardous material) above certain amounts must be reported to the state and local emergency planning. Switch sites or large cell sites that previously had no reporting requirements may increase fuel/battery storage above the reporting limits. As described in the sections above, central office sites will require 24 hours of backup power; remote cell sites require eight hours of backup power.

The reporting threshold for the sulfuric acid content in lead-acid batteries is 500 pounds. The reporting requirement for propane, diesel, and gasoline is 10,000 pounds. Using the approximate weight of diesel, it would take about three 500-gallon diesel tanks to trigger EPCRA reporting at a remote cell site. (See Table on page 22.)

In addition, in the October 2007 AGL, "On the Green" described Spill Prevention Control and Countermeasures (SPCC) requirements for petroleum fuel storage. Under the SPCC regulation, sites with 1,320 or more gallons of petroleum fuel above ground in containers 55 gallons or larger will require a spill plan. Emergency generator fuel stored below ground in quantities greater than 42,000 gallons will require a spill plan.

What happens now?

Initially, the FCC required all existing sites be updated within 12 months from the rule date, and all new sites must be designed to meet the 24- or eight-hour backup power rule. New towers and collocation sites must have

Under the SPCC regulation, sites with 1,320 or more gallons of petroleum fuel above ground in containers 55 gallons or larger will require a spill plan

the space and zoning elements required to allow for adequate generator, battery or fuel cell storage. The compliance date (i.e., the effective date) has been postponed while the FCC responds to industry concerns.

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Although the date has been postponed, at some point the FCC will require regulated entities to provide a compliance plan that describes how, in the event of a commercial power failure, the telecommunications provider would ensure that coverage is guaranteed for 100 percent of the area covered by any non-compliant asset. The plan must contain: 1) an inventory of each asset that was designed to comply with the backup power mandate; 2) an inventory of each asset where compliance is precluded due to risk to safety or life or health; 3) an inventory of each asset where compliance is precluded by private legal obligation or agreement;

If a site is already equipped with the necessary backup power to meet the 100 percent coverage requirement and has already established a testing and inspecting procedure, then the site meets the new standard

4) an inventory of each asset where compliance is precluded by Federal, state, tribal, or local law; and 5) an inventory of each asset designed with less than the required emergency backup power capacity and that is not otherwise precluded from compliance for one of the three reasons identified previously.

Sites with existing emergency power will be required to ensure that regular exercising and testing is completed. As noted by the panel, "because all locations were not able to exercise and test the backup equipment in any systematic fashion, some generators and batteries did not function during the crisis." If a site is already equipped with the necessary backup power to meet the 100 percent coverage requirement and has already established a testing and inspecting procedure, then the site meets the new standard.

Industry response

The Commission received a number of comments following the release of the *Katrina Panel Order*. Commenting parties were particularly concerned about the logistics of installing generators or

22 above ground level

Table 1. Approximate weights.

Quantity	Weight
One gallon of gasoline	6.25 pounds
One gallon of diesel	7 pounds
One gallon of propane	4.2 pounds
One car battery	5 pounds sulfuric acid

batteries on rooftops or in areas where fuel storage was otherwise deemed dangerous. The Commission recognized these concerns and revised the Order

to include several exceptions. "Providers are not required to meet the backup power requirement if they demonstrate, through the reporting requirement described below, that such compliance is precluded by (1) federal, state, tribal, or local law; (2) risk to safety of life or health; or

(3) "private legal obligation or agreement." In the case of private obligation or agreement, the provider must prove that the agreement was established

prior to the installment of the law and specifically prohibits the use of the emergency power required at the site.

CTIA, PCIA and several carriers provided comment or objection to the findings of the Katrina Panel. On Sept. 24, 2007, CTIA filed a new request for an administrative stay against the backup power rule citing "harms and difficulties for wireless carriers associated with compliance." PCIA, which was initially supportive of the panel report, has found serious fault with the backup power rule, challenging the FCC's authority to require such measures. More recently, state wireless associations, such as the MD-DC Wireless Association, have stepped into the ring with position statements backing CTIA.

Until the dust clears, it appears that the FCC will withhold the effective date of the backup power rule. However, the FCC maintains that the rule will become effective eventually, and carriers should prepare a system for compliance. **agl**

References:

- Independent Panel Reviewing the Impact of Hurricane Katrina on Communications Networks (Katrina Panel): www.fcc.gov/pshs/advisory/hkip/
- CTIA request for administrative stay: www.ctia.org/advocacy/filings/
- MD-DC Wireless Association: www.mdewa.com

Norris is an environmental regulatory specialist and telecommunications program lead with Archer Inc. She can be reached at jcuster@archerinc.com or 410-897-9100, ext. 101.

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Use RFID to Improve Safety Management

An intelligent safety system uses RFID-enabled technology for customized web management, giving instant access to inspection logs, inventory records and safety information. It saves you time and money, makes your fall protection more effective and keeps your workers safer.

by John Fuke

In the tower construction business, efficiency and productivity are primary concerns; many companies look for ways to get things done faster, better and at a lower cost. Worker safety is also a top priority and should not be overlooked, but with the focus on productivity, it can sometimes take a back seat. With traditional equipment tracking systems, that is, old-fashioned paper logbooks and bar-coding,

out-of-date equipment can inadvertently end-up in use by a worker to the detriment of his safety.

Equipment managers often cite challenges in keeping track of inventory, equipment inspection timelines and replacement dates. Other tasks, such as ensuring the proper equipment reaches a job site on time, are usually a priority, which leaves the time-consuming task of completing paperwork at the bot-

tom of the to-do pile. Shuffling papers, transferring the information gathered at a remote jobsite and submitting information to a central location is a complicated process. It leaves a long paper trail and, on top of that, is prone to human error. Paper logs can easily be misplaced and records can be difficult to read.

How can you be sure that every piece of equipment sent out to a jobsite is up to date and properly inspected?

How do you know the right equipment gets to the right job at the right time? How do you keep up with paperwork for organizational efficiency, accountability and proof of compliance? The answer is simple: Move to a paperless, electronic tracking system. Keeping track of equipment electronically allows the user to instantly access accurate and up-to-date inspection records, locate where the equipment has been assigned and whom it has been assigned to, and determine when the next inspection is due. Instant access saves time and in turn improves productivity. In the tower construction business, keeping track



RFID tags are now standard equipment on DBI-Sala products. Each tag is programmed with a unique ID that registers its model type and history.

of hoists, winches, cables, slings and personal protection equipment is essential. The sheer variety of equipment that needs to be tracked and inspected is overwhelming.

Fortunately, the days of logging inspections and equipment assignments on paper are over. Widely recognized in other industries as an ideal information-tracking tool, radio frequency identification (RFID) entered the safety arena to simplify record keeping. In the tower construction industry, RFID is emerging as an ideal method to track and keep accurate records of equipment. Some fall protection equipment comes with embedded RFID chips as a standard feature. Whether you have a single construction site or a series of projects to manage, there is a way to use RFID technology to your advantage.

Basics

Just over a year ago, Capital Safety introduced an intelligent safety system comprised of several synchronized parts: RFID tags, PDA readers, a web portal and retrofitting kits.

Each RFID tag is programmed with a unique ID that registers model type and history of the equipment it is attached to. The passive tag emits radio waves that transmit a variety of coded information to the PDA, when the reader in the PDA activates the chip, which is equipped with a reader. The PDA displays the product make and model and upcoming and past inspections, in addition to jobsite and worker assignment. This data is

linked to a personalized web portal that can provide further information including user manuals, inspection checklists, training records, industry regulations, product advisories and

the user to enter model number, make and date of manufacture.

The line of retrofit tags includes “soft,” “cable” and “rigid” tags. The rigid retrofit tag suits the needs of tower construction industry equipment tracking. The versatile tag has a low profile that allows it to be attached to almost anything, including cranes and hoists. The rigid retrofit tag can be affixed with the supplied tie-wrap, key ring or adhesive pad, or it can be screwed or riveted in place.

Advantages

An RFID-based intelligent safety system maximizes the effectiveness and minimizes the total cost of your safety program through web-enabled intelligent technology. It simplifies the process and the work that goes into keeping track of inventory and staying on top of inspections. The system promotes safety by assuring that the equipment that each worker receives is up to date. It ensures compliance by supporting proper handling and records for accountability. It elevates productivity by getting the right equipment to the right place at the right time. It provides cost control



Tags are read by a portable site PDA that scans the piece of equipment and accounts for it by a unique number. The readers make for easy entry to log inspections, equipment assignments by worker or location, and more.

other useful links.

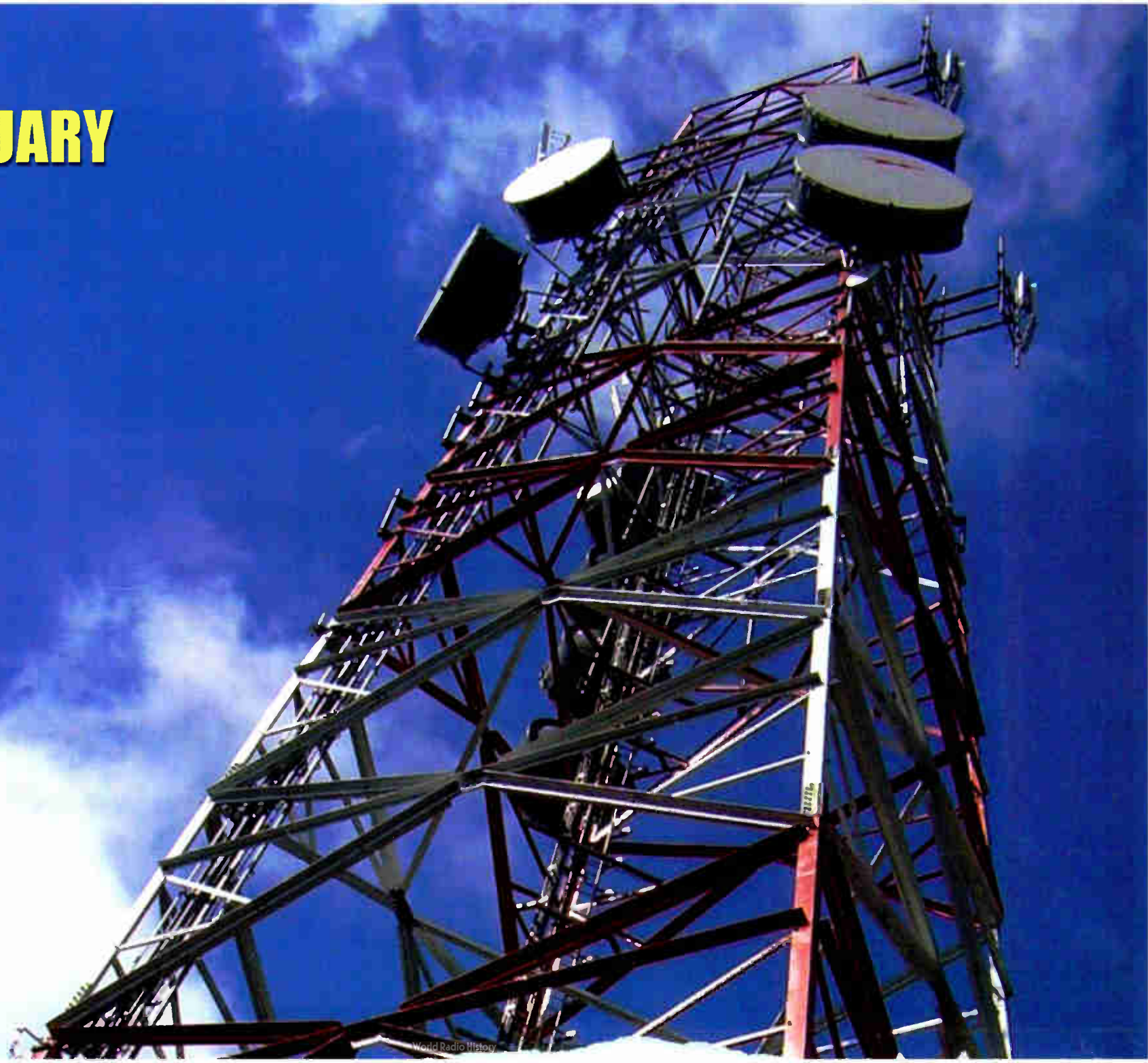
These RFID tags are now standard on all DBI-Sala products and retrofitting kits are available for all types of equipment, regardless of brand, to extend the benefits of this technology to existing inventory. To start electronic record keeping with the retrofitting kits, the tag is simply attached to the equipment and a prompt will instruct

by providing streamlined access to the information you need.

The three main areas addressed by the intelligent safety system include:

- *inspection tracking* that offers the critical due-diligence report, keeps track of inspection logs for product reliability and safety, and both verifies and promotes compliance.
- *inventory control* that tracks inventory

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Data is linked from the PDA to your computer and appears on the customized web portal. Your safety program website also provides instant access to related safety and equipment information, training records, product advisories, and useful links.



You can include your entire inventory within the intelligent safety system. Retrofit kits are available for any brand of harness, lanyard or self-retracting lifeline.

on the jobsite or around the globe, offers paperless and accurate asset management, easily retrieves information about inventory control and helps prevent theft and diversion.

- *information management* that provides real-time web site support for consultative safety solutions, instant access to key information to streamline logistics and safety management and, lastly, accountability by logging product and inspection status by job.

With an intelligent safety system, there's no logbook to locate and no messy handwriting to decipher. At the click of a mouse, compliance can be verified and location of equipment can be determined. This cuts down on the safety director's and equipment manager's time in tracking gear and ensuring that inspections have been performed. On average, the system shaves 30 to 40 percent off the amount of time that is required to do paperwork. One user

equipment. At jobsites with multiple contractors, an intelligent safety system can determine which company a piece of equipment belongs to. If something is left outside at a jobsite and exposed to the elements, it can be traced back to the person responsible for the equipment. This will prolong the life of equipment and cut costs by reducing the number of harnesses, lanyards and lifelines that need to be replaced due to exposure or loss.

With all the benefits that the system reaps, one might get the impression that the system is complicated and difficult to operate. In fact, the contrary is true. The system is user-friendly and easy to navigate, even for the computer-illiterate individual.

Conclusion

The days of logging inspections and equipment assignments on paper are over. The intelligent safety system offers an efficient way of keeping tabs on inventory and saves the safety director's and equipment manager's valuable time and resources, not to mention sanity. The ability to customize the system and apply the technology to exist-

ing inventory with retrofit RFID tags makes it easier to track a wide variety of equipment, including cranes, hoists, winches, cables, slings, personal protection equipment and even items outside of fall protection, such as tool boxes, small diameter pipes, power tools and fire extinguishers. The system encourages responsible use of fall protection equipment and adds personal accountability and a traceability element. Many companies are seeing the value and realizing the time savings associated with the use of the system. Once they start using the electronic record-keeping capabilities of an intelligent safety system there is no going back to the old method. **agl**

John Fuke is marketing manager for I-Safe Intelligent Safety System with Capital Safety, Red Wing, MN. He has more than 15 years of fall protection experience in the safety marketplace, including product development and standards design and implementation. A graduate of the University of Waterloo, Fuke also has marketing accreditation from Ryerson Polytechnic University. The intelligent safety system described in this article is available from Capital Safety. RFID tags are standard equipment on DBI-Sala products. Fuke may be contacted at 800-387-7484.

The days of logging inspections and equipment assignments on paper are over

estimated that the system saved six to 10 hours per week.

The system also provides a level of accountability that can reduce misplacement and mishandling of



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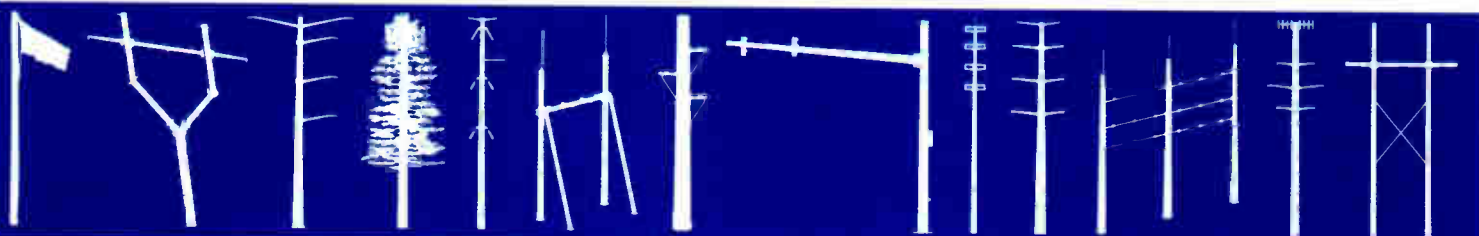
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Optimism At OSHA for Tower Safety

Late last year, Rob Medlock, area director for the Cleveland Area Office of the U.S. Occupational Safety and Health Administration, spoke of the tower construction industry's progress with safety improvements. Here are his remarks.

by Rob Medlock, as told to AGL

Last year [2006] we were disappointed by the fatality rate. A lot of people use that as an overall measurement, and it can be, but we are trying to improve the industry. We're making progress every year, not just in OSHA but also with NATE and others in the industry.

[NATE is the National Association of Tower Erectors. OSHA and NATE have a national partnership that encourages and rewards safety improvements.]

Talking about the national partnership, it is still in the first year so we don't have the final results; but we are optimistic it will show that improved programs, additional training, and self-audits have eliminated serious hazards on tower sites. It began in the spring of 2007, and they renewed the application process for mid-year applications on October 1. It started with 85 companies and has increased to 101 companies participating in the partnership. We hope to get some get some tower owners, general contractors and carriers to participate. The partnership allows for that provision.

Objectives

It is to encourage them to hire

30 above ground level

proven contractors with effective safety and health programs. We have this and other prerequisites before

they can join.

It is one way to avoid the "lowest bid" syndrome. I'm excited about that.



Rob Medlock, area director, Occupational Safety and Health Administration, Cleveland Area Office, speaking of the OSHA/NATE national partnership: 'We are optimistic it will show that improved programs, additional training, and self-audits have eliminated serious hazards on tower sites.'

We also had a course with the OSHA satellite center from the OSHA Training Institute (OTI). They have a satellite center at the University of Cincinnati. The OSHA 500 tower course was conducted with OSHA assisting with the training. We had great feedback from those who attended the course, and we're doing another one in December.

The bottom line is we tailored this course for people to obtain the skills in developing and presenting training sessions. Many had the knowledge and the prerequisite courses, but this gave them the skills and tools to put on presentations and communicate it better through the industry. Now they are authorized to conduct the OSHA 10 and OSHA 30 courses and spread out in the industry.

Jocko Vermillion [national tower expert with OSHA, stationed in the Cleveland office] assisted along with Dr. Judy L. Jarrell from the University of Cincinnati who conducted the class.

This added about 25 new qualified instructors out into the

tower industry. We need these resources and the partnership requires the participating companies to conduct the OSHA 10 and 30 for their own employees.

Some of the difficulty, even for companies with progressive safety and health programs, is that it's difficult to be on the remote work sites. In many cases, they aren't inspected by any outside source except the crewmembers or maybe the crew leaders.

'Policing' needed

For lack of a better word, they have to do some "policing" on their own sites to make sure it's enforced. It is a culture change going down to the tower hands because they work remotely and isolated and in many cases there is not the same oversight that there is in a construction job with many weeks at one location or in a factory where you can observe without sending people to travel all over the place. They need to hold their folks accountable.

Many times when we have a crew, they're comfortable working with each other and it's difficult for a leader to do the enforcement on their people. "Put on your glasses or hard hats," they might remind them, but going to the next step that's necessary is tough. They work together and travel together, and they're friends.

That is fairly unique to this industry, and therefore enforcement is not as good as I would like it. You get to a culture change where you wouldn't have to have that oversight, but we're not there yet. It's a tough industry for that.

We're trying to do more in assisting the safety directors. Jocko has assembled information that helps safety directors manage their programs, and NATE will be including it as a session at their annual conference to help companies field-implement their program.









Many tower companies don't like a lot of paperwork and some of it is required. Many of these things exist already and don't need to be invented; they just need to be implemented. We're willing to share programs and

PowerPoints. OSHA is conducting 10-hour courses again at NATE in Orlando, and that's well attended.

The industry is hungry and continually improving in its efforts to reach out

for new safety materials and ideas to use to improve safety. They realize it's good business to protect workers, and financially, good safety means fewer citations, reduced illness and injury,

The industry is hungry and continually improving in its efforts to reach out for new safety materials and ideas to use to improve safety

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and that goes to the bottom line.

Ten years is a short timeline when you're talking about the history of government or the history of standards. When you look back at this 10 years ago, it's phenomenal how much progress the industry has made. They are the ones that have reached out to embrace even OSHA to get assistance. That's a bright spot.

Numerical goals

How many new safety programs, how many people trained, how many presentations given: That's what the partnership is going to track on a national

basis. We will have some results of that in a few months. We

don't have a lot of data now. There were 18 total fatalities last year [2006]



and eight this year [2007, as of November 1]. Everyone agrees that one is too many. We don't want the number to go higher than it is now.

It has been difficult to track the industry because they don't have their own standard industrial code. They're thrown in with a lot of other companies.

North Carolina has a standard and Michigan has proposed a standard. A similar standard is under consideration and is out for comments for 2008. Some of the states are progressing for their own standards.

OSHA involvement

I hope there will be a greater number [of people involved with tower safety at OSHA], not a dedicated force to the work, but our goal is to have more people involved and competent with regard to providing information and enforcement to the industry. That was our goal. It was a tower task force that evolved to the partnership for Region 5.

Now there is a national partnership management team (PMT) from the national office with myself in the field, and representatives of NATE on the team. That in itself provides a national focus and national attention. I thought this partnership has been good for that.

We have done internal training for our own people, such as the OSHA Institute 3150 course where we get compliance officers or other government people who are involved with the industry and edu-

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Rob Medlock talks with a tower hand at the NATE 2007 convention following a speech delivered by Assistant Secretary of Labor for Occupational Safety and Health Edwin G. Fouke Jr., who spoke via an audio link from his office in Washington.

cate them about the industry so they can provide assistance and be technically competent to do inspections. We take them to tower sites and show the right methods and the wrong methods and have hands-on along with class work.

Our goal is that they become more involved and we become better nationwide. Either you have to police your worksites or we are going to. And we would rather spend our resources helping people rather than doing that.

You got a little microcosm of the issues we sometimes face, being the multilayer sub or a sub. The more layers you have, the less accountability you have. The closer you come to the top it can become like Pontius Pilate who have insulated themselves as to accountability. We don't have a real effective mechanism to get to the top of the food chain, despite their good hearts and civic responsibility and third party liability if someone gets injured. That's real world.

That's one that I hear commonly from the tower contractors, people who build the towers. "Why can't you make the owners write this in the contract?"

Why can't you cite manufacturers who don't put tie-off on the towers?"

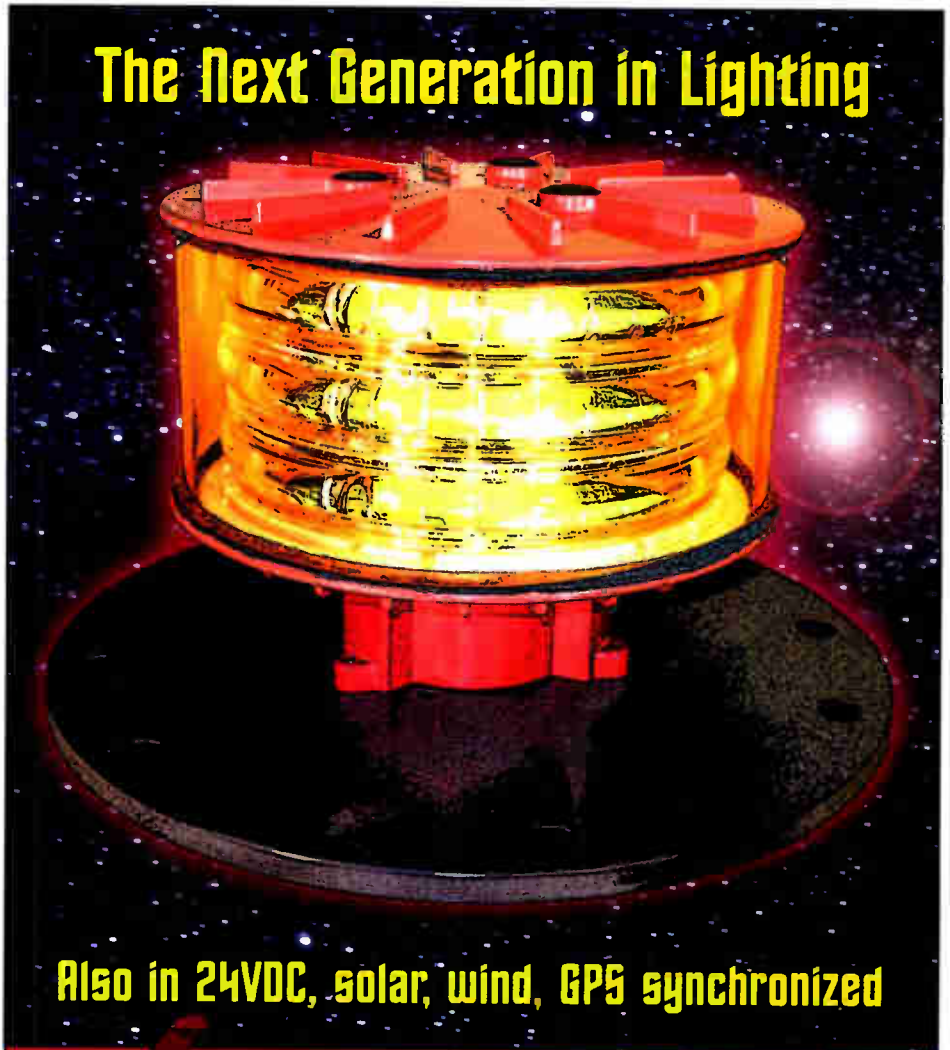
It's a tough legal requirement.

OSHA and NATE will be continuing their safety training at the NATE

convention in Orlando, FL, Feb. 11-14, 2008. The convention will feature an appearance by Edwin G. Foulke Jr., Assistant Secretary of Labor for Occupation Safety and Health at the U.S. Department of Labor. **agl**

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Are You Doing Your Part?

An interview with Patrick Howey, executive director of the National Association of Tower Erectors.

AGL spoke with Patrick Howey in late 2007.

AGL: What has been a highlight of the past year for NATE?

Howey: We are finishing up the first year of our partnership agreement with OSHA for our national partner-

additional members signed up for the program.

We still have to approve those companies, but we should be right around 100 partners for next year. Partners agree to a list of things they'll do, training employees, having a competent person on site, conducting safety audits on the site and having a safety program for employees.

We're firm believers in the program and motivating people to step forward voluntarily to reach a higher level of safety for our members' employees.

That's exciting for us, and we're just getting to the first anniversary of signing that document into place. That's an

important anniversary and it will give us a chance to sit down with OSHA and look at the numbers and gauge the success of the program. We're encouraged by our members' participation.

We've been doing a fair amount of work with OSHA. We're working on changes to the riding the line directive. NATE had revised our hoist standard, and we wanted to see that reflected in the riding the line standard. We have further clarified and improved that language. We're looking forward to getting that done.

We're looking at how we can best address safety. A year and a half ago, we had started releasing safety posters to the industry with the idea that we can run ads in magazines, which we do.

We need a workforce properly trained and equipped and an industry dedicated to doing it right

ship. That's something that we were very excited to see coming into place and very pleased with the responses of our members. We have 85 members initially in the partnership and just had a midseason enrollment period where



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Patrick Howey, executive director of the National Association of Tower Erectors: 'We're looking at how we can best educate the industry in hiring qualified contractors, making sure they have the experience and training to do the job right and safely.'

but we really want to get the message of safety directly to the employees, the tower hands.

By having posters, you can put them up in the break room, in the shop, where employees will see the message. By rotating the messages around, it will keep their interest. We've released three sets of six posters, 18 altogether, in the past 18 months. The feedback has been good.

We're looking at how we can best educate the industry in hiring qualified contractors, making sure they have the experience and training to do the job right and safely.

AGL: *What is NATE's primary motivation?*

Howey: Safety is NATE's top priority. It's why the association has been created. We just want to see companies operating as safely as they can. We want to see the industry taking the lead on driving safety.

AGL: *What developments are ahead in safety equipment and techniques?*

Howey: One thing I can point to is that ANSI has released an updated fall protection standard, Z359. It really goes into depth in fall protection. We're in the process of reviewing that

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document and comparing it to our standard to make sure our members are continuing to receive the best safety guidance possible.

We introduced our climber-training standard a couple of years ago. We give

any new member a copy of that and make it available to non-members.

AGL: *MidAmerica Tower Service has been named as the first tower maintenance company to participate in OSHA's Voluntary Protection Program.*

Howey: This is the first tower company that's been given that designation. We're very proud of them that

We're working on changes to the riding the line directive



A worker climbs a tower in Cuddy, Pa. Photo: Buckingham Manufacturing.

they would reach that standard. As for OSHA discussing that with NATE, that's a recent development that's been brought up. Our focus has been on our partnership, which has outlined what areas of safety are of primary importance on the tower site and how to make sure those areas are addressed. The partnership was developed over a period of years by looking at tower sites and seeing how people could work as safely as possible. My congratulations to MidAmerica Tower Service on their success. It's always great to hear when someone is doing something right.

AGL: *What's new for the NATE convention?*

Howey: The convention is focusing once again on safety. Safety first, safety always. We want to continue to drive that theme.

We're excited that Ed Foulke, assistant secretary of Labor for OSHA, will be attending in 2008. That's exciting news. He was our featured speaker last year but he got snowed in so he did his address by phone. He told us he would be there next year. That's an indication of the kind of support he's given this industry. We're excited to have him there.

For a show based on safety, that's really the top dog we could want to be there. Otherwise, the trade show floor is filling up fast and we again have great

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A worker on a tower in Cuddy, Pa., uses fall protection equipment. Photo: Buckingham Manufacturing.

try. It is an opportunity for companies not only to show their own support for safety, but also their dedication to the industry overall.

Over the years, NATE has become the voice of tower erectors in this country. Whenever there are issues of regulatory significance, NATE speaks for the tower erectors. By being a part of the association to get materials to keep your own guys safe and go to sessions, be involved in the overall health of the industry. NATE gives

support from our sponsors. It looks to be an outstanding year.

NATE gives companies the opportunity to access the state of the art in terms of safety materials, educational sessions and information on the indus-

those companies who are good players an opportunity not only to be better but to give something back to the tower erection industry.

AGL: *Have you been on a tower yourself?*

Howey: I went to the top of a 2,000-foot tower, but there was an elevator, so I was not climbing.

What impressed me all the way up, as I looked at the structure, is that people came out and built this. It is hard to imagine when you look at it. I don't know how to describe the awe I felt for the workers in the industry.

The tower industry has benefited from people who have time and experience, but we've also seen people work on towers before they knew what they were doing. We need a workforce properly trained and equipped and an industry dedicated to doing it right. We have a lot of excellent companies out there that fit the mold, and it is a matter of bringing the others along too.

agl

Patrick Howey's email address is patrick@natehome.com.

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Where Is the Tower Industry Headed?

The owner of the Tower-pro website speaks out about the forces that shape the lives and safety of tower workers.

by **John Hettish**

This is just one person's view of the tower industry. In fact some say it is not an industry at all but merely a loose collection of small businesses. Be that as it may, the tower industry has undergone an explosive expansion from a collection of a few specialized businesses catering to the broadcast industry to hundreds of companies, most of which cater to business of establishing and maintaining the nationwide wireless telephone network.

The need for communications towers began with a vengeance around 1985 when the first metropolitan areas became connected. Many jumped on that bandwagon and made money. As the '80s gave way to the '90s more young men and women entered the tower erection work force all with dollar signs in their eyes. The promise of quick cash lured them. The relative freedom of working on the road 300 days a year or more also attracted some who had no connection to family or hometown. The tower worker often considers himself the last of the cowboys.

Vertical realtors

In the beginning the cell companies took care of their own tower needs by contracting with tower erectors and antenna installers directly. The tower companies doing this type of work would respond with excellent work for

The tower worker often considers himself the last of the cowboys

the most part and made quite a bit of money in the process. Somewhere along the line the cell companies began to see

38 above ground level



John Hettish at 1140 feet on Citadel Broadcasting's WKDF tower in Nashville, TN. Photo by Sam Smith.

contracting directly with tower businesses as something best outsourced. They also began to see that owning towers might not be the best idea from a legal standpoint and that they could sell their tower properties to a new breed of business: tower owners known as "vertical realtors."

The general contractors took over the process of getting the job done. The GCs, relatively large companies such as Bechtel and General Dynamics, looked to other smaller business people to provide a work force at a moment's notice. This "just in time" approach gave rise to the itinerant tower worker who would jump from company to company.

The need for tower crews "just in time" caused many employers to hire people they would not normally consider. At this point a type of pyramid appeared: the GC at the top of the heap; their crew suppliers in the middle; and the actual workers who would do the work of tower and antenna installation at the bottom.

One problem with all this was that training and oversight was being neglected. Accidents occurred, and because there were far more towers and tower workers than ever before, people started to notice us. OSHA didn't quite know what to do. The GCs listened to their lawyers and created often-onerous rules all in the name of safety. The

vertical realtors also started listening to their lawyers and created qualification processes for anyone doing work on their tower sites aimed at protecting the tower owner at all costs. One leading vertical realtor requires the contractor to have insurance coverage of \$5 million and to sign a "Waiver of Subrogation," an instrument that absolves the owner's insurance company from all liability even if the owner is at fault. Doing work for the large general contractors and for the vertical realtors became far more expensive, especially when one considers that most tower erection and maintenance companies have 15 employees or less.

Sub-contractors

As a reflection of the rest of American society, the emphasis from the GCs and the vertical realtors is on the cheaper price. On the one hand they expect these small businesses to spend thousands on insurance, fuel, training and

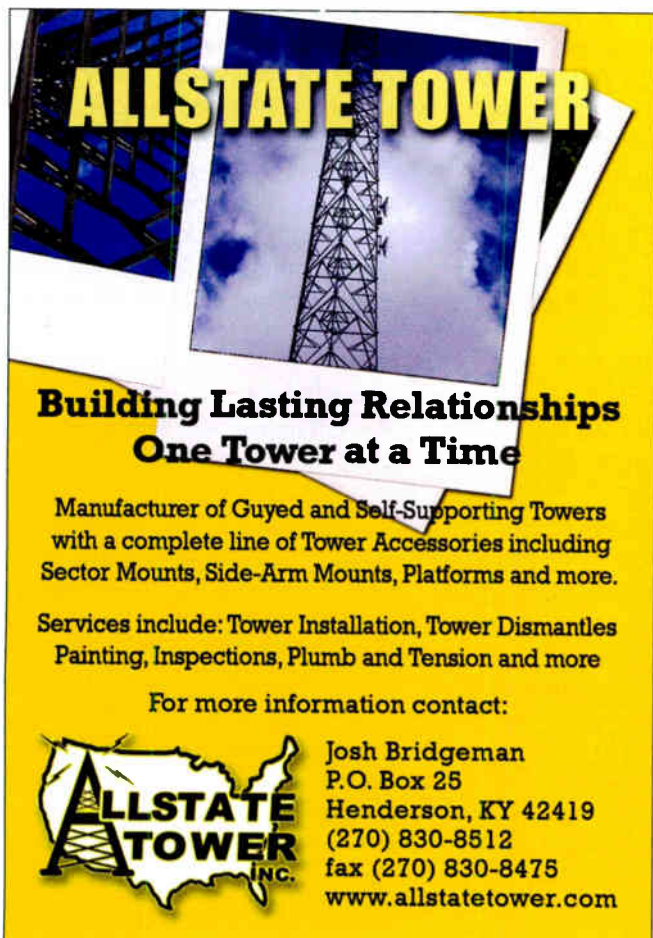
compliance, yet they want to pay less and obtain more service with each new year. This causes some tower company owners to try an end-run around the IRS, declaring their employees to be independent sub-contractors. This is a shaky practice at best but it does keep the cost of insurance and compliance down for these company owners. Because the emphasis is on lower cost, the non-compliant company is best suited to compete in a low-price environment. Tower companies working cheaper will probably ensure the eventual demise of their business.

Where do we go from here?

Tower workers continue to struggle to make a living. I have the unique privilege of running a free service in the Internet designed to allow people in the tower business the opportunity to network. This medium is an Internet mailing list called Tower-pro. The home page can be reached at <http://groups.yahoo.com/group/Tower-pro>. As list

owner, I am privy to what tower workers are discussing. During most of the time tower companies have been in business the workers and owners have been isolated from one another. Now with the formation of the National Association of Tower Erectors (NATE) for company owners and Tower-pro for the rank and file, we're talking to one another. From what I see, there's been a pent-up desire to communicate, and now it is possible.

From reading the message traffic on Tower-pro, it seems that those who have been continuously in business for ten years or more seem to be pretty healthy, but they feel the pressure to provide more for less. Often over the past five years, the cell industry would begin a project to upgrade their systems. Tower workers, idle from the most recent big push and those new to tower work would mobilize to take advantage of a sudden promise of work. I have seen this work suddenly stop and have heard



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the complaints of the tower worker who then finds himself sitting on his couch, watching Jerry Springer on TV, rather than working. Suddenly, another build-out begins, and they're off and running again. In addition, the rise of the GC and the wannabe GCs who actually hire crews have produced some shady operators. The comment, "You'll get paid when we get paid," is more the rule than the exception for the crews actually doing the work. Their employers often have to wait 60 to 90 days before they're paid. Some of the shadier operators advertise their need for crews and entice out-of-work tower technicians to travel across the country only to default on pay and expenses.

'Mechanical engineers'

Since the inception of the Tower-pro Internet mailing list in March 1999, I have been able to get a pretty good view of who tower workers are and their markets. Many tower workers are the equivalent of unschooled mechanical engineers. Many are highly intelligent and have been led into this life of erecting and maintaining communications towers through various twists and turns of fate. The men and, yes, women of the tower industry travel up to 340 days a year giving up the sedentary lifestyle that most accept as the proper way for an adult to proceed through life. Some tower workers begin as adrenaline junkies

but don't last long. The average tower worker who climbs does so on a daily basis wearing the OSHA-mandated 20 pounds of protective equipment, 15 pounds of tools and often trailing a long rope to "rig" the tower. The average adrenaline junkie will do that for a couple of weeks or a couple of months, but the real Tower-pro does it day after day, month after

month and year after year. Sometimes he does his work in the rain, the snow and in excess heat. After someone has been doing this work a few years, he can't imagine another way of life.

The future of tower work?

I have heard that cell antenna and tower work will cease to exist as we know it, and that there may be less broadcast work in the future. In the case of cell tower work, it all began with a rush and, like many things that began with a rush, it will eventually have just as sudden of a finish. Initially cell operators had few clients, those willing to pay \$1500 or more for a mobile telephone. They built



A view from the 1223-foot level on the WKDF tower in Nashville, TN. Tower hands cannot follow the advice, 'Don't look down!'

a few tall towers in a given area to cover 20 miles or more. The operators were quick to figure out that they could give the phone away for the income expected from a two-year contract. The apparent price of phones decreased dramatically, enticing more to purchase phones and sign two-year contracts. More users and the advance of technology made more capacity available and more work for tower technicians. Since more people were buying more phones, the carriers started building more towers with each covering less area because of the limited number of frequencies. As the need for more cell sites increased,

A type of pyramid appeared: the general contractor at the top of the heap; their crew suppliers in the middle; and the actual workers who would do the work of tower and antenna installation at the bottom.

One problem with all this was that training and oversight was being neglected. Accidents occurred, and because there were far more towers and tower workers than ever before, people started to notice us. OSHA didn't quite know what to do. The general contractors listened to their lawyers and created often-onerous rules, all in the name of safety. The vertical realtors also started listening to their lawyers and created qualification processes for anyone doing work on their tower sites aimed at protecting the tower owner at all costs. One leading vertical realtor requires the contractor to have insurance coverage of \$5 million and to sign a "Waiver of Subrogation," an instrument that absolves the owner's insurance company from all liability even if the owner is at fault. Doing work for the large general contractors and for the vertical realtors became far more expensive, especially when one considers that most tower erection and maintenance companies have 15 employees or less.

carriers built shorter towers in urban areas, some as short as 40 feet, with the idea of further decreasing the coverage area of a given cell site to more effectively reuse the limited radio frequencies among more cell towers. Technology has come further making it possible through encryption to use all frequencies at all cell sites. The demand for cell phones has pushed the price down even further as the carriers compete. The cell phone is now seen as a necessity by some parents for their grade school children.

Antennas everywhere

In many places, cell coverage is thorough, especially in urban areas. Carriers and manufacturers continue to improve the technology and are now offering, for a price, many other services to the mobile phone user. As carriers continue to improve their nationwide footprint, towers will continue to be erected throughout


the country. Some will be tall; many others will be short. Some will be disguised as pine trees and church steeples. Antennas are now installed on billboards and electrical transmission towers. Neighbors will continue to call each other on mobile phones to protest the proposed new tower just down the road. In many areas of the country there will be fewer new towers and more "collocation," or the installation of more antennas on existing towers. In remote areas cell towers will continue to be erected. How many and how quickly will be anyone's guess.

It is said that most people receive their TV signal from cable these days. I live in a rural area, and I still use an antenna. The FCC-mandated high definition TV change in the way signals are transmitted has resulted in a lot of work for broadcast-oriented tower companies. That work is continuing because of a 2009 deadline for

broadcasters to cease transmitting on some of the lower TV channels and to stop using the familiar NTSC analog technology on all channels. Many TV receivers will become obsolete and useless after 2009, but there will still be many NTSC transmitting antennas to remove and tower modifications to complete. I am sure this work will extend for many more years.

The only constant in life is change. Who knows what personal communications and entertainment devices will look like in a few years? Perhaps today's mobile phones and televisions will be unknown to future generations as something completely different evolves. agl

Among other things, Hettish is a tower hand with 35 years of experience. He is the owner of the Tower-pro website, www.tower-pro.net, and the president of Middle Tennessee Two-way in Shelbyville and Murfreesboro, TN.



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Initiatives Seek to Ease DAS Site Construction

by Jacqueline McCarthy, esq.

DAS operators must navigate through a complex maze of regulatory entitlements and approvals in advance of construction.



This adds uncertainty to the DAS permitting process. To promote consistency and certainty in DAS deployments, the DAS Forum actively advocates before federal, state and local governments, and serves as an educational forum for information about this wireless deployment tool.

DAS, as well as how the order threatens the viability of existing DAS networks nationwide. The *Motion* also affords us with standing to explain how the one-size-fits-all requirement of 8-hour back-up power equipment at all wireless facilities, including DAS, fails to account for the diversity of wireless site types and could lead to the de-commissioning of sites where compliance is infeasible, thereby conflicting with the goal of ensuring reliable wireless coverage.

The Forum plans to advocate for improved regulatory treatment of DAS before the Connecticut Department of Public Utility Control.

Through a request for docket opening, the Forum will pursue improved access, make-ready procedures and regulatory

treatment of wireless attachments. Likewise, the Forum is considering a response to the FCC's recent pole attachment rulemaking, capitalizing on the opportunity to explain how reform of wireless attachment regulations can benefit the wireless industry as a whole. These proceedings engage influential audiences, and allow

the Forum to explain the intricacies of DAS construction and deployment.

As an educational resource for DAS issues, Forum has participated in key events and will be hosting a series of "DAS in Action" events in 2008. In November, the Forum participated in the National League of Cities' annual convention, explaining DAS and its usefulness as a means of wireless deployment to a broad audience of municipal leaders from across the nation.

The Forum was a supporting sponsor of the American Conference Institute's DAS Summit in January. At the Summit, the Forum hosted a panel discussion on leveraging outdoor DAS as a means of solving coverage and capacity problems in sensitive environments. The panel, which included many of the Forum's founding members, explored the viability of outdoor DAS as a complementary technology to traditional "macro" sites.

For more information about the DAS Forum, please visit www.thedasforum.org.

agl

Jacqueline McCarthy, esq., is director of government affairs at PCIA - The Wireless Infrastructure Association, Alexandria, VA.

The one-size-fits-all requirement of 8-hour back-up power equipment at all wireless facilities, including DAS, fails to account for the diversity of wireless site types

On Dec. 10, 2007, the Forum filed a *Motion to Intervene* in a challenge to the FCC's back-up power order requiring batteries or generators at all wireless facilities, including at DAS hubs and nodes. Our involvement here affords us with the opportunity to express the order's infeasibility with respect to

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New ANSI Z359 Standard Made Simple

AGL begins this month's showcase with an explanation of the new ANSI climbing standard that became effective Oct. 15, 2007.

by Joseph Feldstein

The ANSI Z359 Accredited Standards Committee has completed work on a new series of fall protection standards. On Oct. 15, 2007, the new standards replaced ANSI Z359.1-1992 (R1999), Minimum Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components.

The scope of the new standard has expanded beyond fall arrest to other work applications. The new Z359 adds four new sections comprising the family of standards, which make up the complete document. Sections of the new standard include:

Z359.0 – “Definitions and Nomenclature Used for Fall Protection and Fall Arrest.” This part functions as a dictionary of specialized terms compiled from the other four sections and defines each of approximately 150 terms used throughout the new standard.

Z359.1 – “Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components.” This part contains product design criteria and test procedures for fall arrest components, subsystems and systems, just as in the previous version of the standard. However, it has been revised with several important new requirements.

1. Gate strength requirements have increased for snap hooks and carabiners. The new standard increased the gate strength requirement to 3,600 pounds in all directions of potential loading to the gate.
2. A front attachment element for fall arrest is now included in the standard. The revised standard allows attachment of the fall arrest system to a

front-mounted D-ring, located approximately in the sternum area. Front D-ring connection is limited however, to systems restricting free fall distance to 2 feet or less and limiting front D-ring maximum fall arrest loads to 900 pounds force, or less.

3. Additional testing and warnings for twin-leg shock absorbing lanyards. The new standard will include a 5,000-pound static test of the joint between the two lanyard legs. Also added is a product label warning to attach only the center snap hook to the harness back D-ring. More warnings will be included within the user instructions, such as a warning not to attach the lanyard's unused leg to any harness point except attachment points specifically approved by the harness manufacturer for that purpose.

Z359.2 – “Minimum Requirements for a Comprehensive Managed Fall Protection Program.” This entirely new section is directed at employers and safety professionals rather than product manufacturers. The new program standard sets detailed requirements for a comprehensive fall protection program and forms the basis for the standard's other four sections.

The standard's purpose is to:

- identify, evaluate and eliminate (or control) fall hazards through planning.
- ensure proper training of personnel.
- ensure proper installation and use of fall protection and rescue equipment.
- implement safe fall protection and rescue procedures.

The standard sets clear, unambiguous duties and responsibilities for each program participant, including employers,

Qualified and Competent persons, rescuers, and trainers. Training is also defined for each role in the organization, as are the requirements for the trainers themselves.

The Program Standard sets general and specific requirements for fall protection procedures. The procedural scheme is based around the Fall Hazard Survey Report. The report is written by trained safety professionals, at the Qualified Person or Competent Person level, identifies each fall hazard at the work location. The report goes on to recommend one or more methods for eliminating or controlling each identified fall hazard through a fall protection hierarchy.

The program standard establishes strength criteria for various fall protection anchors. Anchors are divided into two categories, Certified and Non-Certified. Certified anchors are those which have been selected under the supervision of a Qualified Person. Non-Certified anchors are those anchors judged by a competent person as capable of supporting the predetermined anchor forces prescribed by the standard. See “Requirements by Application” on page 44.

Other requirements

- Basic principles for rope access, including use of two rope lines and the need to operate as a multi-worker team.
- Provisions for prompt rescue after a worker has fallen and remains suspended, unable to evacuate him or herself to a safe working level.
 - Planning for prompt rescue is defined as reaching the rescue subject within six minutes after an accidental fall.

Requirements by Application

Fall Arrest

Non-Certified Anchor | 5,000 lbf static strength
Certified Anchor | Designed, selected and installed by a Qualified Person, Static strength two times maximum arresting force

Work Positioning

Non-Certified Anchor | 3,000 lbf static strength
Certified Anchor | Static strength two times foreseeable force

Restraint and Travel Restriction

Non-Certified Anchor | 1,000 lbf static strength
Certified Anchor | Static strength two times foreseeable force

Rescue Systems

Non-Certified Anchor | 3,000 lbf static strength
Certified Anchor | Static strength five times the applied load

- If your plan calls for assistance by professional rescue services, such as the fire department or local search and rescue teams, then advance planning must be undertaken.
- If your plan includes an in-house rescue team, then team members must be trained and equipped for the task. Training must include

regularly scheduled simulations and documented plans and instructions for their use.

- Requirements for incident investigation in the event of accidental death, injury or property damage.
- Regular evaluation of the effectiveness of the Managed Fall Protection Program.

Z359.3 – “Safety Requirements for Positioning and Travel Restraint Systems.” Z359.3 is another all-new section and establishes minimum design and test requirements for equipment used in work positioning and travel restraint. Work positioning systems are designed to prevent a fall from occurring. When a fall hazard is present, positioning systems must be



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used in conjunction with a separate and independent personal fall arrest system. Restraint systems do not support a portion of the worker's weight and are used only on walking/working surfaces with a slope between zero and 18.4 degrees.

Full body harnesses must meet the requirements of ANSI Z359.1 for fall arrest. In addition, work positioning and travel restraint attachment elements (D-rings) must withstand a dynamic strength test consisting of a 3.3-foot free fall with a 220-pound test weight.

Lanyards under this section must be designed and tested to withstand a static load of 5,000 pounds force without breaking.

Z359.4 – "Safety Requirements for Assisted Rescue and Self-Rescue Systems, Subsystems and Components." This new standard establishes requirements for design, performance, marking, qualification, instruction, training, use, maintenance and removal from service of products used in rescue and evacuation. The standard is directed at rescue systems utilized in pre-planned rescue applications for one to two persons wherever a fall hazard exists.

Harnesses, rescue lanyards and anchorage connectors must meet the applicable requirements in ANSI Z359.1. Evacuation harnesses are for rescue only and not for fall arrest. They must securely hold the body whether the person is conscious or unconscious. Body support must be accomplished by a combination of webbing straps supporting the body around the shoulders and thighs.

Self retracting lanyards with integral rescue capability must engage in the rescue mode at any time, have a minimum 3:1 mechanical advantage, hold a load in rescue mode and have a means to stabilize the device during use.

Synthetic rope tackle blocks must use rope with a minimum breaking strength of 4500 pounds tensile load and 3,100 pounds static load. They must have a secondary brake to prevent uncontrolled descent, and have a minimum mechanical advantage of 3:1.

Descent devices can be single or multiple use devices, and can be automatically or manually controlled. Manually controlled devices must stop if descent control is released and must also have a panic-grab

function (stop descent if excessive force is applied to the control).

Personnel hoists may be operated manually or by an external power source. Units operated by an external power source must have a manual back-up operation mechanism. Hoists must also be able to stop and hold a load and include a back-up brake mechanism.

For additional information on the new standard's requirements, refer to MSA's

white paper, A Review of Upcoming Changes to the ANSI Z359.1 Fall Arrest Standard, posted at www.msanorthamerica.com/webcasts.html.

To purchase copies of the new standards, contact the American Society of Safety Engineers, online at www.ASSE.org. **agl**

Feldstein is manager, Technical Services for MSA Fall Protection, Englewood, CO.

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ANSI Z359 Compliant Lanyards

Several ANSI Z359-compliant lanyards are available from **MSA North America**.

The FP5K tie-back lanyard uses a carabiner with a 5,000-pound gate strength to allow users to tie back to the leg of the lanyard, minimizing the amount of equipment a user must carry. The integral shock absorber keeps fall arrest forces below 900 pounds to meet ANSI Z359.1 requirements and uses Monster Edge webbing with a 12,000-pound minimum breaking strength for increased durability. Monster Edge webbing includes internal wear indicators to alert a user when it is time to remove the product from service.

The Diamond line of lanyards features a pouch-less, integral shock-absorbing design to keep fall arrest forces below 900 pounds to meet the requirements of ANSI Z359.1. This pouch-less design decreases the weight of the product and streamlines the design, improving user comfort. The outer sheath of the Diamond lanyard is UV resistant and includes a Teflon coating to prolong service life.

Sure-Stop shock-absorbing lanyards use a tear-tape design to keep fall arrest forces below 900 pounds to meet ANSI Z359.1 requirements. Lanyards are offered in adjustable and fixed lengths and are available in rope, cable and web.

ArcSafe lanyards are SEI-certified to the requirements of ASTM F887-05 standard for electrical arc flash protection. ArcSafe shock-absorbing lanyards use a tear-tape design to keep fall arrest forces below 900 pounds to meet ANSI Z359.1 requirements.

Thermatek lanyards are designed for high-heat applications. This specialized design features a Tuffweld protective cover over the shock absorber and a Kevlar back-up strap inside the shock-absorbing pouch.

Heavy-worker versions of all these lanyards are available for workers who weigh between 311-400 pounds. Heavy-worker lanyards limit maximum fall arrest forces to 1,800 pounds and are OSHA compliant.

www.msanorthamerica.com

Free Fall Limiter

The Miller MiniLite fall limiter is an 11-foot self-retracting web lanyard with a quick-activating braking system that limits free falls. In contrast to shock-absorbing lanyards, a fall limiter eliminates the need for extended fall distance clearance, minimizing the risk of injuries and making rescue easier.



The compact design fits in the palm of your hand and weighs 2.5 lbs. Its quick-activating, high-strength stainless-steel braking system offers up to 11 feet of working capacity. The unit with its corrosion-resistant interior, frame and components requires no annual factory re-certification. It also features a high-impact protective outer cover and visual load indicator and is available with a variety of integral anchorage connectors.

And it is rated to 400 pounds capacity when using a SofStop shock absorber.

www.millerfallprotection.com

Locking Snap Hook

Buckingham Manufacturing's 17061 locking snap hook, a piece of personal protection equipment, complies with the new ANSI/ASSE Z359.1-2007 Section 3.2.1.4 standard. It withstands a 5000-pound tensile strength test and a 3600-pound gate load test in all directions. The 17061 has the same design and operation as the 1706 locking snap hook.

www.buckinghammfg.com





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RF Garment System

Available from **UniTech Services Group**, a Naptex-based flame-retardant RF garment system is CE-certified to reduce radio-frequency (RF) radiation. Yarn used for these garments has patented, conductive yarn containing stainless-steel fibers in its core. The tailored garments can be machine washed with no deterioration in shielding or service life. A new profile hood design offers extra comfort. Silver-based knit socks and gloves provide RF protection, comfort, and microbial resistance.

The proprietary RF fabric has been certified to German standard DIN 32780. CE certification guarantees constant quality of garment components and the manufacturing process. These RF garments have been tested in conformance with the U.S. ANSI/IEEE standard and the German DIN VDE standards. Additional tests include U.S. Navy, German Armed Forces, German Telekom, independent institutes, and major licensees. Results show ample protection for high radio and radar frequencies and high power microwave applications.

www.unitech-rf.com

Protective Suit

The KW-Gard RF protective suit from **Euclid Garment** enables tower and rooftop workers near antennas to comply with FCC RF safety guidelines. The soft, breathable fabric is made from Nomex with a 25 percent stainless-steel microfiber content. The suit offers maximum protection, reducing RF field strength more than 30 dB (1000 times).



The suit has an ergonomic fit, specially cut for climbing procedures, ideal pocket-placement, and a headgear system (necessary for RF fields above 800 MHz) designed for optimal visual acuity. The garment set includes the coverall, headgear, long-length gloves and socks, carry-bag and DVD tutorial. Standard and custom sizes available.

www.euclidgarment.com

RFID for Safety Gear

The i-Safe cable retrofit tag and the i-Safe rigid retrofit tag from **Capital Safety** allow a variety of items and surfaces to be tagged for paperless inspection and inventory tracking with the i-Safe system. The cable retrofit tag, which is the size of a golf ball, fits wire rope up to 3/16-inch in diameter and can be used for self-retracting lifelines and other cable products including slings and winches. The i-Safe Rigid Retrofit Tag has a low profile that allows it to be attached to a variety of systems and anchors in addition to non-fall protection equipment such as toolboxes, electrical panels and portable ladders.



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SWAP Completes Another Record Year

By Pat Tant



The State Wireless Association Program continued to grow during 2007 with the addition of seven new state associations. Those launched last year included California, Illinois, New York, Ohio, New Jersey, Northwest, and Maryland. In 2007, we also witnessed a relaunch of the Louisiana/Mississippi Wireless Association.

The combined efforts of these two sister states is a tremendous story of how this young association survived the devastation wrought by Hurricane Katrina.

Existing states associations also had a great year, and their volunteers have been hard at work to plan the year ahead. Their boards of directors and committees are busy planning quarterly meetings: inviting industry leaders as guest speakers at luncheons; and choosing those perfect golf courses for the charity tournaments that have become much anticipated annual events that promote positive industry awareness throughout our communities.

State associations have exhibited an outstanding heart of care and generosity. Each donates to chosen local charities the proceeds of fundraising events conducted throughout the year. These include golf tournaments, holiday social collections, and even a Texas hold 'em poker tournament. As of this writing, seven state associations had reported 2007 charitable donations totaling more than \$100,000 to Nancy Chrisman, director of SWAP and membership at PCIA – the Wireless Infrastructure Association. To everyone who participates in the generous giving

to organizations such as children's hospitals, the American Red Cross, cancer centers and foundations, and many more – we all thank you.

In addition to the information, education, donations, and networking opportunities, associations will have a definite focus on legislative issues this year. Our featured state association this month is the Carolinas Wireless Association and I encourage you to read and learn about their success in the recent passage of statewide tower citing legislation in North Carolina. This is the legislation that was introduced and passed in Tennessee two years ago that made history when PCIA joined with an individual state association to ease the process of collocation. Other states have introduced similar bills, and SWAP and PCIA will continue to support these efforts to ensure success in zoning and deployment of sites.

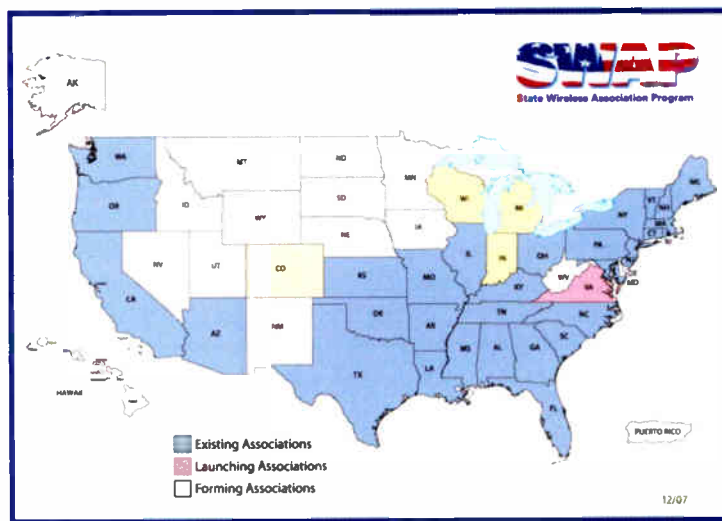
Although the SWAP National Executive Committee was formed only a few short months ago, we are

preparing to make a difference in both the state wireless movement and our industry as a whole in the year ahead. The Committee will be traveling to PCIA's headquarters in Alexandria, VA, during the first quarter to meet and discuss our plans, our goals, and our commitment to SWAP. Our article for the March issue of AGL will feature an update on legislative news throughout the country.

I encourage everyone to continue your support of state wireless. Please contact Nancy Chrisman with how we may assist you with any needs you have within an existing association or if you are interested in establishing an association in your local state. Nancy's email is nancy.chrisman@pcia.com.

The SWAP Executive Committee thanks you for your assistance in making a difference through state wireless. Together, we can make a difference in our industry by delivering the local grass roots message at a national level. **agl**

Tant is senior vice president of Excell Communications and Network Partners.



SWAP National Executive Committee mission statement:
 To implement and execute a national program for the success of the individual state wireless associations and provide one voice for strength and consistency throughout the country

SWAP
 State Wireless Association Program
www.swapprogram.net

Meet: Carolinas Wireless Association

by Brian Hurley, CWA president



Carolinas Wireless Association (CWA)

Meeting Locations: Pinehurst, Charlotte and Raleigh

Date Formed: 2005

Association Charity:

University of NC,
Ovarian Cancer Research
Center – 2007 Charity

President: Brian Hurley
Wireless-Enterprises
Apex, NC 28539
919-868-4082

bhurley@Wireless-Enterprises.com

The Carolinas Wireless Association is entering its fourth year. We continue to support a broad base of wireless participants in North and South Carolina and have continued to grow significantly year after year. We attribute this growth to our core mission of being an advocacy forum that addresses issues faced by all segments of the wireless industry: carriers, tower companies and vendors.

Our first real advocacy breakthrough came in Spring 2006 when the association sponsored an educational forum for the North Carolina Department of Labor (DOL) Tower Climber Regulations. These regulations set a new standard and the National OSHA regulations are now modeled after them. We worked proactively with the DOL to host a “Lunch and Learn” that included John Hoomani, DOL’s general counsel. At this event, DOL’s comprehensive presentation outlined pertinent changes that our construction segment faced under the new regulations. DOL’s representatives further clarified issues through an extensive question and answer session.

CWA Board Members

Vice president: Elaine Tarkington, *SBA*

Secretary: Gayla Haag, *Crown Castle*

Board Member-at-Large: Mike Sayers, *FCI Towers*

General Counsel: Henry Campen, Parker, Poe, Allen

Our next advocacy breakthrough came in 2007 when our partnership with PCIA – The Wireless Infrastructure Association culminated in the passage of statewide tower-siting legislation in North Carolina. This legislation streamlined the zoning process for collocations and limited the ability of municipal consultants to charge unlimited amounts for reviewing of any wireless application. The statute also limited the scope of review to traditional zoning matters, restraining the permitting authority from second-guessing the carriers’ build-out plan and strategy.



In 2008, our Legislative Committee, chaired by Liz Hill of American Tower, will continue the momentum in North Carolina through a proactive educational initiative. The goal is to help local jurisdictions understand the effect of the statewide legislation. The committee’s program includes a model ordinance, a “Wireless 101” road show, and participation in ordinance revisions across the state. In 2008, we hope to duplicate our successes in a South Carolina statewide tower-siting legislative effort.

In addition to our advocacy efforts, our association is proud of its charitable endeavors. Proceeds from our annual golf tournament are donated to a worthy cause. In Summer 2007, the association designated the University of North Carolina’s Ovarian Cancer Research Center as the recipient. We gave \$10,000 to use for research, education and support for patients with ovarian cancer. As a way to give back to the community that supports us, we will continue to fund various charities and organizations that touch the lives of so many.

Thank you to our officers, board members and committee leads who have tirelessly led the way. Thanks also to our sponsors and general membership. Without their participation, none of our activities would be possible.

agl

CWA Calendar/Events

March 8: Program/Luncheon – *Location TBA*

June 8: Golf Tournament – *Raleigh*

September 8: Program/Luncheon – *Location TBA*

December 8: Holiday Social – *Charlotte*

www.carolinaswirelessassociation.com

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A coalition of broadcasters, engineers and OEMs filed a Request for Further Rule Making to unsnarl the FCC's AM detuning rules. The Commission released the Request for comments, which have been received. Indications are that the rules changes and additions in the Request will be adopted, wholly or in part. These changes should facilitate AM detuning compliance and improve relations among broadcasters and tower owners and their tenants.

To learn more, go to www.waterfordconsultants.com and read the articles about the proposed rule changes and the impact these changes may have on you.

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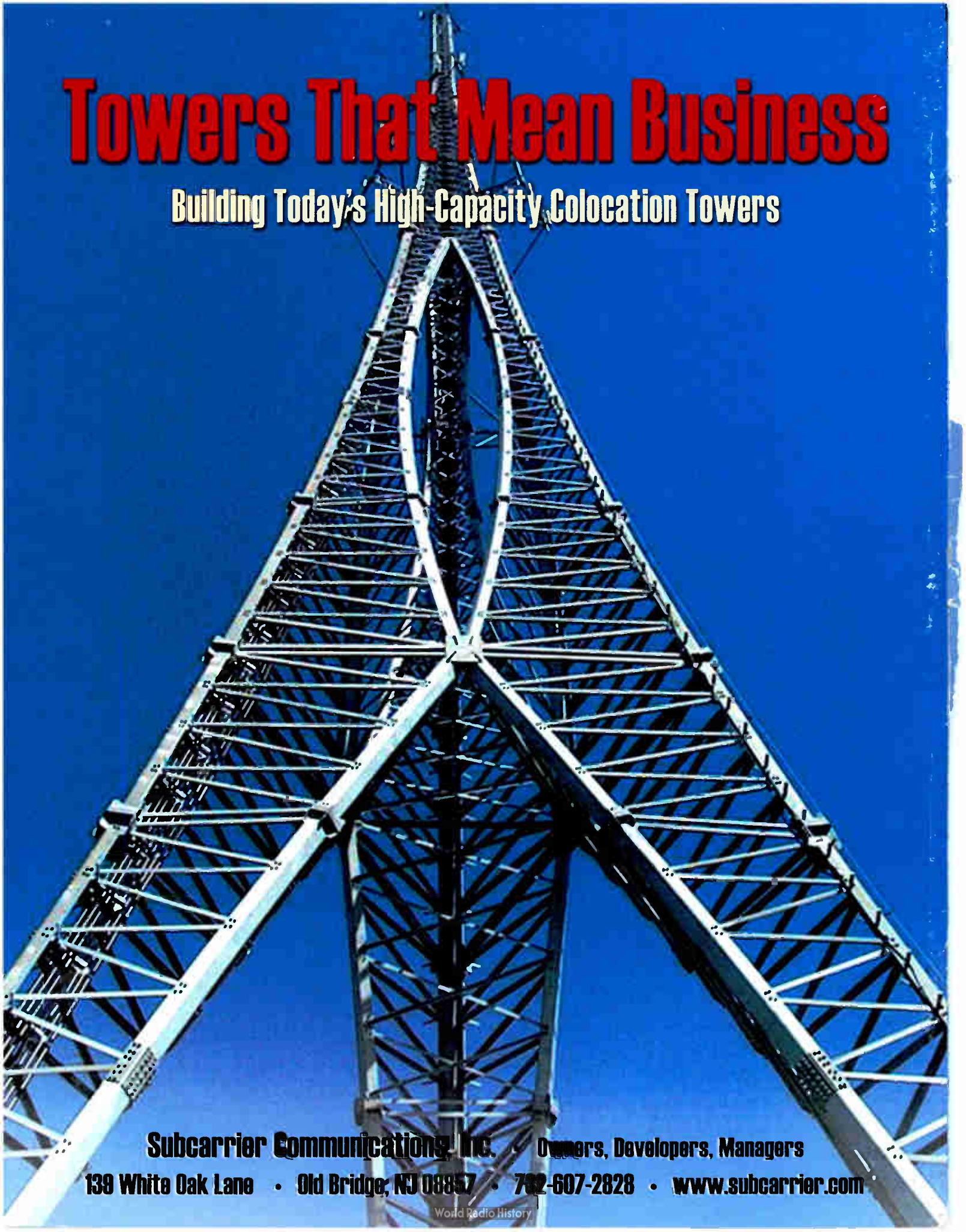
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