

ABOVE GROUND LEVEL

agil Magazine™

100th ISSUE

AGL Magazine's 100th Issue

- Timeline
- Mergers and Acquisitions
- Industry Leaders Reflect on Past 10 Years
- Tower Industry Foundation
- Recycle, Repair, Repurpose
- TIA 1019A Standard
- Hybrid Power Solutions

November 2014 /// Volume 11 /// No. 11



YOUR SIGNAL STARTS HERE.®



IN OUR BUSINESS, IT IS ALL ABOUT THE SIGNAL.

Our clients depend on SBA to provide the wireless infrastructure that allows them to transmit the signal to their customers. As their first choice provider of wireless infrastructure solutions, we are continuously setting the standard for customer satisfaction by **“Building Better Wireless”**.



- TOWER OWNERSHIP
- LEASING
- SITE MANAGEMENT
- SITE DEVELOPMENT
- CONSTRUCTION
- TECHNICAL SERVICES



800.487.SITE | sbasite.com

ABOVE GROUND LEVEL

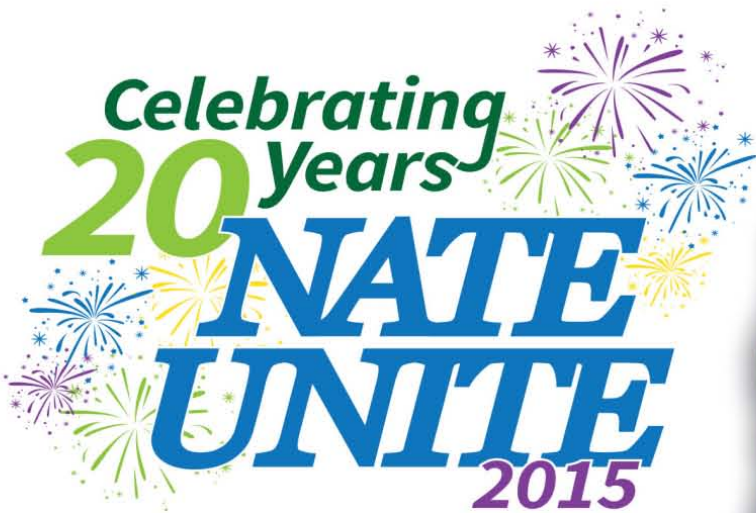
agl Magazine™

100th ISSUE

AGL Magazine's 100th Issue

- Timeline
- Mergers and Acquisitions
- Industry Leaders Reflect on Past 10 Years
- Tower Industry Foundation
- Recycle, Repair, Repurpose
- TIA 1019A Standard
- Hybrid Power Solutions

November 2014 /// Volume 11 /// No. 11



Join Us for
NATE's
20th Anniversary
Celebration!

FEBRUARY 23-26

LAKE BUENA VISTA, FLORIDA

Visit www.natehome.com to select your booth space and demonstrate your commitment to NATE by becoming a Sponsor today!

REGISTRATION
OPENS
October 15!



Conference & Exposition Registration Fees

Registration Description	Member Rate	Non-Member Rate
 Early Bird <i>(October 15, 2014 through November 30, 2014)</i>	\$135	\$405
Advance <i>(December 1, 2014 through February 13, 2015)</i>	\$149	\$449
On Site <i>(February 23 - 25, 2015)</i>	\$259	\$599
One-Day Pass <i>(Valid Wednesday, February 25, 2015 Only)</i>	\$125	\$200
NEW! Exhibit Hall Pass <i>(Valid ONLY FOR THE EXHIBIT HALL on Tuesday and/or Wednesday during exhibit hall hours.)</i>	\$75	\$100

has something for everyone to assist in meeting your business objectives.

Please visit www.natehome.com to register and for further details regarding each type of registration.

www.natehome.com

100TH ISSUE

24 The More Things Change, the More They Stay the Same

By Clayton Funk

30 Industry Leaders Reflect on the Past 10 Years

By J. Sharpe Smith

30 Industry Growth Has Led to Increased Antenna Loads and Retrofitted Towers

By James Lockwood

31 Engineering Cellular and DAS Has Seen a Fundamental Shift; Now Capacity is King

By Ted Obenour

32 Amazing Growth and the Challenges Forecasting It

By Kristin S. Rinne

33 How Tower Companies Overcame the Dot Com Crash

By Jeffrey Stoops

35 Wireless Drives Six-Fold Growth at Services Company

By Martin Travers

FEATURES

36 AGL Tower of the Month

Photography by Don Bishop

38 Tower Family Foundation Sets Course to Help Families of Injured, Deceased Tower Workers

By Don Bishop

44 Happy New Year! OSHA's Revised Recordkeeping Rule – Major Implications for Employers

By Mark A. Lies II and Kerry M. Mohan

48 Standard? What Standard?

By Dr. Bridgette Hester

54 Renewable Networks: Repair, Recycle, Repurpose

By Peter Murray

58 Capacity Management for DAS

By John Spindler

60 Hybrid Power Solutions for a Countrywide Cell Tower Network in Myanmar

By Craig Gelderman

DEPARTMENTS

04 Editorial Comment – Training, Enforcement and Family Support

By Don Bishop

06 Publisher's Note – I'm a Little Fired Up

By Richard P. Biby, P.E.

08 Buyers Guide – Quick-Guide to Tower Construction Companies

18 Questions and Answers – Auctions and Advocacy Dominate Agenda for CTIA

20 Questions and Answers – Rich Biby, Founder and CEO, Discusses AGL Magazine's First 10 Years

64 Product Showcase – Brackets, Mounts and Hardware

70 Advertiser Index and Professional Directory

AGL Magazine (Above Ground Level) is published 12 times a year by AGL Media Group Inc., P.O. Box 2090, Ashburn, VA 20146-2090, and is mailed free to qualified individuals in the United States of America.

POSTMASTER: Send address change to AGL Media Group Circulation Department, P.O. Box 2090, Ashburn, VA 20146-2090.

Interested in advertising with AGL Media Group's magazines, website or e-newsletters or sponsoring AGL Regional Conferences? Visit www.aglmediagroup.com/advertise for information.



Training, Enforcement and Family Support

Last month, there was just enough time before the deadline for this space to let you know about the launching of the Tower Family Foundation, a nonprofit organization



formed as a conduit for financial assistance to be given to the families of tower workers injured or killed while performing tower-related work. This

month, we give more details, including how families can apply to receive the financial assistance that the foundation offers in the form of grants and scholarships. To learn more, turn to page 38 for the article "Tower Family Foundation Sets Course to Help Families of Injured, Deceased Tower Workers." Fund contributors as of this writing include ClearTalk Wireless; Fletcher, Heald & Hildreth; MUTI – Sabre Industries Telecom Services; SBA Communications; and Jim and Betty Ann Coleman.

Enforcement

AGL Media Group Editor J. Sharpe Smith reported in the Oct. 2 issue of his *AGL Link* email newsletter that OSHA issued notice of a \$134,000 fine to St. Louis-based Wireless Horizon for a tower collapse that took the lives of two workers in March. The story recounted that Dr. David Michaels, the assistant secretary of labor who heads OSHA, sent a letter to tower industry employers telling them that if they did not follow safety

procedures, they would face penalties for willful violations, which are defined as acts committed with an intentional disregard of the law or with indifference to worker safety. Willful violations carry much higher fines than serious violations do. Serious violations are defined as involving situations in which there is a substantial probability that death or serious physical harm will result from a hazard that the employer should have known about.

Whether or not the fine issued to Wireless Horizon is sustained on appeal, it shows that OSHA meant it when Michaels said tower industry employers could expect higher fines.

Training

Enforcement actions and the need to extend support for families of tower workers who become casualties underscore the need for training, proper use of proper safety equipment, and supervision. Any initiative that spreads the commitment to safety deeper into all related companies including wireless carriers, general contractors, tower owners, and tower construction and maintenance companies will bring the day closer when the Tower Family Foundation need not exist, and OSHA can take a holiday.

Don Bishop, Executive Editor
dbishop@aglmediagroup.com



Exec. Editor/Assoc. Publisher

Don Bishop
913.322.4569
dbishop@aglmediagroup.com

Art Director

Brian Parks
423.710.3866

Copy Editor

Martha Collins

Contributing Editors

J. Sharpe Smith
515.279.2282
ssmith@aglmediagroup.com

Ernest Worthman
303.290.9700
eworthman@aglmediagroup.com

Publisher/CEO

Richard P. Biby, P.E.
540.338.4363
rbiby@aglmediagroup.com

Advertising Managers

Mercy Contreras
303.988.3515
mcontreras@aglmediagroup.com

Mary Carlile
484.453.8126
mcarlile@aglmediagroup.com

Circulation Manager

circulation@aglmediagroup.com

Corporate Office

AGL Media Group LLC.
201 Loudoun St. SE, Suite 301
Leesburg, VA 20175
703.594.8500

Press Releases and Advertising Materials

press@aglmediagroup.com

Subscription Information

To subscribe online, go to:
www.aglmediagroup.com/signup

To subscribe by mail:
AGL Magazine Circulation Department
P.O. Box 2090
Ashburn, VA 20146-2090

Copyright ©2014. AGL Media Group, LLC.
All Rights Reserved.

EDITORIAL COMMENT



AGL MAGAZINE'S 100TH ISSUE SPECIAL TIMELINE

The following pages reveal milestones on *AGL Magazine's* 10-year path. Our thanks for Clayton Funk, managing director, Media Venture Partners. See his article on page 24.



Bring It All Back

SCI has been hiding your sites for over 15 years, leading the way in product design and innovation. Count on SCI to deliver the finest site upgrade or modification the industry has to offer. SCI provides full turnkey services and products to refurbish any manufacturer's mono tree. Technology doesn't have to be intrusive. Call us today to discuss your concealment projects.



SOLAR COMMUNICATIONS INTERNATIONAL

FOR INFORMATION ABOUT
OUR CONCEALMENT SYSTEMS,
PLEASE CONTACT US AT:

619.243.2750

8885 Rio San Diego Drive
Suite 207
San Diego, CA 92108

www.RFTransparent.com

I'm a Little Fired Up

Chances are good someone, sometime, has asked you about RF exposure, and chances are even better that someone sent you a copy of the *Wall Street Journal* article "Cellphone Boom Spurs Antenna-Safety Worries" by



Ianthe Jeanne Dugan and Ryan Knutson, published on Oct. 2. The article makes quite a few good points, but it misses the mark on several others.

Existing rules are more than sufficient to protect workers and members of the public alike. If there is an issue that could or, perhaps more likely, *should* be addressed, it is the matter of recognizing that the industry as a whole (carriers, management companies, tower/rooftop companies and building owners) probably are following the letter of the law, but in the end, they are not ensuring that employees actually are working in a safe manner. How could rules encourage carriers to do something without explicitly requiring them to do it? As with any rule or law, it is common to find statements that explain how things should work, and then there is little or no follow-up to make sure things are working well.

Over time, carriers have found ways to keep their legal teams happy and to provide what would appear to be compliance with the RF exposure rules. And it actually is (pretty much) proper compliance. Nevertheless, the average person who walks out onto a rooftop where antennas are transmitting RF probably is not 100 percent certain what it takes to be safe.

Here's one thing most carriers are doing right: They perform some kind of audit of the rooftops. Most carriers I know of make an annual or biennial review of RF exposure on their rooftops. In the spirit of full disclosure, I should say that my engineering company, Waterford Consultants, is among companies that routinely audit what antennas are on rooftops, document physical antenna placement and orientation data, and inspect any barriers and access controls. All of these parts of an audit are considered when determining compliance.

Carriers often can say they are compliant by identifying areas with RF levels potentially higher than the exposure limits. And in an absolute way, the carriers that do this *are* compliant. This is where the breakdown begins. What happens when someone needs to enter an area with an RF level higher than the limit indicates for their exposure classification? (Classification involves an individual's occupation, whether the individual has had RF safety training or whether the individual is an untrained member of the public.) This is where theory and reality break down a bit, from my real-world experience.

From what I have seen for myself, carriers are creating the necessary exposure documents and statements of compliance that go on to occupy drawers in file cabinets (well, nowadays, they spin around on little hard disks in some data center), and although some effort has been made to identify the areas that are potentially unsafe, the information is not finding

its way into the hands of the individual who really needs it: the person about to receive the keys to a rooftop.

There is good science to back up why RF exposure levels are set where they are, and most people in the RF exposure industry seem to be in pretty good agreement with the power-density standards. We still have some work to do to improve the modeling capabilities, beef up some of the software we've all been using to generate the power-density maps, and make maps that are more useful for those who actually go onto the roof.

One way to help these folks is the way I help myself when it comes to RF — I have the appropriate personal protective equipment in place and on my body when I know I'm going into an environment with potentially high RF. I don't want the less expensive one that is "pretty good" or "pretty close." Or even worse, pretty good and pretty close only when held in a certain way or used in a particular manner, or only for certain frequencies. That kind of personal protective equipment should not be acceptable to our industry.

What is not clear now and hasn't been clear since day one of the current RF exposure rules is who needs to take what specific actions. I'll work toward including more information and articles about RF safety in the near future. It is an important issue.



Rich Biby, Publisher
rbiby@aglmediagroup.com

PUBLISHER'S NOTE





Providing the telecommunications industry with a single turnkey solution.

Contact Sabre today for all your project needs.
800-369-6690 | www.SabreIndustries.com



Quick-Guide to Tower Construction Companies

As a supplement to *AGL Magazine's* January Buyers Guide, a list of tower construction companies offers more detail to help you choose a vendor for your next project. Where shown, logos and company descriptions were provided by and paid for by each company.



AFL

5854 Peachtree Corners East
Norcross, GA 30092
Joe Cerniglia
484.252.9446
joe.cernigliasr@aflglobal.com
www.aflglobal.com

Services: antenna installation, lighting system installation, power and grounding installation, site construction, tower construction, build-to-suit, microwave installation, RF equipment installation, site maintenance, tower reinforcement, platform installation, shelter installation, site modifications

AFL provides project management, installation and design, civil construction, antennae and line installation to include sweep and PIM testing, tower modification installation, RBS/BTS installation and integration, DAS design, installation and optimization. Additional services include warehousing and equipment furnishing and network monitoring.



Allstate Tower

P.O. Box 25
Henderson, KY 42419
Kevin Roth
270.830.8512
kroth@allstatetower.com
www.allstatetower.com

Services: antenna installation, lighting system installation, power and grounding installation, site construction, tower construction, build-to-suit, microwave installation, RF equipment installation, site maintenance, tower reinforcement, foundation installation, platform installation, shelter installation, site modifications

Allstate Tower fabricates a line of self-supporting, guyed, agriculture and specialized steel structures engineered specifically for its customers' demanding requirements. Allstate Tower offers turnkey installation services, tower maintenance and inspection services for any type of tower. The company

has served the broadcast, wireless, CATV, agriculture, government, utility and general contracting markets for more than 10 years.

See ad on page 70

American Tower

10 Presidential Way
Woburn, MA 01801
877.409.6966
leasing@americantower.com
www.americantower.com

Service: build-to-suit



Anritsu

115 E. Collins Blvd., Suite 100
Richardson, TX 75081
Rob Robinson
972.761.4648
rob.robinson@anritsu.com
www.anritsu.com

Services: antenna installation, measurement equipment, tower construction, RF equipment installation

With over 110 years of global communications technology leadership,

BUYERS GUIDE



Anritsu provides the RF/micro-wave, telecom, optical and wireless industries with top-notch test and measurement instruments, as well as components for R&D, manufacturing, field installation and maintenance. Anritsu's handheld and bench-top instruments address the full spectrum of RF/microwave and wireless applications.

Atlantic Tower Services (ATS)

2544 E. Landstreet Drive, Suite 600
Orlando, FL 32824

Wayne Busby
941.224.4504

wbusby@accessats.com

www.accessats.com

Services: antenna installation, lighting system installation, power and grounding installation, site construction, tower construction, build-to-suit, microwave installation, RF equipment installation, antenna installation, lighting system installation, power and grounding installation, site construction, tower construction, microwave installation

Black & Veatch

10950 Grandview Drive
Overland Park, KS 66210

Kristi Klohs
913.458.2000

klohskm@bv.com

www.bv.com

Services: antenna installation, lighting system installation, power and grounding installation, site construction, tower construction, microwave installation, RF equipment installation, site maintenance, tower reinforcement, foundation installation, platform installation, shelter installation, site modification

See ad on page 23

BlueStream Professional Services

3305 Highway 60 West
Faribault, MN 55021

Darlene Braunschweig
678.355.6200

dbraunschweig@bluestreampro.com

www.bluestreampro.com

Services: antenna installation, power and grounding installation, site construction, tower construction, build-to-suit, microwave installation, RF equipment installation, tower reinforcement, foundation installation, platform installation, shelter installation, site modifications

BlueStream Professional Services provides planning, implementation and maintenance services for wireless, wireline, broadband cable, utilities and data center networks. With unique capabilities, including wireless cell tower installation and maintenance crews, as well as small cell and DAS, BlueStream Professional Services has the capabilities with key technology skills and certifications to offer complete turnkey solutions. Together, KGP Logistics and BlueStream Professional Services are one of the country's largest single-source, value-added providers of communications

equipment, supply chain services and integrated solutions to the communications industry.

See ad on page 69

Cell Blocks

P.O. Box 1167

Jackson, CA 95642

James Fey

510.418.4322

www.cellblocksinc.com

Services: site construction, foundation installation

Cell Blocks is an engineered foundation made from individual precast concrete blocks. The blocks are assembled in various configurations and post-tensioned providing an immediate, full-strength foundation for poles, shelters and towers. Rapid deployment, predictability and minimal ground disturbance make Cell Blocks conducive to oil/gas and telecom industries. Anchor rods are cast into the pole block. Since 2000, Cell Blocks has constructed nearly 300 sites. Cell Blocks customers include Verizon, T-Mobile, Sprint/Nextel, Metro PCS, U.S. Cellular and the U.S. military.

SURVEYING | ENGINEERING | CONSTRUCTION

C

Concordia Group, Ltd.

Partners With Our Clients

Concordia Group has been in business since year 2001. The group is comprised of over 60 professionals specializing in the design, construction, tower maintenance, types of projects ranging from telecommunications to traditional commercial and industrial facilities. Concordia has been a successful vendor and has established a solid reputation for delivering projects on time and above expected with standards of quality. All services are performed with pride with in-house staff. Concordia helps you plan ahead; Always proactive, never reactive.

Land Surveying (Using most up-to-date Technologies)
Engineering Services A&E Department
Structural Department
Environmental Department
Construction - Concordia Triad In-House Construction Crews Civil Construction
Antenna & Line/Tower Crews
DAS/ Small Cells Site design/ Macro Sites/ In-Building Construction
Commissioning & Integration

FOR ENGINEERING, CONSTRUCTION & NETWORK SERVICE NEEDS, REACH OUT TO CONCORDIA @ 847-708-7500

/ DEPARTMENTS /



CIS Communications

749 Old Ballas Road
Saint Louis, MO 63141
Brick P. Storts
314.569.2275
brick@ciscomm.com
www.ciscomm.com

Services: site construction, tower construction, build-to-suit, site maintenance, project management

CIS Communications offers full site deployment services to the wireless industry including construction and project management as well as build-to-suit tower construction. CIS offers DAS advisory services for in-building applications as well as full-service real estate advisory and brokerage.



CommStructures

101 East Roberts Road
Pensacola, FL 32534
Jim Hobbs
850.968.9293
jhobbs@commstructures.com
www.commstructures.com

Services: tower construction, tower reinforcement, foundation installation, site modifications



ComSites West

2555 Third St., Suite 200
Sacramento, CA 95818
Charlie Feick
530.414.4376
charlie@comsiteswest.com
www.comsiteswest.com

Services: build-to-suit, site maintenance

ComSites West owns, operates and develops wireless communications sites in California and Nevada, including tower and rooftop communications facilities. They develop towers jointly with landowners and acquire towers through outright purchases and through purchase leaseback programs.



Concordia Group

361 Randy Road, Suite 101
Carol Stream, IL 60188
GM Sadat
847.708.7500
gmsadat@concordiawireless.com
www.concordiawireless.com

Services: antenna installation, lighting system installation, power and grounding installation, site construction, tower construction, build-to-suit, microwave installation, RF equipment installation, site maintenance, foundation installation, platform installation, shelter installation, site modifications

Since 2001, Concordia has serviced telecommunication carriers, tower

owners and turfing firms with in-house expertise in architecture and engineering, land surveying, site audits and tower audits, site acquisition, construction, tower installation, maintenance, network integration services and backup generator services. For over a decade, Concordia has worked hard to meet the highest customer expectations.

Day Wireless Systems

4700 S.E. International Way
Milwaukie, OR 97222
Kevin Hunter
503.659.1240
khunter@daywireless.com
www.daywireless.com

Services: antenna installation, lighting system installation, power and grounding installation, site construction, tower construction, microwave installation, RF equipment installation, site maintenance, tower reinforcement, foundation installation, platform installation, shelter installation, site modification

Dietz Brothers

12185 51st St. N.E.
Spicer, MN 56288
Alan Dietz
320.796.2281
alan@dietzbros.net
www.dietzbros.net

Services: antenna installation, lighting system installation, power and grounding installation, site construction, tower construction, build-to-suit, microwave installation, site maintenance, tower reinforcement, foundation installation, platform installation, shelter installation, site modification

BUYERS GUIDE



2005

In a flurry of deals throughout the year, Global Tower Partners buys 62 towers from Five Star, 51 sites from Jesta Towers, more than 500 towers from Dobson Communications in a sale-leaseback...



Excell Communications

3608 7th Court S.
Birmingham, AL 35222
Scott B. Smith
919.771.1961
scottsmith@excellcommunications.com
www.excellcommunications.com

Services: antenna installation, lighting system installation, power and grounding installation, site construction, tower construction, build-to-suit, microwave installation, RF equipment installation, site maintenance, tower reinforcement, foundation installation, platform installation, shelter installation, site modification

Excell Communications' construction division can provide tower and civil crews across the Southeastern United States with expertise in all aspects of telecommunications construction. Their capabilities include general construction, raw lands, collocations, rooftops, design/build, maintenance, construction project management, portfolio management and disaster recovery.

FDH

66221 Meridian Drive
Raleigh, NC 27616
Dan Sammartano
314.773.4000
dsammartano@fdh-inc.com
www.fdh-inc.com

Services: tower construction, site maintenance, tower reinforcement, tower welding

FDH performs structural modifications, maintenance and repair, as well as raw land new site build outs for some of the largest tower owners in the world. We have tower crews traveling throughout North America performing structural upgrades and inspections, and we serve as construction management professionals using a vast network of

master subcontractors.

See ad on page 15

GlenMartin

1604 A Business Loop 70 W.
Columbia, MO 65202
Greg Ira
800.486.1223
greg.ira@glenmartin.com
www.glenmartin.com

GRADUATE UP TO A SMARTER LED LIGHT.



Here's another brilliant idea from Hughey & Phillips: The **HORIZON™** LED Series. Recipient of a 2013 CTIA Emerging Technology Award, it's simply the smartest LED in its class. With features like WIFI control and monitoring, GPS sync, built-in self-testing and precision microprocessor control. This lightweight unit (under 20 pounds) is also easy to install, can be retrofitted using existing cabling and is fully field serviceable. So graduate up to the smarter **HORIZON™** Series LED with your choice of red (L-864), white (L-865) or dual (L-864/865). Make the smart call to Hughey & Phillips at 877.285.4466 or visit hugheyandphillips.com.

* Patents Pending

HORIZON™ SMART LED

- WIFI control available
- Field serviceable
- Lightweight (under 20 lbs.)
- GPS sync available
- Built-in self-testing
- Microprocessor control
- Retrofit with existing cable



HUGHEY & PHILLIPS • 877.285.4466 • HUGHEYANDPHILLIPS.COM

/ DEPARTMENTS /



Henkels & McCoy

985 Jolly Road
Blue Bell, PA 19422
Bob Dundon
215.283.7764
bdundon@henkels.com
www.henkels.com

Services: antenna installation, site construction, tower construction, microwave installation, RF equipment installation, shelter installation, site modifications

Since 1923, Henkels & McCoy has evolved its capabilities to keep pace with the ever-changing communi-

cations infrastructure needs of its clients. The company's focus is to support clients' requirements, whether wireline or wireless, OSP or ISP, and to deliver solutions incorporating safety, quality, on-time performance and effective program and cost management, from source to end user.



High Gain Wireless

P.O. Box 308
Great Falls, VA 22066
Tom Ferguson
717.592.9578
tferguson@highgainwireless.com
www.highgainwireless.com

Services: site construction, tower

construction, build-to-suit, foundation installation, frequency license build-out

High Gain Wireless' experts help customers in executing difficult site developments by unifying team members' diverse backgrounds in engineering, site development, construction, project management and finance. Their unique offering is their expertise in full market build-outs with critical frequency license deadlines.

See ad on page 51



Sabre Industries Telecom Services

MUTI - Sabre Industries Telecom Services

2626 Midwest Court
Champaign, IL 61822
Doug Scanlon
913.269.7606
dscanlon@mutionline.com
www.mutionline.com

Services: antenna installation, lighting system installation, power and grounding installation, site construction, tower construction, microwave installation, RF equipment installation, site maintenance, tower reinforcement, foundation installation, platform installation, shelter installation, site modification, full turnkey site development

Midwest Underground Technology offers a full range of infrastructure services to the telecommunications industry, including tower construction, modifications and maintenance, shelter storage/decommissioning/

BUYERS GUIDE



Engineers, Architects and Consultants



CIVIL ENGINEERING SURVEY SERVICES

CT OFFICE
110 Washington Avenue, Fourth Floor
North Haven, CT

E: info@hudsondesigngroupllc.com



STRUCTURAL ENGINEERING ARCHITECTURE

MA OFFICES
Main Office: 1600 Osgood St. North Andover, MA
116 Pleasant St. Easthampton, MA

P: (978) 557-5553



TELECOMMUNICATIONS PROJECT MANAGEMENT

NY OFFICES
16-18 Reynolds Ave, Oneonta, NY
75 Summit St, Philmont, NY

W: www.hudsondesigngroupllc.com



2005 (CONTINUED)

...transaction, 227 towers from Mesa Communications, more than 3,600 rooftops from Tower Resource Management and 38 towers from Shared Tower Sites.

refurbishment, inspections, micro-wave design and deployment, integration and maintenance, warehousing and material management, generator installation, maintenance and refueling, emergency services, and DAS and small cell design and deployment.



NB+C

6095 Marshalee Drive, Suite 300
Elkridge, MD 21075
Jeff Ebihara
410.712.7092

jebihara@nbcllc.com

www.networkbuilding.com

Services: antenna installation, lighting system installation, power and grounding installation, site maintenance, platform installation, site modifications

NB+C (Network Building + Consulting) specializes in three key areas of wireless infrastructure: architecture and engineering, construction, and site development. Whether it's new site construction, small cell installs or engineering, they are the people you can count on for results — not excuses.



SBA Communications

5900 Broken Sound Parkway NW
Boca Raton, FL 33487-2797
800.487.SITE

information@sbsite.com

www.sbsite.com

Services: antenna installation, lighting system installation, power and grounding installation, site construction, tower construction, microwave installation, RF equipment installation, site maintenance, tower reinforcement, foundation installation, platform

Location, Location, Location...

over 1,200 and counting

- Over 1,800 Water Tower Sites Available for Co-Location
- Site Management Services Ensure: Fast Turnaround Times - Expert Design

Utility Service Group
UTILITY SERVICE COMMUNICATIONS

Utility Service Group

For more information please contact: Utility Service Communications • 1-800-679-7819 • Email: sitemanagement@utilityservice.com • www.utilityservice.com

BUYERS GUIDE

/ DEPARTMENTS /

installation, shelter installation, site modification

As your first-choice provider of wireless infrastructure solutions, SBA continues to set the standard for customer satisfaction by "Building Better Wireless." Clients depend on SBA to provide their wireless infrastructure needs at all stages. SBA focuses on tower ownership, leasing, site management, site development, construction and technical services.

See ad on back cover



Shenandoah Tower Service
341 National Ave.

Staunton, VA 24401
Joshua P. Anthony
540.887.8000
bids@shensvc.com
www.shenandoahtower.com
Services: antenna installation, lighting system installation, power and grounding installation, tower construction, microwave installation, site maintenance, tower reinforcement, foundation installation, platform installation, shelter installation

Stainless Doty-Moore
100 W. Main St., Suite 400
Lansdale, PA 19446-2021
Gregg Fehrman
215.631.1325
gregg.fehrman@stainlessllc.com
Services: antenna installation, build-to-suit, foundation installation, system installation; microwave installation,

platform installation, power and grounding installation, RF equipment installation, site construction, site maintenance, site modifications, tower construction, tower reinforcement

Stainless Doty-Moore provides design, engineering, fabrication and installation for towers of heights to 2,000 feet to customer specifications for durability and dependability under extreme conditions.



STEALTH[®]
FIRST IN CONCEALMENT[™]

Stealth Concealment Solutions
3034-A Ashley Phosphate Road
North Charleston, SC 29418
Cindy Wishart

BUYERS GUIDE

<p>Taking LIGHTS TO NEW HEIGHTS</p>	<p>EXPERIENCE COUNTS! QUALITY HAS IT!</p>	<p>FOUNDATIONS ARE OUR SPECIALTY</p>
<p>High Quality Obstruction Lighting FAA Certified</p>	<p>Tower Installations/Erections, Maintenance and Removals</p>	<p>Turn-Key Tower Foundations Complete Drilling Services Anchor Bolt Placement, Rebar, Concrete and Forming</p>
<p>713.722.8273 www.specialtytowerlighting.com</p>	<p>713.722.9119 www.qualitytowerservices.com</p>	<p>713.722.8290 www.specialtydrilling.com</p>



MAY 2005

American Tower acquires SpectraSite for \$3.1 billion to become the largest global mobile-phone tower company with more than 14,800 wireless communications sites across North America and Brazil.

WE DELIVER RESULTS... NOT JUST PROMISES.



OUR REPUTATION HAS BEEN BUILT ON OUR ABILITY TO CONSISTENTLY APPLY INNOVATIVE, CLIENT-CENTRIC SOLUTIONS TO EVERY PROJECT WE UNDERTAKE. FROM IMPLEMENTATION TO COMPLETION, OUR LEADING-EDGE PROJECT MANAGEMENT SYSTEMS WILL KEEP YOU UP-TO-DATE 24/7, 365.

ENGINEERING SERVICES

- » A&E/Civil Engineering
- » Mapping and Inspections
- » Structural Engineering
- » Geotechnical Engineering
- » Environmental Compliance

INFO@FDH-INC.COM

CONSTRUCTION SERVICES

- » Structural Modifications
- » Construction Management
- » Civil-Site Construction
- » Drop and Swap
- » Maintenance and Repair

FDH-INC.COM

WEB-BASED PROGRAM MANAGEMENT

- » Project Data On Demand
- » Transparency, Accountability
- » Real-Time Reporting
- » Enterprise Control
- » Improved ROI



ENGINEERING INNOVATION

/ DEPARTMENTS /

800.755.0689
cindywishart@stealthsite.com
www.stealthconcealment.com
 Service: wireless concealment

As the industry founder, Stealth continuously strives to produce the highest-quality and best-performing concealment products through world-class integration of dedicated employees, innovative design and cost-effective materials. Using their proprietary materials, they consistently deliver superior radio-frequency (RF) transmission performance to all of their customers.



Stout & Company
 415 S. Commerce St.
 Natchez, MS 39120
 Guy Stout or Lou Ellen Stout
 601.445.0504
louellen@stoutandcompany.com
www.stoutandcompany.com
 Services: site construction, tower construction, build-to-suit

Stout & Company is a full-service tower developer and wireless telecom consulting and marketing firm. We offer a broad menu of services for clients: build-to-suit towers, collocation, site recon, site acquisition, zoning, permitting, design management, construction management and tower marketing. In addition, we provide

tailored services specifically designed to fit your unique needs.

Thin Air Construction
 3500 Cannon St.
 Hastings, MN 55033
 Jules Fisher
 651.319.0152
jules.fisher@thinairconstruction.net
www.thinairconstruction.net
 Services: antenna installation, lighting system installation, power and grounding installation, site construction, tower construction, RF equipment installation, antenna installation, microwave installation

Tower Resource Management (TRM)
 16 Chestnut St., Suite 220
 Foxboro, MA 02035
 Justin Leland
 617.510.1115
jleland@trmcom.com
www.trmcom.com
 Services: antenna installation, lighting system installation, power and grounding installation, site construction, tower construction, build-to-suit, microwave installation, RF equipment installation, site maintenance, tower reinforcement, foundation installation, platform installation, shelter installation, site modifications

Tower Sites
 17640 W. National Ave.
 New Berlin, WI 53146-3727
 Terry Michaels
 262.786.8330
tmichaels@tower-sites.com
www.tower-sites.com
 Services: antenna installation, tower construction, build-to-suit, microwave installation, site maintenance

Trilogy Communications
 2910 Highway 80 East
 Perl, MS 39208
 Edmund Lee
 601.933.7522
elee@trilogycoax.com
trilogycoax.com
 Services: antenna installation, lighting system installation, power and grounding installation, site construction, tower construction, build-to-suit, microwave installation, RF equipment installation, site maintenance, foundation installation, platform installation, site modifications

Trilogy is the leading U.S. manufacturer of advanced air-dielectric cable technology for the wireless market. Trilogy's AirCell Transline, radiating and plenum cables eliminate water migration and offer the best attenuation. Trilogy offers PIM-certified jumpers. Trilogy also provides complete turnkey construction services for operator network deployments.

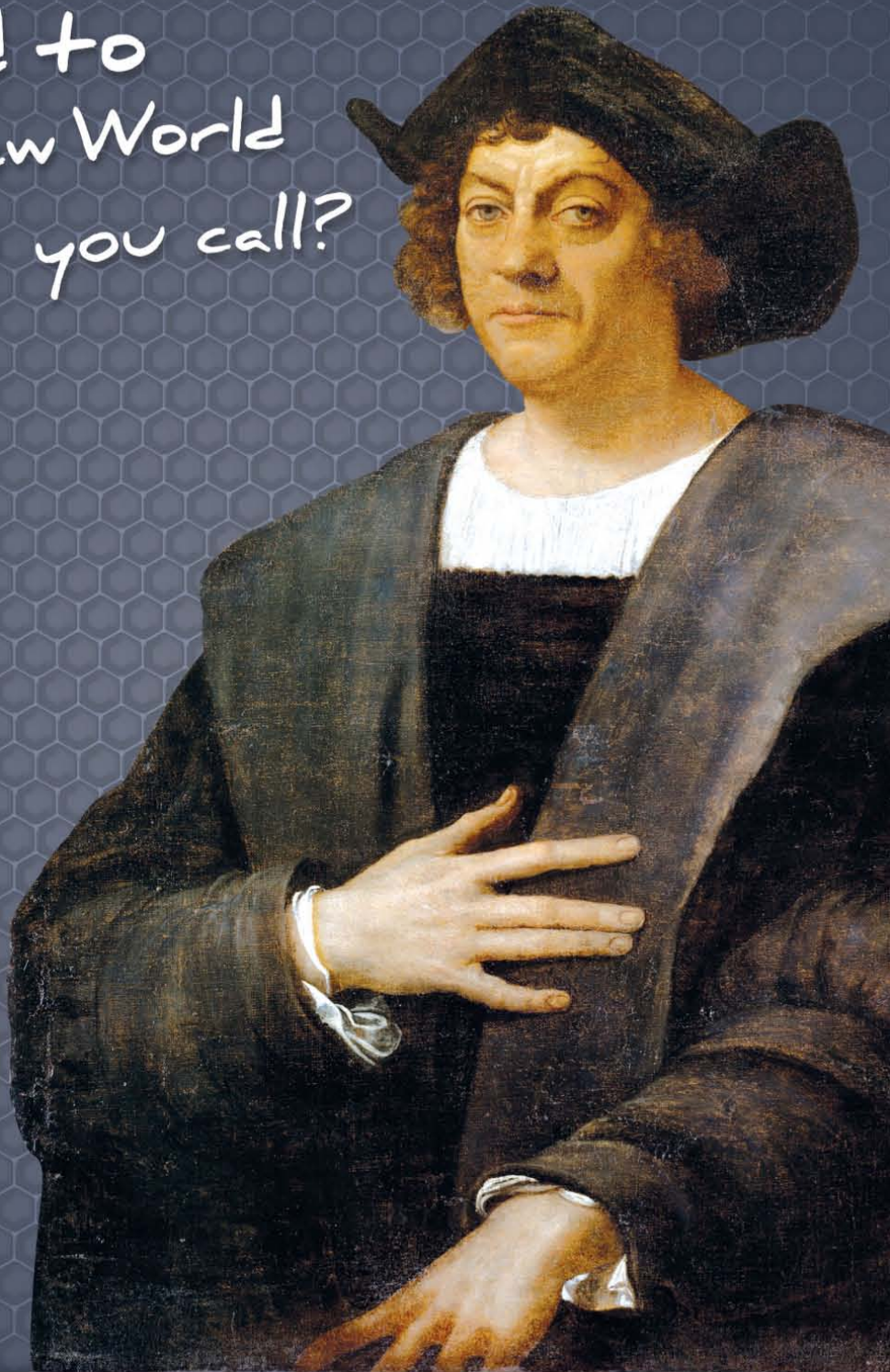
Unitek Global Services
 1777 Sentry Parkway W.
 Blue Bell, PA 19422
 Mike Treger
 800.214.6642 ext. 8528
mtreger@pinnaclewireless.com
www.unitekglobalservices.com
 Services: antenna installation, lighting system installation, power and grounding installation, site construction, tower construction, build-to-suit, microwave installation, RF equipment installation, site maintenance, tower reinforcement, foundation installation, shelter installation, site modifications



JULY 2005

TrinTel Communications sells its wireless tower business, including 467 tower sites, to Crown Castle International for \$145 million.

If You Need to
Discover a New World
Who would you call?



If You Need to Solve FCC Regulatory Issues... **Call Waterford.**



WATERFORD
COMPLIANCE...FROM START TO SIGNAL

- RF Exposure Analysis
- Intermodulation Studies
- Structural Analysis
- Tower & Site Mapping
- AM Screening & Detuning
- FAA Certification & Filing
- RF Safety Training
- DAS Solutions

waterfordconsultants.com • 703.596.1022



Scott Bergmann, vice president of regulatory affairs, CTIA – The Wireless Infrastructure Association. Photo by Don Bishop

Auctions and Advocacy Dominate Agenda for CTIA

By Richard P. Biby, P.E.

On Sept. 10, at the AGL Media Group booth in the Tower & Small Cell Summit pavilion in the exhibit hall at Super Mobility Week, powered by CTIA, I interviewed Scott Bergmann, vice president of regulatory affairs at CTIA – The Wireless Association.

AGL Magazine: Tell us about what you do.

Bergmann: I head the regulatory affairs department at CTIA. We're so pleased that you're here seeing what the wireless mobile ecosystem has to offer.

AGL Magazine: Could you tell us a

little bit about CTIA?

Bergmann: CTIA is the largest wireless association in what is the largest wireless market in the world. We represent wireless providers large and small, manufacturers, handset and wireless device developers and software providers in the mobile wireless ecosystem. We run Super Mobility Week, and we are the leading voice for the wireless industry before policymakers in Washington and in the states.

AGL Magazine: CTIA runs the gamut of regulatory issues and advocacy. Could you tell us about those?

Bergmann: As wireless becomes more important to people's lives, from the connected home to the connected car, wireless issues are important to consumers and are important to policymakers. At the top of our policy priority list is radio-frequency spectrum. Spectrum is the key to ensure that wireless networks run and that wireless consumers can receive their services. We spend a lot of time working on spectrum policy. We spend a lot of time helping mobile broadband network providers build out their networks. Infrastructure issues are a really close second policy priority for us in the wireless industry.

AGL Magazine: We have two FCC

QUESTIONS AND ANSWERS



spectrum auctions coming up, the AWS-3 auction and then the TV broadcasters' incentive auction. Could you tell us about those?

Bergmann: It's very exciting: two big upcoming auctions. The AWS-3 auction starts on Nov. 13. This is the first major auction since the launch of the smartphone. It's been more than six years. This will be 65 new megahertz of prime spectrum that will be brought to bear to speed wireless services, increase capacity and help foster the continued investment and innovation that makes the United States so strong in wireless.

AGL Magazine: Could you tell us about the TV broadcast auctions that are coming up after AWS-3?

Bergmann: The incentive auction is one of the most exciting proceedings that I've ever been involved with. It's a unique opportunity that will leverage financial incentives to try to make more highly valued use of spectrum.

We're in the process of developing rules for the auction. We're on pace to have the auction in mid-2015. We're hopeful that it will produce a critical influx of spectrum for mobile wireless services.

AGL Magazine: As the infrastructure community becomes increasingly international, what's CTIA's presence internationally?

Bergmann: Most of CTIA's work is domestic, here in the United States. Because the United States is such a big part of the mobile ecosystem, we often end up being leaders on the international stage.

AGL Magazine: After the two auctions we just talked about, what's next on the spectrum horizon?

Bergmann: We're working to finalize the broadcast TV incentive auction. A lot of important work has been done this year, but there are some key, open proceedings that will

have to be resolved, proceedings on how unlicensed services will work in the band, how wireless services and broadcast services that remain behind will fit together. That's a real top priority for us. And then we're thinking about how do you refuel the spectrum pipeline so that we can identify the next bands of spectrum that will come to market.

AGL Magazine: So what's next for CTIA?

Bergmann: This is one of the big questions for the wireless industry: How do you continue to make sure that you have innovation, how do you work with new agencies and policy-makers that are interested to make sure consumers' interests will be protected? The great story of wireless is that competition really has delivered for consumers. A big part of CTIA's advocacy is sharing with them the benefits that an innovative and competitive marketplace can bring.

WHY WELD?

**100% NON-WELDED
STRUCTURAL REINFORCEMENT
IMMEDIATELY AVAILABLE**

AeroSolutions
Optimizing Your Tower Infrastructure

ASK US ABOUT

ENGINEERING SUPPORT CHANNEL SOLUTIONS
PLATE SOLUTIONS HUCK BOLT INSTALLATION OPTIONS
NON-METALLIC SOLUTIONS

5500 Flatiron Pkwy, Boulder, CO 80301 www.aerosolutionsllc.com 720-304-6882

QUESTIONS AND ANSWERS

/ DEPARTMENTS /



Richard P. Biby, P.E. (center), CEO and publisher, AGL Media Group.

Rich Biby, Founder and CEO, Discusses AGL Magazine's First 10 Years

By Patricia Troxell-Tant

AGL Media Group is the result of 10 successful years beginning with its flagship *AGL Magazine*. As a media company focused on wireless infrastructure, AGL Media Group is entering its second decade as an independent voice reporting news and information about the telecommunications industry. The company is committed to reporting educational intelligence about antenna siting, which is the most significant element of wireless communications, according to Rich Biby, CEO and publisher of AGL Media Group.

A project that started with a magazine has expanded to become AGL Media Group with additional products, including a second publication, *AGL Small Cell Magazine*; two email newsletters with original content written each week; AGL Conferences; AGL Video and the AGL Media Group website.

Some of the following interview questions resulted from asking industry professionals what they would ask Biby about the history of *AGL Magazine* and about the future contribution it would make to the

wireless infrastructure industry.

Tant: What was it like creating *AGL Magazine* in 2004, leading up to publishing the first issue on Jan. 5, 2005?

Biby: As with any startup, it was a big decision to launch a new company and an even bigger decision to start a magazine despite my having no history or background in the publishing field. It took months of planning, and it meant hiring people and making a sizable financial commitment.

There were many details to finalize,

QUESTIONS AND ANSWERS



such as how many issues to publish each year, what topics should we cover that people would be interested in reading about, as well as what advertisers would want from the new magazine. We would meet and talk about what company would print the publication, what kind of paper did we want to use, all the little things that were each so important in their own right. Then all of the fun business issues started — such as where to even get a circulation list. In all honesty, the experience was a little bit more like being on the high school yearbook staff than I like to admit. Things were obviously a lot more manual than they are now, but all in all, it was a great time that the AGL Media Group team had together.

Tant: Why the name *AGL Magazine*, and why did you actually start the magazine?

Biby: The magazine was named by David A. Keckler, one of the cofounders and its managing editor for the first three and a half years. The name nicely summed up what we were all about — everything above ground level, which included towers and antenna attachments. There was that brief moment that we talked about it being a BGL publication — below ground level. For those who know about all of the details and work involved in tower construction, there are a lot of things to consider such as grades of concrete, grounding, rebar, rust, soil conductivity, guy wires, guying radii and all kinds of crazy things. There actually is probably room to create an entire magazine on everything below the ground, but

I think that *AGL Magazine* has done a very good job of addressing the issues of the tower industry.

While still chief technology officer at Crown Castle International, I always kept my eyes on industry journals, looking for issues about towers, and I realized that there was really no consistent discussion about towers in this emerging industry. I was often called upon to provide testimony at zoning meetings and to answer questions at community meetings and realized that what I needed in many instances was an article or book that I could reference for facts and credibility. It is often hard for others to believe what you are saying when you're the proponent, but for some reason, when people read something in print, it seems more believable. So I decided that *AGL Magazine* would become an industry resource and provide the information that people needed to make good decisions.

Tant: What has been the motivation to keep your vision alive for the magazine and now for the expanded media company, AGL Media Group?

Biby: The motivation simply comes from the success of the magazine. Over these first 10 years, we have covered great topics and have provided educational opportunities for people in the industry, and I think that we have provided a needed service to the industry. I think that everyone on the AGL Media Group team enjoys what they do, and that is another motivation for me — getting to work with this staff as well as so many people in the industry each day. The expanded publications and

offerings are a result of not only the success we have had so far, but also the growing need to provide knowledge and information through content as well as education through everything we offer.

Tant: I am sure there have been many memorable issues, articles or interviews, but tell about a specific one that helped *AGL Magazine* to gain its success and recognition.

Biby: There have been so many great people we have worked with over the years and so many great interviews. But getting the endorsement of PCIA was definitely a thrill and an honor. In 2004 and 2005, which was part of his time as president of PCIA, Jay Kitchen supported the idea of the new magazine and really helped us get things going. Today, the continued support and the relationship we have with PCIA President and CEO Jonathan Adelstein and the PCIA staff remains very important to AGL Media Group.

I must admit that a certain delight I get each month when the magazine arrives in the mail is to open it to the *AGL Tower of the Month* photo feature, which was the brainchild of our first art director, Scott Dolash. It still puts a smile on my face, and has been one of the most talked about features throughout all of our issues.

Tant: What have been some of the biggest industry surprises that you have seen over these past 10 years?

Biby: I have been a little surprised at how large the tower companies have become. I also have been surprised,

/ DEPARTMENTS /



pleasantly though, at the good fortune we have all had with the ongoing success of the industry. Although I owned part of a company with some towers in Mexico years ago, I'm a little surprised at the rate of investment internationally. It is definitely part of the industry to keep an eye on — in a very positive way.

I know it probably shouldn't come as a surprise to me as an RF engineer, however, I shake my head every time I run a speed test on my LTE phone. Wow, that's fast. Again, I know it shouldn't come as a surprise, but I am amazed at the complexity of the systems that are now going on the towers. Years ago, it would have been unthinkable to put the radio at the top of the tower.

A very unpleasant surprise may be that tower safety has not become a bigger issue than it has. I can't believe the ongoing loss of life.

Tant: Going into your second decade, what does AGL Media Group have to offer the industry today?

Biby: We have a lot to offer. As we have done for the last 10 years, we will continue to provide educational material for people in the industry and provide information about the industry for people who are not. We are going to take a little bit more of an advocacy role going forward. As the carriers continue to roll out new technologies and install sites that continue to get smaller and smaller, they need more and more data, and issues will continue to arise. We intend to be there to cover them.

Tant: What would you say is the single biggest success of what *AGL Magazine* has delivered to the industry?

Biby: The fact that I do not believe there is anyone in the industry who can read an issue of *AGL Magazine* without learning something new.

Tant: What do you see as the next game-changer in the industry?

Biby: The small site revolution could

be a game-changer. To me, the sheer number of sites that are going to be built over the next 10 years should really be incredible. I am keeping an eye on Voice over LTE. What will really be the difference in a carrier's network? Will all the carriers still want their own networks? With fewer manufacturers of network equipment and everyone using the same technology, will there be bigger mergers? Or, if the roaming arrangements can all be worked out, are there opportunities for smaller carriers? Ten years from now, I think we will look back on LTE as having changed the game.

Tant: Why did you start a second publication this year — *AGL Small Cell Magazine*? How do you view the success so far after three issues?

Biby: It is a little more technical than *AGL Magazine*, and for me it's fun. Seeing that my day job is running a small cell cellular company, I'm having a great time with this publication. It's a peculiar time to be in publishing. Despite the trend moving away from print publications, we couldn't be any happier with our success to date. As with every other magazine and newspaper in the world, we will be increasing our emphasis on digital communications; however, we remain in love with being able to touch the pages.

Patricia Troxell-Tant is president and CEO of Solution Seven, the marketing and public relations contractor to AGL Media Group. Photography by Don Bishop.

QUESTIONS AND ANSWERS



Nationwide & Turnkey

Speed. Safety. Performance.

Black & Veatch has shaped the telecommunications landscape for the last 50 years. Wireless carriers rely on Black & Veatch to support their macro network sites or specific coverage solutions, including DAS and Small Cells. No other company can offer the depth and breadth of engineering, program management, site acquisition, construction and technical expertise of Black & Veatch. That's why *Engineering News-Record* has ranked us the #1 engineering company for telecommunications for the fifth consecutive year.

We're building a world of difference. Together.

Learn more at bv.com/telecom



BLACK & VEATCH
Building a world of difference.®

Consulting • Engineering • Construction • Operation | www.bv.com

The More Things Change, the More They Stay the Same

"I've never particularly liked the idea of looking back; I'd rather look forward." —*Jane Asher*

By Clayton Funk

SpectraSite, Global Signal, AAT Communications, Mesa Communications, Trintel, TCP Communications, ClearShot Communications, Signal One, Titan Towers, Lattice Communications, GoldenState Towers, Mountain Union Telecom.

For those who have been in the industry for over a decade, or when *AGL Magazine* published its inaugural issue, those names should be familiar because those companies were all still operating back in 2004 before eventually selling. And although those private equity-backed companies had portfolios from anywhere between a couple of hundred towers to more than 10,000 in the case of Global Signal, there were also several larger-scale carrier leasebacks completed in the first couple of years of *AGL Magazine's* existence. Carriers such as SBC, Verizon, Sprint Sites USA, Triton PCS, Dobson Communications and Cricket Communications sold either all or a substantial portion of their tower inventories, with Sprint's approximately 6,600 towers being the largest of that class.

Mergers in any industry can be transformative. The wireless tower industry has certainly been shaped by companies that eventually sold

and, as importantly, who the acquiring companies were for each transaction. Between early 2004 and early 2007, the dynamics in the tower industry shifted significantly as all of the aforementioned companies divested of their portfolios and reshaped the ownership profiles of a few companies.

- AAT Communications, already sizeable from buying some of SBA Communications' portfolio, entering into a sale-leaseback with Centennial Communications and being in the business for many years, bulked up further by acquiring Signal One's 226 sites in early 2004. AAT then sold a reported 1,855 sites to SBA in 2006.
- Global Signal was one of the most prolific tower acquirers during this stretch of time, announcing deals with Tower Ventures for 97 towers, GoldenState Towers for 214 towers, 95 sites from Didicom, 48 towers from Towers of Texas, 172 sites from ForeSite, 169 towers from Triton PCS and, most notably, the acquisition of 6,600 towers from Sprint Sites USA. Global Signal, in the fall of 2006, agreed to sell its more than 10,600 sites to Crown Castle.
- Global Tower Partners, in terms of the sheer number of deals, was

arguably even busier than Global Signal during this roughly three-year stretch. GTP acquired 240 sites from Titan Towers in April 2004 and followed it up the next year with a flurry of deals, including 62 towers from Five Star, 51 sites from Jesta Towers, more than 500 towers from Dobson Communications in a sale-leaseback transaction, 227 towers from Mesa Communications, more than 3,600 rooftops from Tower Resource Management and 38 towers from Shared Tower Sites. GTP didn't slow down much in 2006 when announcing deals with Towers of Texas for 137 sites, the acquisition of 234 towers from TCP Communications and 77 towers in a sale-leaseback with Chinook Wireless. Early 2007 saw GTP announce the acquisition of 83 sites from Midwest Tower Partners.

- Mountain Union Telecom, which ended up selling 468 towers to Crown Castle in June 2006, was (leading up to its sale) active in buying 143 towers from Cricket Communications in a sale-leaseback transaction in addition to dozens of smaller transactions that were never publicly announced. Prior to its deal, Mountain Union had a cluster of sites in

100TH ISSUE



MAY 2007

The second-largest deal of the year is a management-led buyout of 345 towers and fiber assets of National Grid Wireless, a buyout that will eventually form Lighttower.

Puerto Rico, and Crown had a presence there. The acquisition of Mountain Union gave Crown a stronger foothold on the island, and it remains a key market for Crown to this day.

- TCP Communications, prior to its sale to GTP in early 2006, was also very acquisitive in the previous handful of years. Its most notable transaction was the sale-leaseback deal for 92 sites owned by the Sprint affiliate, iPCS Wireless.

- American Tower didn't announce all the deals it was closing, but a transformative deal for the tower industry was its acquisition of SpectraSite back in 2005 for \$3.1 billion. It gave American Tower another approximately 7,800 sites for its portfolio.

- SBA, in addition to the acquisition of AAT Communications in May 2006, was also active with dozens of smaller transactions, some were announced, but most were not material enough for them to report the details.

- Crown Castle's deals with Global Signal and Mountain Union were notable, but Crown was active in the same time frame, announcing the acquisition of Trintel's 467 sites as an example of another mid-tier tower portfolio divesting to a larger entity.

It's important to also remember that not only did these transactions allow some companies to achieve greater scale, but also the flurry of deals between early 2004 and early 2007 came after a long drought with no notable transactions in the tower industry.

After the financial meltdown of the early 2000s that saw Pinnacle Towers and SpectraSite both go through bankruptcies, there was

Mergers in any industry can be transformative. The wireless tower industry has certainly been shaped by companies that eventually sold and, as importantly, who the acquiring companies were for each transaction.

some uncertainty about the tower business model. Yes, it's almost comical to think that more than a decade ago, people actually questioned whether owning and leasing towers was a viable long-term investment, but over-levered balance sheets and a couple of high-profile bankruptcies will do that to an industry. In order to regain the confidence of Wall Street investors and analysts, the public tower companies focused more on paying down their debt and de-levering their balance sheets versus buying towers.

Also contributing to the decline of deal flow were the multiple dynamics of sellers still having the memory of the record high prices being paid for tower assets in the late 1990s, the fact that buyers were now making offers at nearly half of what their offers were a couple of years before, and tower owners realizing that unless they had another use for the money or there was a change in their life circumstances, owning and leasing tower space was a relatively simple business compared with many other ways of making a living. Unless the prices were attractive enough, many towers owners, especially mom-and-pops in what at the time was an incredibly fragmented industry, simply didn't see a compelling reason to sell. Our firm's database shows a noticeable uptick in the number of deals closed

beginning in early 2004 and during the next few years as consolidation picked up again with Global Signal (formerly Pinnacle) becoming very acquisitive and with Global Tower Partners being formed. And, as we showed earlier, consolidation efforts by both of those companies and others changed the landscape of the tower industry in relatively short order.

The deals consummated in that three-year window resulted in the formation of companies that are current fixtures in the tower industry as the founding entrepreneurs or management teams remained in the business. With only a handful of exceptions, nearly all of the executives from those companies listed at the top of this article are involved as owners and operators or investors in existing tower companies such as InSite Wireless, Grain Communications, CiG Wireless, Tarpon Towers, EcoSite, Diamond Communications, Wireless Income Properties, Arcadia Communications, BlueSky Towers and Clearview Towers, just to name a few.

In 2007, the biggest announced tower deal was GTP's acquisition of 549 sites from AT&T, the second-largest deal was the management-led buyout of 345 towers and fiber assets of National Grid Wireless to eventually form Lighttower, and the third-largest announced deal was Diamond

Deal activity during the past few years, although robust, hasn't resulted in as many seismic shifts in terms of the ownership and management team structures of today's tower companies.

Communications buying 180 sites from Southeast Towers.

The following year saw SBA in the headlines through a handful of deals. Within one month of each other, SBA announced the acquisition of Opta-Site's 593 towers and 340 sites from Lighttower. Also unique to 2008 were two substantial transactions involving TowerCo. In May of that year, Towerco sold 430 towers to SBA and in September turned around and closed on over 3,000 towers in a sale-leaseback deal with Sprint Nextel.

Deal activity during the past few years, although robust, hasn't resulted in as many seismic shifts in terms of the ownership and management team structures of today's tower companies.

In 2009, larger deals were either carriers selling towers, such as AT&T selling another 235 towers to GTP and Cincinnati Bell and American Tower entering into a deal for 196 sites, or long-time tower owner-operators such as Roberts Tower selling 164 towers to American Tower and Vanguard Wireless selling approximately 200 sites to InSite Wireless. That year also saw a couple of utility-related deals, specifically Diamond Communications entering into a deal with a subsidiary of First Energy for more than 150 sites and GTP announcing a deal with Duke Energy subsidiary, DukeNet Communications.

The two-year period of 2010 and 2011 saw several notable announced

deals. GTP, continuing its M&A activity, acquired CitySwitch's approximately 450 sites in 2010 and 130 towers from Leap Wireless the following year. Also in 2011, GTP entered the ground lease ownership business through the acquisition of GS Cell Site Holdings' approximately 1,600 leases, and American Tower announced the acquisition of more than 1,800 leases from Unison. American Tower also entered into a sale-leaseback deal with Plateau Wireless involving 180 towers.

But it was 2012 and 2013 that saw several blockbuster deals announced. In 2012 alone, Crown Castle was involved with the following deals:

- Acquired 2,300 leases from Wireless Capital Partners for \$500 million
- Acquired DAS provider NextG for \$1 billion
- Entered into a sale-leaseback with T-Mobile for approximately 7,200 towers at a \$2.4 billion valuation

Crown didn't take off 2013 and agreed to buy 9,600 towers from AT&T in a \$4.85 billion transaction, the largest of last year but not by much. American Tower bought long-time industry consolidator Global Tower Partners in a \$4.8 billion deal that closed in the fall of 2013.

Not to be outdone, SBA had a noteworthy 2012 in being able to buy Mobilitie and its approximately 2,300 towers for \$1 billion and then

TowerCo's portfolio of 3,252 sites for \$1.45 billion.

What will the next decade of mergers and acquisitions look like, and how will it affect the dynamics of the tower industry? If history is any indicator, there will continue to be consolidation as both public and privately backed companies seek to grow their portfolios. Private equity-backed companies, upon reaching enough critical mass and a valuation that will meet or exceed a target return hurdle, will sell with the management teams very likely to remain in the business and continuing to build towers for their long-time wireless contacts. There remain very few carrier portfolios of any size and scale, but smaller, regional wireless carriers could monetize their tower assets as valuations remain high for tower deals. There could be sizeable deals from broadcasters and utilities as these tower owners look to sell through sale-leaseback transactions what could be viewed as non-core assets. And although they have been largely consolidated, mom-and-pop tower owners will continue to sell as life events occur, and selling their towers is the selected course of action.

Who sells, when they sell and who ends up buying all have yet to be determined, but the next decade, like the previous 10 years, will be exciting for the tower industry as the further consolidation of the industry will grab headlines.

Clayton Funk is a managing director with Media Venture Partners, a division of Financial Telesis. MVP is a telecom-focused investment bank. Funk can be reached at cfunk@mediaventurepartners.com or 816.249.1630.



SEPTEMBER 2007

In the largest deal of the year, Global Tower Partners buys 549 cell sites in urban areas across 27 states from AT&T. (Financial terms were not disclosed.)



NATE is the industry leader in **Safety, Standards** and **Education** and a Proud Sponsor of the **Wireless Industry Safety Task Force**



Congrats to **AGL Media Group** on the **100th** issue of **AGL Magazine!**

natehome.com/100-tie-off-24-7

ABOVE GROUND LEVEL
aglTM
CONFERENCES

REGISTER NOW

Attend the December 4, 2014
AGL Conference in Glendale, AZ

Experience the Benefits of an AGL Conference

EDUCATION

Learn from industry leaders and technology experts.

NETWORKING

Interact with existing clients and build new relationships.

EXHIBITION

Showcase your company products and services.

REGISTER ONLINE: aglmediagroup.com/aglevents

WHERE



Renaissance Glendale
9495 W. Coyotes Blvd
Glendale, AZ 85305

WHEN



Thursday
December 4
8:00 am – 4:30 pm

COST



Now Only
\$119

Sponsorship...

View the 2014 Media Guide for sponsorship opportunities at aglmediagroup.com or contact conferences@aglmediagroup.com

SPONSORS





Network Before the Conference

Wednesday, December 3

Meet and greet conference attendees at our networking social.

5:00 pm – 7:00 pm

Sponsored by SunSight Instruments

Experience the Education

AGL Brings Content to Glendale

Gain insight from leading companies that design, build and improve today's demanding networks to meet carrier capacity and consumer needs. Hear from experts that will explain the latest trends, discuss cutting-edge technologies and deployment strategies.

- Strengthening Your Business in the Wireless Industry
- A Wireless World in the Enterprise Space
- Wireless Opportunities in Public Safety
- Small Cells ... Big Deal
- Zoning Tactics from Small to Macro Cells: Getting to 'Yes'

NATE Tower Business Symposium

Tower Economic Session & Case Studies
2:30 pm – 4:30 pm

Benefit from an educational session and practical discussion of tower economics from a tower contractor perspective. Session topics include tower site installations, preventing catastrophic failures, maintenance, best practices, work safety and other subjects that drive cost. The session is led by Craig Snyder from Sioux Falls Tower and Communications. Craig is past chairman of both the National Association of Tower Erectors as well as Telecommunications Industry Association tower standard writing committee TIA 222.

Register to Win

Win 2015 Super Bowl Tickets

Register to attend an AGL Conference for a chance to win tickets to Super Bowl XLIV. Once registered, download the Bizzabo App to be included in the drawing. The winner will be announced on December 4 at the last 2014 AGL Conference in Glendale, AZ.



Tickets provided by Black & Veatch
Bizzabo App sponsored by SAC Wireless

Win an iPad Mini

Registration includes a chance to win an iPad Mini, given away at each conference.

iPad Mini provided by Fidelity National Title Group and Ambor Structures

**Must be present to win iPad Mini*



Industry Leaders Reflect on the Past 10 Years

As *AGL Magazine* notches its 100th issue, Contributing Editor J. Sharpe Smith asked leaders from various segments of the wireless infrastructure industry for their recollections. Here are their views, edited for length and style.

» Industry Growth Has Led to Increased Antenna Loads and Retrofitted Towers

By James Lockwood
President of Aero Solutions

Prior to Aero Solutions, I worked with advanced composites such as carbon fiber and carbon fiber adhesives for infrastructure strengthening buildings and bridges. I have a passion for advanced materials and product development.

In 2002, when Aero Solutions was formed, money was coming back into the market to fund collocations on cell towers. Zoning boards were demanding that new antennas be collocated on existing towers instead of giving permits for a lot of new towers. Tower companies such as Crown Castle International were attracting carriers to collocate on their towers.

We caught the early wave of the collocation market. We were in the forefront of working on the retrofitted towers to make them stronger to handle the collocations without welding. Companies were welding half pipe onto guyed towers and welding

steel plates onto monopoles to increase the capacity. The welding sometimes started causing fires on nearby rooftops, inside the coax that ran up the side of the tower and inside of the monopoles.

We addressed the need for strengthening with a quarter-inch-thick, lightweight, carbon-fiber laminate plate that we would structurally bond to the side of the pole. It increased the capacity of the tower by 15 percent without the threat of a fire breaking out. Back in 2003 and 2004, if you could add 15 percent to a monopole's capacity, it was considered a big deal because you could almost add another carrier.

We had a lot of interest from Crown Castle and became the company's modification partner for a while. We did some work for SBA Communications and for Sprint in the Northeast. We grew quickly, and when customers began wanting even more capacity,



James Lockwood
President of Aero Solutions

we began bonding steel because we could provide the needed capacity with a 1-inch-thick plate. In 2006, Crown Castle had grown to the point at which its head, John Kelly, was

100TH ISSUE



looking for a nationwide standard for pole modifications. Aero Solutions provided that standard for a time.

Things were moving fast. From 2007 to 2009, on an annual basis we did more than 250 monopole reinforcements. We had 30 people on staff, and 70 percent of our work was outsourced. We would perform the engineering and product development, and we had three product fabricators working for us across the country.

A big part of our turnkey supply chain was the installation crews, which we outsourced. From 2002 to 2010, we were able to count on the companies we trained to have consistent crews. With the turnover that is happening today, we have seen a super shortage of crews available to install our products.

"There are about 12 major firms doing structural work that use our software, and we support them with our products and services. This was a major shift in how we did business. We wanted to focus on a specialty. We wanted to stay a technology company. That is my passion." –James Lockwood

In the 2012–2013 time frame, as tremendous growth resulted in more and larger LTE antennas on existing towers, we found that we were losing control over the services and we had trouble meeting deadlines and deliverables. As a matter of course, we had to make the decision to either go into the construction business (invest in crews and trucks) or invest in new products, new product development and software to support the engineering process and expand our

fabrication capabilities. We elected to do the latter.

It was important for us to go upstream in the process, licensing software to engineering firms. There are about 12 major firms doing structural work that use our software, and we support them with our products and services. This was a major shift in how we did business. We wanted to focus on a specialty. We wanted to stay a technology company. That is my passion.

» Engineering Cellular and DAS Has Seen a Fundamental Shift; Now Capacity Is King

By Ted Obenour
Vice President of Sales, H&M Networks

Cellular systems and distributed antenna systems have undergone a fundamental shift in the past 10 years, changing from a technology that was designed for mobility to cell phones that are sources of communications and data in our offices, in our homes and in our shopping malls. The transformation was driven first by 3G and ultimately pushed by smartphones that needed higher data rates, which led to 4G deployment.

In 4G LTE deployments, the system designs and installations that we do are all affected by the attention that has to be given to capacity, not just coverage. And that will continue as we move to the next generation of LTE in the AWS band and on into voice-over-LTE. The data, which occurs continually as apps check in with the network, is, without a doubt, the most fundamental driver of increased capacity in the networks, but we are just at the beginning of it. We are

looking at new systems that are not just 2x2 multiple-input, multiple-output (MIMO) communications, but also 4x4 MIMO communications.

The level of data, transmission, integration, capacity and coverage that is going to be required is absolutely phenomenal.

We have a very large RF engineering team that is specially trained for designing for this type of environment, but we had to change our general philosophy regarding performance



Ted Obenour
Vice President of Sales, H&M Networks

engineering concerning capacity. When you start increasing capacity, the words “performance engineering” take on a completely new significance. Performance engineering starts with the design, but then it gets implemented into how we build and test our systems and ultimately how we commission and tune them.

For example, although a stadium may have 20 sectors, I don’t want to wait to complete the entire construction

to find out whether each sector works as it was designed to work. Instead, we test the system sector-by-sector as we build. In the end, we obtain the best performance. It has fundamentally changed the way we do business.

As a matter of course, we have significantly increased our RF engineering team. We have design engineers, field engineers and wireless field specialists. It represents a significant investment in people, software, tools, training and resources across the board. We have engineers to design the system. We have field engineers on-site from beginning to end to make sure that the performance meets the design. Wireless field specialists make sure the equipment is installed, set up and tuned to meet the design specifications and to make sure that it performs as designed.

In the area of DAS networks, carriers are moving rapidly back to requiring carrier-grade systems. In the hurry to build DAS in the past, systems have been deployed that I would not call carrier-grade. It is not something we have done at Henkels. But when you look at the small startup companies,

they were not always building carrier-grade quality.

We have been deploying remote radio heads for some time. We are not just deploying a small cell or remote radio head to fill a coverage gap, but also for capacity underneath the macrocell, and that requires us to integrate the unit into the macro network. If we don’t, the phone won’t know which site to access.

The specialized human resources we need to be successful are highly in demand. We have had to accept the fact that we have had to grow our own people to really meet the demands of the market. We have to train them on the technology itself for each original equipment manufacturer’s equipment. Plus, there is training on a specific carrier’s needs in a specific market, safety training and training on Henkels’ deployment approach. There are design criteria on how a piece of equipment works in a certain environment, plus tuning and optimization is needed to turn all small cell, remote radio head, Wi-Fi and DAS into a single solution. It is an ongoing challenge.

100TH ISSUE

» *Amazing Growth and the Challenges Forecasting It*

By **Kristin S. Rinne**

Senior Vice President of Network & Product Planning, AT&T Services

During the past 10 years, we have seen terrific growth in our wireless network. In 2005, we became the first in the world to deploy UMTS/HSPA on a wide scale. This gave our customers their first experience with high-speed data on the mobility network and the

opportunity to do voice and data simultaneously. Only two years later, with the iPhone introduction, the smartphone era began and customers fell in love with the ability to manage their email, surf the Web and watch videos, all from their mobile devices.

At almost the same time, social

media networks began to boom, and suddenly the need for constant connectivity was greater than ever. Then, of course, there was the introduction of the open OS and the application development platform, and data utilization took on a totally new driver to the utilization of the wireless network.



MAY 2008

TowerCo sells 430 towers to SBA Communications, and in September closes on more than 3,000 towers in a sale-leaseback deal with Sprint Nextel.

"As you look at the growth, it is obvious that in the early part of that 10-year period we didn't have forecasts that were anywhere close to what we needed to drive and develop. We had to totally retool how we forecasted, built and managed the network to address all of the changes that confronted us."
—Kristin S. Rinne

Needless to say, we have seen an amazing change in terms of how the technology we have deployed in our wireless networks has driven transformation in how people live, work and play.

Surmounting the Challenges

As you look at the growth, it is obvious that in the early part of that 10-year period we didn't have forecasts that were anywhere close to what we needed to drive and develop. We had to totally retool how we forecasted, built and managed the network to address all

of the changes that confronted us.

We have an outstanding team of engineers and data scientists. We have an integrated planning organization, so we were able to focus and use that analysis, solution development and performance improvement on an end-to-end basis.

In many, many ways, we were the first in the world to deal with the major wireless broadband growth and the ramifications that it had on how we plan, build, optimize and manage the network. We have a team of dedicated and talented engineers



Kristin S. Rinne
Senior Vice President of Network & Product Planning, AT&T Services

that has driven that transformation.

Ten years ago, I was in a wireless company. Now, I'm in one of the top communications and information technology companies in the world. As we move to an all-IP network — mobile first, and cloud — we are uniquely positioned to do this.

» *How Tower Companies Overcame the Dot Com Crash*

By Jeffrey Stoops
President and CEO of SBA Communications

The most significant turning point in SBA Communications history happened in the depths of the Dot Com crash of 2002. All the tower companies found themselves over-levered. Two of them, SpectraSite and Pinnacle, declared bankruptcy, and SBA was widely thought to be the next in line. We were looking at a path that would have

taken us to a Chapter 11 restructuring.

Thankfully, we had another path, which was to find a way to stabilize our capital structure, deal with the specific debt issues and avoid bankruptcy. Where I was raised, bankruptcy was not something to be proud of. It was to be avoided. A lot of people would have been hurt, not the least of whom would have been Steven Bernstein,

with his equity wiped out.

We were able to accomplish a sale of 20 percent of our towers to AAT Communications, which was run by Jerry Penn. Basically, what we learned, which is valuable to this day, is that towers are integral to the operation of a carrier. However, to a tower company, a tower is an independent business unit, and you can slice them



Jeffrey Stoops
President and CEO
SBA Communications

"We focus on owning macro towers and leasing space in a way that provides maximum flexibility for the future unknown directions of wireless." –Jeffrey Stoops

you can be patient and stick to your core business, it will generally work out well in our industry. It takes staying power, and it takes time.

Roll Ups of the Last 10 years

Clearly, in terms of the absolute number of towers purchased and dollars invested, 2012 was our biggest year. I believe we increased our tower count by 60 percent. We borrowed some money and issued some stock to the owners of TowerCo and Mobilitie to pay for those acquisitions. The confidence they had in our reputation helped make all that possible. We were really happy with the deals we did in 2012.

We did not grow personnel-wise that much in 2012, because we can add a lot of assets and not increase overhead, which is one of the reasons Wall Street loves the tower industry.

In 2004, SBA had 475 employees, down from 1,500 employees in 2000. The stock was still below \$4 a share; the company was worth \$1 billion; and it owned 3,100 towers. Contrast that with today when we have a stock price that is well above \$100, a company value that is north of \$20 billion, and we own more than 22,000 towers, globally; and we have more than 1,100 employees.

The Keys to Success

We have kept a fairly singular focus from the day we embarked on the road to tower ownership. We focus

on owning macro towers and leasing space in a way that provides maximum flexibility for the future unknown directions of wireless. That has served us extremely well in the way we draft our contracts and the assets we have selected. We are much more focused on macro towers than our peers, percentage-wise. We are not in the small cell, DAS or other ancillary businesses. But we do keep a fairly vibrant services component, which keeps us smart and close to our customers.

Our focus is on being patient and having flexible contracts that can accommodate new equipment when it is needed. It was that focus that helped us to decide to go international in 2006/2007, when the opportunity set began to shrink in the United States. We could have gone in some other directions, but we decided to keep the macro tower focus and take it international. That has served us well because the basic operational knowledge of infrastructure deployment translates to any country.

I think I have become more patient personally, as I have gained more confidence in the strength of our business and the core belief that infrastructure will continue to grow, because wireless will continue to grow and spectrum is limited. That has proven to be an absolute, mathematical equation that is a core component of our success. I know that our site leasing revenues will be greater next quarter than this quarter. I just know it.

off one at a time to sell or securitize. It gives you a powerful tool to fine-tune your balance sheet. We began at the Pacific Ocean and started counting eastward the number of tower sales it would take to help with our debt issues. The answer was between 800 and 900 towers and ended up being every tower we owned west of the Mississippi.

We dropped our tower count from 4,000 to 3,000, stabilized the company and avoided bankruptcy. By selling those towers, we bought ourselves some time. We were very entrepreneurial. We moved assets around. We swapped debt for equity. Although our stock price dipped to a low of 19 cents a share, which was scary, the shares have priced well since then.

I learned a lesson that has served me well through the years. During that time, even though it was a tough time throughout the telecom industry, carriers kept leasing up space on towers. They kept deploying more infrastructure, and wireless kept growing. What I realized was that if

100TH ISSUE



JULY 2008

SBA Communications announces the acquisition of OptaSite's 593 towers (for \$430 million) and 340 sites from Lighttower.

» Wireless Drives Six-Fold Growth at Services Company

By Martin Travers
President of Telecommunications, Black & Veatch

It has been a great 10 years for Black & Veatch. We are all privileged to be a part of such a dynamic industry. Our head count has increased six-fold, from 300 to 1,800 people. A lot of that growth was driven by the launch of 3G and 4G wireless technologies. We have seen that growth all across the country. It has been exciting.

One big change has been the dramatic increase in connectivity speeds at the cell site and the expansion of fiber to the cell site. Ten years ago, we were not really engaged in fiber deployment. That was a big growth area for us. Now, it is a routine part of what we do.

We have seen a greater dependency on skills related to tower analysis to get more and more capacity out of the tower structures. We have seen that grow exponentially with the demand for services for strengthening, modifying and reinforcing towers, driven by the installation of remote radio heads on tower tops. It changed our business.

More recently was the tremendous growth in the need for more and more tower crews and more experience within the crews to install the 4G technologies, many of which are placed at

the top of the tower, which requires personnel to have both tower climbing and technology deployment skillsets.

From time to time, there have been strains on the supply of tower crews and resources. From 2012 to 2014, it was very noticeable. The shortage was exacerbated by the fact that there is more work to do physically on the tower at height than there was in 3G and 2G before that. Because there was a lot of push from multiple carriers, the number of man-hours per site increased. Networks were becoming more and more dense, so there were more towers to work on.

Although in 2007 the iPhone became the tipping point for driving data growth, the change really began in 2003 when the “American Idol” television show teamed with AT&T to allow viewers to vote for the contestants via SMS texts using their cell phones. It became a big driver for wireless network quality and capacity. It was a sign that people were beginning to use the technology in a very different way, more socially, not just talking with family. I recall that we were prohibited from taking the system off the air to do any upgrades or maintenance during the window of time



Martin Travers
President of Telecommunications
Black & Veatch

when voting for “American Idol” was happening to ensure that all those texts made it through the network. In 2008, the show generated 78 million texts.

Also during the past 10 years, we built and later decommissioned Qualcomm’s MediaFLO branded FLO TV, which broadcast 14 TV channels to handsets using dedicated spectrum in the 716-MHz to 722-MHz band. It was an interesting technology that both Verizon and AT&T sold, but it was very short-lived because of the growth of LTE and higher data speeds were enabled. FLO TV was live only from 2007 to 2010. LTE Broadcast eliminated the value of broadcast TV on a separate network. It was a testament to the fact that any technology must not only perform, but there must be a solid value proposition behind it.

“One big change has been the dramatic increase in connectivity speeds at the cell site and the expansion of fiber to the cell site. Ten years ago, we were not really engaged in fiber deployment. That was a big growth area for us. Now, it is a routine part of what we do.” –Martin Travers



SITE NAME
CUMMINGS PARK EAST T

HEIGHT
179 FEET

YEAR CONSTRUCTED
1999

CARRIERS
AT&T MOBILITY
VERIZON WIRELESS
T-MOBILE USA
SPRINT

TOWER OWNER
AMERICAN TOWER

TOWER TYPE
MONOPOLE

LOCATION
HUNTSVILLE, ALABAMA

Photography by Don Bishop

AGL TOWER OF THE MONTH



agl
ABOVE GROUND LEVEL
TM

NOVEMBER 2014

AGL TOWER OF THE MONTH

Tower Family Foundation Sets Course to Help Families of Injured, Deceased Tower Workers

With an initial donation of \$400,000 from ClearTalk Wireless and Fletcher, Heald & Hildreth, the Tower Family Foundation has started accepting applications for grants and scholarships.

By Don Bishop

Grants and scholarships from the Tower Industry Family Support Charitable Foundation (Tower Family Foundation) will help to provide financial assistance to family members of a severely injured, permanently disabled or deceased tower worker injured or killed in an accident stemming from working at heights on communications structures or other job-related activities that involve tower workers on a daily basis, according to an announcement made by the foundation during the Tower & Small Cell Summit in Las Vegas in September.

In making the announcement, Jim Tracy, president and CEO of Legacy Telecommunications, who serves as the foundation's president and as vice

chairman of the National Association of Tower Erectors, said that 70 percent of calls to police, fire and emergency medical services are made with mobile devices. "The people who make those mobile devices run are our people," he said. "Americans rely on those mobile devices to call for help. When they call for help, they call 9-1-1. When 9-1-1 needs help, they call us. When they need help so they can get their towers fixed, they call our heroes."

Tracy said the foundation is about the families of heroes. "We have a moral imperative to take care of the families who take care of the heroes who take care of our people," he said. "We're talking about tower workers who are severely disabled and tower workers who are unfortunately killed

in the line of duty. This mission was established to provide bridge funds, to give money to a family to buy groceries, transportation and needed elements that are necessary in the short term to care for families. We don't care whether it's mortgage money. We don't care what you do with the money. What we're saying is that we do care." In addition to making grants of bridge money, Tracy said the foundation would give scholarships at the level of \$2,500 per year for up to four years, capping at \$10,000.

For bridge money grants, the foundation has an advisory committee that reviews applications sent by families of tower workers. "In three to seven days after the advisory committee receives the completed information and if it approves the application, a family gets a check with a handwritten note from one of our board members," Tracy said. "Because that's what it's about, people who care, doing the right thing at the right time for the right reason."

Todd Schlekeway, executive director of NATE, said the foundation

"We would really like to see the foundation grow. What we've done is to add a little bit of gas to the carburetor and get it going. This by no means is the size should be, given all the people that are out there who really need some help in our industry. We're looking forward to them helping it grow." –Glenn Ishihara





At the lectern, Jim Tracy, president of the Tower Family Foundation, announces that the foundation is ready to accept applications for grants and scholarships.

Qualifications for a Foundation Grant

The Tower Industry Family Support Charitable Foundation has been established to help provide financial assistance to family members of a severely injured, permanently disabled or deceased tower worker injured or killed in an accident stemming from working at heights on communication structures or other job-related activities that tower workers are involved in on a daily basis.

The Tower Industry Family Support Charitable Foundation Advisory Committee will evaluate applications for accidents that occurred on or after Sept. 1, 2014. This will be the starting point for applications to be considered. Donations will not be retroactive (provided for accidents that occurred prior to Sept. 1, 2014).

The following definitions for the three categories of death, permanent disability or severe injury will be utilized by the Advisory Committee as a framework to evaluate whether applications merit a donation.

Death or Permanent Disability

Defined as a loss of life or an injury that disables a person from performing the tasks he/she was doing earlier in the normal course, that will continue indefinitely and remain with a person throughout his or her lifetime. The cause of the death or permanent disability must be as a result of tower-related work. The following are examples of injuries that constitute a permanent disability:

- Permanent speech impairment

- Loss of hearing in both ears
- Loss of sight in both eyes
- Loss of ability to use both hands
- Loss of ability to use both feet
- Loss of ability to use a combination of one hand and foot (together)

Severe Injury

A severe injury is a physical injury that creates a substantial risk of death, or that causes serious disfigurement, serious impairment of health or serious loss or impairment of the function of any bodily organ. In order for an injury to be classified as severe, the worker must be hospitalized. The severe injury must be as a result of tower-related work.

Source: Tower Industry Family Support Charitable Foundation

Qualifications for a Foundation Scholarship

Tower Industry Family Support Charitable Foundation scholarships are valued up to \$2,500 each for full-time students and up to \$1,250 per year for part-time students with a maximum lifetime scholarship amount not to exceed \$10,000. They are renewable annually for up to four years for full-time students and six years for part-time students, provided academic criteria are met.

A 2.5 GPA or equivalent will be required for the recipient's freshman year, with a 3.0 GPA or equivalent for each successive year.

The scholarship will supplement a financial aid package received from an institution. Scholarship awards are made payable to the school on behalf of the student. A telephone interview will be conducted by mem-

bers of the Advisory Committee Foundation Scholarship Committee. Scholarships may be awarded in advance of acceptance by a college or technical school conditioned upon the student's admission and attendance.

Eligibility Requirements

- The candidate must be a legal dependent of a permanently disabled or deceased employee tower worker.
- The candidate must be a high school graduate or equivalent and must be accepted as a full or part-time student to an accredited college or technical school to receive the scholarship.
- Full-time students must carry at least 12 credit hours per semester. Part-time students carry less than full-time credit hours, but must carry at

least six credit hours per semester.

- The application for the scholarship should be submitted no earlier than the calendar year in which the student plans to begin attending college or technical school. Send to:

Tower Industry Family Support Charitable Foundation
Attn: Advisory Committee
8 Second St. S.E.
Watertown, SD 57201

The foundation's Advisory Committee reviews all applications and makes an award if it determines that one of the candidates has met all of the criteria.

Source: Tower Industry Family Support Charitable Foundation

received a joint donation of \$400,000 from ClearTalk Wireless and the law firm of Fletcher, Heald & Hildreth as seed money to begin its charitable giving. Additional donors include Legacy Telecommunications, MUTI – Sabre Industries Telecom Services, Partner Telecom Services, SBA Communications, and Jim and Betty Ann Coleman.

Eric Steinmann, business development manager of NTCH, which does business as ClearTalk Wireless, said his company received a windfall primarily through the effort of its attorneys, Fletcher, Heald & Hildreth, and wanted to allocate some of it to

charity. "There was an incident in Colorado in 2006 where I got in contact with the family involved," Steinmann said. "I stayed in touch and helped them as I could, and thought that if I were ever able to do something a little more, I would certainly want to. I understood what she was going through, raising three kids, not married, so she didn't get the benefits that she ordinarily would. Those are the type of people that you often find working in our industry. They're good people. They may not be married. But they do care about their families, and if all of sudden the family breadwinner

is gone, it is really a tough situation to be in."

Need for a Charity

Steinmann said he and Glenn Ishihara, ClearTalk's president with whom he started the company 20 years ago, saw a need and that a charity didn't exist to serve the need. "We worked together with NATE to create one," he said. "We set up a fund to help families of tower climbers who are all too often getting hurt. We've been in this industry more than 20 years. We started primarily doing construction and then we became a carrier, and now we operate as a carrier as well as doing services for



SEPTEMBER 2010

Crown Castle completes a \$115 million acquisition of DAS vendor NewPath Networks from Charterhouse Group.

other carriers. We build sites and do some spectrum transactions.”

Loss of Breadwinner

“Over that 20-year period, we were constantly hearing about the unfortunate occurrences in our industry and we felt fortunate that we didn’t have those things happening to us. At this point, kind of on the back end of our careers, we wanted to see where we could help in that situation where people are left without the primary breadwinner and they’re maybe overcome with grief at the same time. It really can be a sad situation. The statistics speak for themselves insofar as the need.” Steinmann said.

Ishihara said ClearTalk made the \$400,000 donation as a company, jointly with Fletcher, Heald & Hildreth. “We always wanted to do more than we have in the past,” he said. “The law firm got us into a situation where we had the wherewithal to do something meaningful. So we made the decision as a company to try to do a lot more.

“We would really like to see the foundation grow. What we’ve done is to add a little bit of gas to the carburetor and get it going. This by no means is the size it should be, given all the people that are out there who really need some help in our industry. We’re looking forward to them helping it grow. We can’t do it ourselves, so with all the NATE members, I think the word will get out and people will understand what’s going on and will jump in to help,” Ishihara said.

Donald Evans, an attorney with Fletcher, Heald & Hildreth, who represents ClearTalk and who serves as special counsel to the foundation’s



Eric Steinmann (left), development manager at ClearTalk Wireless, and Donald Evans, an attorney with Fletcher, Heald & Hildreth. ClearTalk and FH&H jointly donated \$400,000 to the Tower Family Foundation.

advisory committee, said the committee has received many expressions of interest from other firms that do tower erection work to say that they want to contribute. “There’s a lot of sentiment in the industry for supporting this project,” he said. “What motivated Fletcher, Heald & Hildreth to make the joint donation with ClearTalk was a matter of my consciousness being raised about how dangerous this work is, which is something I hadn’t realized until the ClearTalk folks made me aware of it. From working on the advisory committee, I’ve become much more aware of accidents that happened. Immediately, we sympathized with the victims, and we had to think about how we could take care of them.”

Steinmann compared the tower industry fatality rate with that of the elevator industry. “In our industry,

in the past year, there have been 14 deaths,” he said. “In the elevator industry, in the past year, there were five deaths. If you try to call someone to work on an elevator, you pay \$230 an hour, port to port. Unfortunately, many people in our industry are young, doing this job for a period when it’s busy, and then when things slow down, they go on to something else, and employers have to retrain people. There is a lot of work to do to establish more permanence, a higher level of conversation in our industry, and that will lead to a safer industry.”

Evans added, “Participating in this project with ClearTalk has been an honor and an education. I’m a Washington lawyer who’s in an ivory tower most of the time. To me, towers usually are just latitudes and longitudes and heights above ground level that we fill in on forms and file with the FCC.

SAFETY

Tower Industry Family Support Charitable Foundation

Board of Directors

Foundation President

Jim Tracy
President and CEO
Legacy Telecommunications

Foundation Vice President

Jim Coleman
National Tower Safety Manager
AT&T

Foundation Secretary and Treasurer

Kari L. Carlson
COO, Tower Systems

Advisory Committee

Cliff Barbieri

Owner, Advanced Tower Services

Victor Drouin

President
Green Mountain Communications

Karen Kyman

President, Precision Communications

Ben Little

Chairman and CEO
Centerline Solutions

Todd Schlekeway

Executive Director
National Association of Tower Erectors

John D. Talley

Executive Vice President, Talley

Dimitri Thornley

Wireless Sales Director, JDS Uniphase

Special Counsel to the Advisory Committee

Donald J. Evans

Attorney at Law
Fletcher, Heald & Hildreth



Back row: Ben Little, Victor Drouin, Jim Coleman, Kari L. Carlson, Jim Tracy, Todd Schlekeway and Dimitri Thornley. Front row: Donald J. Evans, Eric Steinmann, Adilia Aguilar and Michael Feigenbaum.

Working with Eric and working on this project has raised my consciousness such that I understand this is a deadly job, that people can be severely injured and some lose their lives. As my consciousness has been raised, I hope that others in Washington will have their consciousness raised by this foundation and by the other work that NATE and Eric are doing to publicize the danger that tower workers face every day.”

The foundation has a website at www.towerfamilyfoundation.org where it makes application forms available.





WESTOWER
EXPERIENCE THAT WORKS

Celebrating Our 25th Anniversary of *'Experience That Works'*

Over the last 25 years, WesTower has played an important role in helping its clients meet their strategic goals in the deployment of their ever evolving and growing networks.

We're proud of what we've done, what we're doing today, and especially the team of people we work with and work for.

We would like to thank our clients, suppliers and our entire WesTower Team on the 25th Anniversary of the company's founding.

We look forward to evolving and growing with you for the next 25 years and beyond.



WESTOWER
www.westower.com

Happy New Year!

OSHA's Revised Recordkeeping Rule – Major Implications for Employers

Time is short. A new OSHA rule announced on Sept. 11 becomes effective on Jan. 1. Here are steps you can take to meet the requirements and prepare for inspections.

By Mark A. Lies II and Kerry M. Mohan

As many employers know all too well, the Occupational Safety and Health Administration requires them to record work-related injuries and illnesses and to maintain the OSHA 300 Log for five years. Moreover, OSHA requires all employers to report to OSHA certain serious injuries within a short time period. On Sept. 11, 2014, OSHA announced its final rule revising the current recordkeeping standard, which will significantly expand the recordkeeping rule's reach to hundreds of thousands of new employers and place further burdens on employers to report additional workplace injuries and illnesses. Because the new rules become effective on Jan. 1, 2015, employers have little time to modify their practices and prepare for the coming wave of enforcement.

Recordkeeping Regulations

Under OSHA's recordkeeping regulations, 29 C.F.R. 1904, certain employers with more than 10 employees must record work-related injuries and maintain written records for five years.

Those records include the 300 Log, the 301 form and the 300A annual summary. Although it may sound simple, recordkeeping is not easy because it involves numerous issues including work-relatedness, the nature and scope of an injury or illness, and counting employee days off from work or restricted duty, all of which many times involve analysis of incomplete or conflicting evidence. For instance, an employer may disagree with an employee's claim that his or her injury or illness is work-related. In such circumstances, the employer must evaluate the employee's claim to determine whether the injury or illness should be recorded on the OSHA 300 Log or should be found to be nonwork-related. If the employer finds that the injury is nonwork-related, the employer will have to maintain documentation to support its determination in case OSHA were to challenge that decision.

Subject to the Requirement

Under OSHA's current rule, employers with 10 or fewer employees are exempt

from maintaining OSHA 300, 301 and 300A records, which track work-related injuries. The current rule also exempts thousands of employers based on their Standard Industrial Classification (SIC) codes. Under the new rule, the list of exempted employers will be based on North American Industry Classification System (NAICS) codes. As a result, many employers that were once exempted from OSHA's recordkeeping requirements will now have to begin maintaining OSHA 300, 301 and 300A records. Some of the industries now covered by the recordkeeping rules include bakeries and tortilla manufacturing; automobile dealers; automotive parts, accessories and tire stores; lessors of real estate; facilities support services; beer, wine, and liquor stores; commercial and industrial machinery and equipment rental and leasing; direct selling establishments; performing arts companies; museums, historical sites and similar institutions; amusement and recreation industries; and other personal services.

SAFETY



SEPTEMBER 2011

Global Tower Partners enters the ground lease ownership business through the acquisition of GS Cell Site Holdings' approximately 1,600 leases.

The first question that comes to mind when seeing this list of industries now covered under the recordkeeping rule is, “What is OSHA even talking about?” Thus, it is important that employers learn what their NAICS code is to determine whether they are now covered by the recordkeeping rule. If so, the employer will then have to count its number of employees to see if it has 10 or fewer. There is information available from OSHA at www.osha.gov/recordkeeping2014 on how to conduct this assessment and also identify the employers now subject to the rule.

In short, OSHA’s new rule will encompass hundreds of thousands of employers who never had to keep these records. Moreover, because of the Jan. 1, 2015, implementation date, these employers must take prompt action to ensure that they are prepared to record injuries and illnesses in the future.

Reporting and Inspections

Under the current rule, all employers are required to report to OSHA “[w]ithin eight (8) hours of the death of an employee from a work-related incident or the in-patient hospitalization of three or more employees as a result of a work-related incident.” 29 C.F.R. § 1904.39(a). This requirement applies to all employers, regardless of whether they have 10 or fewer employees and regardless of whether they are exempt from maintaining recordkeeping logs.

Under the new standard, all employers are required to report to OSHA within eight hours after the death of any employee as a result of a work-related incident and within

24 hours after the in-patient hospitalization of one or more employees or an employee’s amputation or an employee’s loss of an eye, as a result of a work-related incident (20 C.F.R. § 1904.39(a) as amended).

OSHA’s new reporting rule raises several questions as to what it even means. For instance, what constitutes an amputation? Under the new rule, an amputation does not require bone loss. Thus, does the cutting-off of the very tip of a finger, no matter how small, constitute an amputation? Also, what constitutes the loss of an eye? Does it require an immediate incident resulting in the loss of an eye? The fact that these questions exist means that OSHA may have a different interpretation of the rule than the employer, which could result in a citation.

Moreover, the new standard’s implications are significant. As you may expect, reporting a death or serious injury often leads to an OSHA inspection, which brings its own set of issues. Thus, by requiring employers to now report more injuries and illnesses, the number of OSHA inspections, and citations issued as a result, will certainly increase.

Multi-employer Worksites

As this rule unfolds, it will have implications relating to OSHA’s multi-employer worksite doctrine, which applies when multiple employers engage in performing work at the same worksite.

Section 5(a) of the Occupational Safety and Health Act broadly requires employers to furnish each of their employees a workplace free from recognized hazards and to comply

with all occupational safety and health standards developed by OSHA. Thus, the Act creates two types of obligations: a “general duty” obligation running only to the employer’s own employees and an obligation to obey all OSHA standards with respect to all employees, regardless of their employer.

This second obligation formed the basis for OSHA’s multi-employer worksite policy, under which the agency decided it had the authority to issue citations not only to employers that exposed their own employees to hazardous conditions, but also to employers that created a hazardous condition that endangered employees, whether its own or those of another employer. This policy gave OSHA the ability to issue citations to multiple employers even for violations that did not directly affect the employer’s own employees. This policy had particular import in the construction industry, with many different employers having employees at a site at any given time.

Since the early 1980s, OSHA has continuously expanded the scope of its multi-employer worksite policy. Under OSHA’s current enforcement policy, compliance officers are instructed to issue citations to any employer that exposed its own employees to a hazardous condition, created a hazardous condition that endangered any employer’s employees, was responsible for correcting a hazardous condition even if its own employees were not exposed to the hazard, or had the ability to control to prevent or abate a hazardous condition through the exercise of reasonable supervisory authority.

This fourth category, the “controlling employer,” has historically caused



/ FEATURES /

the most consternation among employers as well as courts. The new OSHA enforcement policy regarding reporting injuries or illnesses and monitoring the OSHA 300 Log and related documents will raise numerous issues, for example:

- Does the controlling employer at the worksite have OSHA liability if another employer, such as a subcontractor or a temporary staffing service, at the worksite fails to report an injury or illness involving the subcontractor's or temporary staffing service's employee to OSHA within the required time period?
- What obligation does the controlling employer have to question other employers to determine whether a subcontractor or temporary staffing service had a reportable or recordable

injury or illness and whether the subcontractor or temporary staffing service complied with the rule?

- Who is responsible for maintaining the OSHA 300 Log at the worksite since OSHA has specific rules regarding which employer(s) is/are required to maintain the Log if there are multiple employers at the worksite?

Inspection Preparation

As many employers that have been inspected by OSHA have learned, there are respective rights of the employer, employees and OSHA during an OSHA inspection. Unfortunately, most employers are unaware of these respective rights, as are their employees, and, therefore, may waive important rights regarding the scope of the inspection, what documents the

agency is and is not entitled to and how to respond to requests for employee interviews. Since there will be many more inspections generated, it is critical that in the next several months employers train their supervisors and make employees aware of these rights.

Training the Recordkeeper

Because many thousands of new employers will now be responsible for maintaining the OSHA 300 Log, the training process must begin now so that the recordkeepers can begin to properly document recordable injuries and illnesses on the Log as of Jan. 1, 2015. The recordkeeper will need to learn the various categories of recordable injuries and illnesses, how to evaluate medical records to

RESPONSIBILITY IS THE FOUNDATION FOR ALL WE DO.

We've built an environment within our company where safety is everyone's responsibility. Every phase of every project, we accept nothing less than an accident-free jobsite. We believe this standard leads to safer and more productive jobsites and that's why we're dedicated to having the highest level of protection for our employees, our customers and the general public. **That's our standard.**

ELECTRICCONDUITCONSTRUCTION.COM/ABOVE



ABOVE. BELOW. BEYOND.

TOWER CONSTRUCTION • TOWER MODIFICATION • SMALL CELL TRENCHING • DIRECTIONAL DRILLING • FOUNDATIONS & FOOTINGS

ELECTRICCONDUITCONSTRUCTION.COM | 630-293-4474

Keep on track for RF safety



Policy on human exposure Frequently asked questions

www.fcc.gov/oet/rfsafety

SAFETY



SEPTEMBER 2011

American Tower announces the acquisition of more than 1,800 leases from Unison; American Tower also enters into a sale-leaseback deal with Plateau Wireless involving 180 towers.

determine whether an incident is recordable and then become aware of how to insert the data into the correct categories in the Log. The learning curve will be steep because the Log must be completed for each recordable incident within seven calendar days of the employer becoming aware that there has been a recordable injury or illness

Recommendations

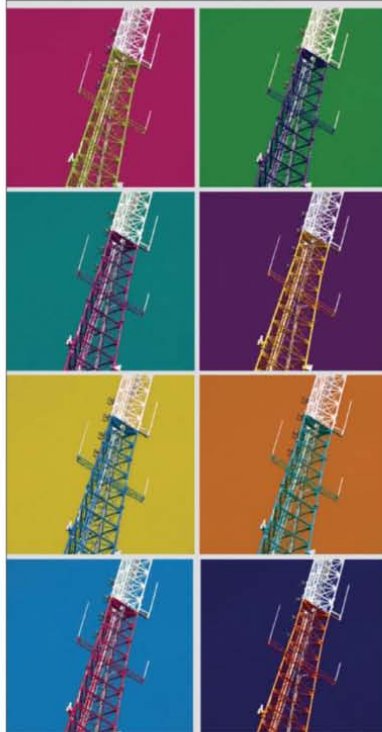
In order to be prepared to meet these new compliance obligations, employers should consider the following:

- Determine whether the employer is now subject to the requirement to maintain the OSHA 300 Log, and if so, designate and train an employee who will be competent to perform this responsibility
- Conduct training for its recordkeeper or other responsible employee regarding the new requirements to report the expanded categories of reportable severe injuries and illnesses within 24 hours to OSHA
- Because there will be many more OSHA inspections due to the new reportable categories of severe injuries and illnesses, conduct training on the various rights and responsibilities of employers, employees and OSHA during an OSHA inspection so that these rights can be properly exercised to limit the scope of potential employer liability.

Mark A. Lies II is a partner in the Seyfarth Shaw law firm Chicago office. His email address is mlies@seyfarth.com. Kerry M. Mohan is an associate with the firm in the Chicago office. His email address is kmohan@seyfarth.com.

Conduct training for its recordkeeper or other responsible employee regarding the new requirements to report the expanded categories of reportable severe injuries and illnesses within 24 hours to OSHA

WE UNDERSTAND EVERY TOWER OWNER FACES UNIQUE RISKS.



BB&T – Atlantic Risk Management is a large, independent insurance agency and an expert in protecting tower owners from unexpected risks. We offer complete, competitively priced programs endorsed by PCIA and tailored to suit your specific exposures, including: self-supporting, guyed or monopole towers; support equipment; shelters and fencing; plus general liability, business auto, workers' compensation, umbrella and more.

Find out why we protect more tower owners than any other agency. Call 410-480-4413 or 410-480-4423, visit www.bbt.com or email David Saul at dsaul@bbandt.com or Kimberly Calhoun at kimberly.calhoun@bbandt.com



Insurance Services
Global Resources — Client Focused



©2012 Branch Banking and Trust Company.

Insurance.BBT.com

SAFETY

Standard? What Standard?

More affordable, more accessible standards related to jobs that involve climbing telecommunications towers could save lives, especially the TIA 1019A standard. A safety advocate offers suggestions for improvement.

By Dr. Bridgette Hester

The number of safety standards for the telecommunications tower industry from OSHA, ANSI and TIA can be overwhelming. The many available standards save lives when they are followed appropriately. The Occupational Safety and Health Administration (OSHA), when investigating a fatality or injury, draws upon its own OSHA telecommunication standards, general construction standards, general industry standards and standards from the Telecommunications Industry Association (TIA) and the American National Standards Institute (ANSI).

If you aren't familiar with all of the standards, you should be. It's daunting to go through all of them and hope to obtain a clear and concise knowledge of them all. Short of having an eidetic memory, you need them on hand for reference.

The following information looks at the TIA 1019A standard from not only my point of view, but also from the point of view of an industry professional who has been in telecommunications for 11 years. My view includes my opinion and overview of the standard, how it applies in the field and hindrances that affect employers who want to have every

standard they need. I urge you to obtain a copy.

Saving Lives

If used more often, the TIA 1019A standard could save lives. Adherence to the standard could have saved four lives this year alone. TIA approved the standard in the summer of 2011. Yet even now, when I ask climbers through social media or on the phone, few have an idea as to what TIA 1019A is. Some climbers have a general understanding of it, but they are in the minority.

TIA 1019A is the "Standard for Installation, Alteration and Maintenance of Antenna Supporting Structures and Antennas." Eighty-four pages long, the standard replaced the ANSI/TIA-1019-2004 standard, "Structural Standards for Steel Gin Poles Used for Installation of Antenna Towers and Antenna Supporting Structures." It explains in meticulous detail the accepted industry minimum standard for installing, altering and maintaining antenna supporting structures and antennas. Using criteria based on both Load and Resistance Factor Design (LRFD) and Allowable Stress Design (ASD) methods, TIA adopted the standard to cover

construction and loading requirements for antenna supporting structures and antennas.

The standard allows for an engineered approach and construction guidelines for work being performed on towers such as structural upgrades, guy wire replacements, gin pole operations and special engineered lifts. Put more plainly, the standard answers the question of how to complete the job in a safe manner for the employees while still protecting the company's (the tower owner's) infrastructure.

If you need to modify the tower, you use TIA 1019A. If you are changing guy wires, you use the TIA 1019A. If you are removing structural members or appurtenances, you use the TIA 1019A. When followed accordingly, the potential for partial or complete failure is greatly reduced. If precautions are not adhered to, there are many elements that can go awry. For example, pulling angles out to put new ones in can cause incidents of catastrophic proportions. Pulling and replacing angles reduces structural integrity because the compression and tension on the components of the tower are not being properly managed during the replacement. Temporary supports may need to be used during

SAFETY




such a job in which the compression and tension forces need to be managed to maintain the tower structure's integrity.

Example

The triple fatality accident in West Clarksburg, West Virginia, earlier this year is a prime example. Based on reports, this incident occurred when T.J. Richards and Kyle Kirkpatrick, two Oklahoma tower technicians, and Michael Garrett, a Nutter Fort firefighter, were killed. The tower they were reinforcing collapsed when the techs were replacing horizontal braces. Garrett was in the process of trying to rescue other injured workers and was killed when a second tower fell on the first structure, striking the guy wires.

On July 31, 2014, several sources reported that OSHA inspectors cited the company for directing their employees to remove members from the structure without the use of temporary braces while the employees were tied off to bracing that wasn't capable of holding a minimum of 5,000 pounds. Both are violations. In turn, it means that there was a substantial probability that death or serious physical harm could result from a hazard about which the employer knew or should have known. Given this information, it is reasonable to speculate that somewhere in the process of the tower being worked on, TIA 1019A wasn't utilized at all. Perhaps the company performing the work wasn't familiar with the standard or knew about it and didn't follow the standard's protocol properly. In the process of this particular job — or any job where the 1019A should be

Employers have to be willing to make the investment and they should be mandated to utilize standards such as TIA 1019A to ensure the safety of their workers and infrastructure. Because that may take an act of Congress, which would not be likely to happen, an effective compromise might be called for if we want to take a serious step toward saving lives.




Marvair[®]
AIRXCEL™, Inc.

If you lose your air conditioner you lose your cell site.

If you lose your cell site you drop customer calls.

Don't drop customer calls.

Order **Coil Cop** on your next Marvair air conditioner.



Discourage • Alert • Stop Theft

Call (229) 273-3636

Ask for Kimberly

SAFETY



SAFETY

implemented — several steps must be followed.

A rigging plan has to be constructed for any job classified as a construction class II, III or IV. For classes III and IV, a qualified person will coordinate the involvement of a qualified engineer as required. (You may or may not have to involve an engineer for class III. It depends on the scope of the work, but construction falling into class IV needs to have the rigging plan reviewed by an engineer because class IV jobs have the highest risk.) When establishing rigging plans for a construction class IV, the engineer is required to perform an analysis of the structure and the components. The engineer won't articulate measures to be taken for the job, but will tell the company and the author of the rigging plan if the plan can be exe-

cuted and will state whether or not the work can be completed. In this case, I wonder if such a rigging plan was approved, much less written.

Accessibility to Standards

TIA 1019A is not law. It's not mandated that employers utilize the standard. However, if it will preserve the life of the employees and the structural integrity of the tower, why is it not being utilized more than it seems to be? Why don't more workers and employers have access to the standard? Why is it that so many climbers, and presumably training managers and coordinators, especially at small companies, have problems obtaining all of the industry standards, mandated or not? Do climbers and trainers have the standards and just don't use them? Is it a matter of standards being

inaccessible? In my conversations with industry professionals and climbers, I was told that many owners, especially small business owners, are unwilling to pay the several hundred dollars it costs to acquire standards that are not mandated.

These OSHA, TIA and ANSI standards might be able to save lives, but the companies aren't paying the money to obtain TIA 1019A and the subsequent costs that go along with executing the standard. In short, if the customer or the government isn't requiring companies to own and comply with a standard, there isn't anyone pushing for an owner to buy the standard. Companies and organizations are out to make money. They are out to turn a profit, but at what cost? The fact is, unless standards such as TIA 1019A are mandated as law, chances are good that most employers won't buy the standard or follow its guidelines.

Conversely, we could potentially ask for some accountability on the part of those writing such standards. OSHA standards can be found online for free, and TIA standards seem reasonably priced (TIA1019A is \$174), but others are priced to the detriment of some companies. For instance, ANSI standards are expensive, especially for small business owners just getting started. The complete construction package is \$2,000. Individual standards are priced from \$125 to well over \$1,000, depending on what industry the standard is for. From what I was able to locate, if you are a member of ANSI, you may qualify for a discount, but if you are not, no discount is available. I may have missed something in my research on pricing, but even at



a discounted rate, some standard packages are so expensive that even a discount might still cause budgetary problems for a smaller business owner.

Similarly, at the National Association of Tower Erectors, safety resources are available to NATE members only, with the exception of the NATE Tower Climber Fall Protection Training Standard and Coffee Table Book, which is available to members and nonmembers.

What about companies that can't afford to become NATE members? What about all the good information in the NATE educational resources about other aspects of the industry other than fall protection? What about the company that can't afford ANSI standards? Some will say that it is the company's fault for not spending the money to have the most

up-to-date safety information for their employees, but most companies in this industry are subcontractors and may not have the funds.

Let's be realistic. Most contractors and subcontractors are not at the top of the telecommunications food chain, making the big money within the industry. Given that, if the standards were more readily available and reasonably priced, it's likely these smaller companies would have access to tools to make the workplace safer. Why not allow companies to access a standard for a fee per access? If they have jobs in which they have to reinforce a structure, why not make available a copyrighted protected version (one that can't be copied) of the standard for a nominal single-use fee so that the company can take notes and get the information it needs to follow

the protocols? Would all companies buy these invaluable pieces of information even if they were available in a different format? Well, of course not, but making it reasonable so the ability is there for companies to purchase them or have access to them not only gets the information into more hands, it also places the responsibility on the employers to be more accountable for ensuring a safe workplace. When the safety information is easily accessible or affordable, you in essence eliminate the excuse for not having or utilizing it.

All industry participants, in whatever capacity, are looking to make money and become a viable part of the industry. That will require some give and take when it comes to things like standards that potentially save lives. Standards that are not available

Wireless Challenges ... High Gain Solutions

Are You Prepared to Meet FCC Rules That Require You to Show Substantial Use of Your Licensed Spectrum?

High Gain Wireless has recently completed over sixty 'license save' deployments for our clients to file their certifications in time to meet their FCC obligation.

High Gain Wireless also specializes in non-traditional network build projects, managing a broad scope of converging technologies including tower and site development, small cell design and deployment, and DAS/ODAS design and integration.



highgainwireless.com



/ FEATURES /

TIA 1019A standard allows for an engineered approach and construction guidelines for work being performed on towers such as structural upgrades, guy wire replacements, gin pole operations and special engineered lifts.

to all industry personnel or not available at a reasonable cost (when taking into account business size) seems counterintuitive to producing a safe workplace. I am not suggesting that these organizations give standards away for free, but scaled pricing based on the size of a company or the number of employees in a company would be feasible.

Employers have to be willing to

make the investment and they should be mandated to utilize standards such as TIA 1019A to ensure the safety of their workers and infrastructure. Because that may take an act of Congress, which would not be likely to happen, an effective compromise might be called for if we want to take a serious step toward saving lives. By adjusting the accessibility and pricing of such standards, the information

will potentially make it into the hands of more company owners, trainers and safety coordinators. If that is accomplished, it is more likely that more workers would be made aware of the standards, and the probability of safer worksites would be on the horizon.

Bridgette Hester, Ph.D., is a family and workplace strategist. She is the founder and president of the Hubble Foundation, which is dedicated to promoting the safety of tower workers, site crews and all workers at heights. Her email address is bridgette@hubblefoundation.org.

SAFETY

www.unimar.com | 1 (800) 739-9169

UNIMAR
Brighter lighting solutions

**FAA
CERTIFIED
CUSTOM
OBSTRUCTION
LIGHTING
TO MEET
YOUR NEEDS**

UNIMAR
Brighter lighting solutions



For a quote please visit www.sunsight.com



The New AAT-30. The most feature-packed antenna alignment tool on the market.

The new AAT-30 has an overall 81% reduction in size!



- **Weight:** 3.6 lbs & Mount Weight: 1.2 lbs
- **Most Accurate:** 2.5 times more accurate than the main competitor's instrument based on R99 (3 sigma)
- **Most Durable:** solid powder-coated aluminum housing, weather-resistant, reduced internal moving parts
- **Best Value:** the lightest, tightest form factor - most features for the lowest price!



- Measures azimuth, tilt, roll (plumb) and height (with optional laser range-finder option) capturing measurements for reporting
- Uses **GPS** and **GLONASS** satellites providing the quickest and most accurate measurements in the industry
- Approved for use with **Major Carriers**
- Designed for **hot RF environments**
- Now includes a **3-year manufacturer warranty**



For a quote please visit www.sunsight.com



Renewable Networks: Repair, Recycle, Repurpose

BUSINESS

Recycling offers an opportunity to profitably and legally dispose of end of life and legacy telecommunication equipment. Many times, the equipment can be put back into service elsewhere.

By Peter Murray

Currently, the world disposes of 54 million tons of electronic waste each year, and it is estimated to grow to 72 million tons by 2017. The United States is the leading country with more than 10.4 million tons. This only includes computers, cell phones, televisions and other major consumer electronics

products. Every year, consumers and businesses buy new gear and, in 2012, global sales of new equipment included 238.5 million televisions, 444.4 million computers and tablets, and 1.75 billion mobile phones (Gartner). A study performed a few years ago found that 157 million computer products were discarded, with 133 mil-

lion disposed of in landfills. The U.S. Environmental Protection Agency estimates that only 15 to 20 percent of this gear is recycled, with the remainder dumped in our landfills. These are startling facts about what contributes to the continued environmental issues our planet is experiencing.

The figures do not include the



many components in our networks that are also routinely disposed of during upgrading — routers, servers, switches, cables, connectors, radios, antennas and storage devices, to identify a few. Most of this hardware can be resold and repaired and, if not, it can be repurposed and recycled. One company, SWG, runs a clearinghouse of sorts where companies can go for a one-stop resource to determine how and where to get the most return for their gear.

These products contain lead, cad-

mium, beryllium, arsenic, mercury, PCBs, brominated flame retardants and other environmental contaminants. Some of these never decompose and seep into the ground and water tables causing huge environmental problems. Burning them produces other toxins such as furans and halogenated dioxins. The toxins are released into our air, water and soil, affecting mankind with serious illnesses such as cancer, endocrine disruption, birth defects and other reproductive dangers as well as respiratory illness, skin sores,

infections and lesions.

Recycling workers are directly exposed to these toxins, which accelerates the onset of illness. These recycling workers are often in regions with primitive and developing socioeconomic conditions. Over the past few years, “60 Minutes” and the BBC separately documented these conditions and demonstrated that many of the workers are children, some as young as 8 years old. Eighty-two percent of children tested in the Guiyu region of China were found to have clinical

Acceptable Materials for Recycling or Repurposing

Network Gear, All Generations

- Microwave equipment
- Radios
- Routers
- Servers
- Switches
- Blade servers
- Cabling
- Antennas
- Access points
- Controllers
- Muxes
- Towers
- UPS systems
- Racks and cabinets
- Voice mail systems
- Phone systems

General

- Cell phones (without battery) – scrap cell phones without batteries
- Cell phone chargers
- Circuit boards
- Computers
- Computer cables – electrical and

ribbon wire from electronics, based on 25 to 30 percent

- Copper degaussing wire
- Copper yokes from TVs and monitors
- Copper transformers from electronics
- GPS units
- Inkjet and toner cartridges
- Laptops
- Medical testing equipment
- Mixed degaussing wire
- MP3 players
- Pagers
- PCs
- PDAs
- Phones
- PoS
- Power strips and surge protectors – power strips with wire and plug
- Scanners
- Storage devices (internal hard drives, external hard drives, solid-state drives, SD cards, memory cards, card readers)
- Tablets

- Video equipment (cameras, video cameras, webcams, recording devices)
- Wireless workstations

Parts

Boards

- Processors and CPUs
- Memory and RAM – disk and hard drives are shredded for security and compliance

Monitors and televisions – fee-based

Batteries

- Li-Ion – dry cell only, terminals must be taped
- NiCd – dry cell only, terminals must be taped
- NiMH – dry cell only, terminals must be taped
- Lead-acid – palletized and shrink wrapped, cardboard between layers

/ FEATURES /

lead poisoning. The same region has been estimated to have dioxins at more than 4,500 percent of safe levels.

An increasing number of global regulations are beginning to ensure that these components are disposed of properly. For instance, in the United States each state creates its own regulations. Pennsylvania enacted a law called Covered Device Recycling Act (CDRA), by which manufacturers can be fined up to \$10,000 for a first offense and \$25,000 for subsequent violations. The potential liability could ultimately bankrupt a company, as Johns Manville's asbestos violations did. The EPA has a program called Sustainable Materials Management (SMM), which is increasing responsibility among major industry players to utilize approved recycling methods. The only carrier currently involved is Sprint.

The startling fact is that most of this gear is still functional or could be repaired or repurposed for an optimized return.

Proper recycling carries an R2 certification. There is a maze of players, but the key components of the R2 program beyond the environmentally safe disposal of equipment stress:

- Repair and reuse, steps that companies like SWGinc.net have developed to provide a comprehensive program to take products such as microwave radios and antennas and put them to work in other countries or in legacy networks. Materials that are unable to be repaired are then either repurposed or recycled with the focus on maximizing the return on all the network assets. SWG works with a network of specialists that includes companies that repair and

reuse routers, servers, computers and cell phones

- Repurposing removes valuable metals as well as toxins and provides high returns for the metals and materials such as circuit boards and other components that are in radios, servers and routers. Other components are harvested as spares, and certification is provided that disk drives were destroyed and valuable data was rendered irretrievable. One company, CCNY, provides a mobile service that shreds drives at their clients' sites.

The United Nations weighed in on this crisis with the Basel, Switzerland Convention in 1989, and in 1997, The UN formed the Basel Action Network (BAN), which in turn founded the e-Stewards program. The e-Stewards have taken a more global approach, while the R2 program has a strong U.S. network and is compliant with the EPA. The Basel Convention treaty identifies 41 countries that should not be disposing of this waste, and it has been ratified by the entire country membership of the European Union. Unfortunately, the United States has lagged in its compliance with this treaty. This lack of compliance allows U.S. companies to dispose of these toxic materials overseas. Countries such as Ghana, Pakistan and China receive a lot of this waste from the United States. The danger of this tactic beyond the obvious environmental problem is that the governments of these countries are becoming more and more diligent, and shipping containers are now being turned away when detected by customs agents.

Recent developments have included the use of social media. Facebook has

countless sites such as Earth Day and Environmental Conservation. On LinkedIn, two new sites have been launched: Global Renewable Networks and Renewable IT Networks. These sites provide an exchange for professionals to learn more on the subject and to work together to ensure environmentally sound use as well as a place to post hardware that is being decommissioned or disposed of with the number one purpose being to reuse it. The sites are aimed at more members of the ecosystem beyond operations and engineering. The goal is to also get finance and supply-chain professionals to interact and, through shared information and understanding, cut down the environmental danger as well as drive financial gain. The movement has also caught on among universities. The Association for the Advancement of Sustainability in Higher Education (AASHE) has developed a strong reuse program.

The bottom line is that many companies are missing out on an opportunity to profitably and legally dispose of their end-of-life and legacy gear. Tremendous dollars and effort are being expended to brand global corporations as green, but most have not adopted a policy to ensure that their networks and IT hardware follow a renewable policy.

Peter Murray is CEO of SWG and has been involved in the IT and networking industry for more than 25 years. He has also been a professor at Temple University and the College of Philadelphia. His email address is pete@swg.net.

BUSINESS



OCTOBER 2012

Crown Castle enters into a sale-leaseback with T-Mobile for approximately 7,200 towers at a \$2.4 billion valuation.



DAS The Way To Do It. Expand Your Footprint Without Leaving A Mark.

From stadiums to boardrooms, parking lots to playgrounds, SCI has got your DAS covered and your customers connected. For more than a decade, SCI has been out in front, engineering and manufacturing the most innovative concealment systems on the market. Count on SCI to deliver the products and services you and your team deserve. Call us today to discuss your DAS projects.



SOLAR COMMUNICATIONS INTERNATIONAL

FOR INFORMATION ABOUT
OUR CONCEALMENT SYSTEMS,
PLEASE CONTACT US AT:

619.243.2750

8885 Rio San Diego Drive
Suite 207
San Diego, CA 92108

www.RFTransparent.com

Capacity Management for DAS

With the use of coordinated multipoint technology, cell sites can become smart and dynamic, improving service to devices at the edge of a cell and making customers happier.

By John Spindler

Mobile operators need to increase capacity and improve services while conserving costs when deploying distributed antenna system (DAS) networks in large venues and outdoor areas. There are three key trends at work that can lead to lower costs and higher service quality in cellular networks: base station hotels, fiber conservation technologies and coordinated multipoint (CoMP) technology that improves service at the edges of the network.

Base Station Hotels

With today's fiber-fed DAS, mobile operators can locate base stations and DAS headends miles away from the stadium or arena where the DAS is deployed. This is the case in Phoenix, for example, where a group of base stations is housed in a central office located some distance from the Bank One Ballpark, the Phoenix Convention Center and the US Air Arena, where DAS networks are implemented for these venues, distributing the signals from the centrally located base stations. The base stations provide the capacity, which can be shared among the three facilities.

By combining base stations into a central hotel, mobile operators can avoid having to find the real estate

for them at the venues themselves. In addition, they can share the base stations' capacity among three different facilities, and reduce backhaul costs by backhauling traffic from one location instead of many. This model makes efficient use of base station resources while putting all of the base stations in one location (instead of three) for easier access and maintenance.

Fiber Conservation

The trend toward base station hotels feeding multiple large venues points to the need for lots of fiber to connect the base station hotel to a DAS. Typically, each DAS headend requires one to three fiber pairs, and there can be a dozen or more headends in a base station hotel. Finding the fiber to transport the DAS traffic between the base station hotel and the DAS-served venues can be problematic.

One solution to this is a new type of "muxponder" — a multiplexer and transponder in one unit that will take in three 3.072-Gbps feeds and multiplex them into a 9.8304-Gbps transport over a single fiber pair. By combining three fiber pairs into one,

the muxponder saves two-thirds of the fiber needed coming out of a base station hotel.

TE Connectivity's serial line combiner (SLC) is an example of a fiber muxponder network element that can support up to 225 megahertz of RF spectrum over a single fiber pair. The SLC combines up to three 3.072-Gbps fiber links to a single 9.8304-Gbps (10-Gbps) single-mode fiber pair. SLC is a perfect optical multiplexing solution for neutral host architectures where it is necessary to transport full-band, multi-band RF to a designated service area, such as a stadium or an urban core, where there is high sectorization and capacity strain on the network. To further reduce the amount of fiber needed, the composite 10-Gbps fiber link can be multiplexed with WDM, CWDM or DWDM. SLC works with any solution that transports at the 3.072-Gbps data rate and offers a 13-dB optical budget (20-dB optical budget optional) at 10-Gbps data rate.

The use of base station hotels is becoming a popular strategy for mobile operators looking to obtain

CoMP addresses service deficiencies for mobile devices at the edges of cells.

DISTRIBUTED ANTENNA SYSTEMS



more efficiency out of base station capacity while using DAS to serve large venues or urban cores. With muxponders, operators can extend these efficiencies out into the fiber network by slashing the amount of fiber needed to transport DAS traffic.

CoMP

CoMP addresses service deficiencies for mobile devices at the edges of cells. When a mobile device is at the edge of the cell, the data rate drops off and the device starts looking to hand off its connection to the next cell. The signal levels are constantly changing, and service is poor in these areas.

The idea of CoMP is to get two or more cell sites to cooperate. One CoMP scenario is that the network can send the data to both base stations and, on a real-time basis, the base stations monitor the signal quality and can actually decide which of the base stations is in the best position to get that signal to the mobile device. In another form of CoMP, only one base station is transmitting but the other base stations in the area are aware of which time slots and frequency bands are being used to communicate, and they cooperate by saying, "We won't use that same block in our cell so we won't interfere with you."

So under CoMP, all of the base stations in an area identify which mobile devices are in the lowest signal areas, and figure out how to cooperate to get the best throughput to that mobile either by reducing interference or by sharing the responsibility of transmitting. CoMP is included in the LTE portion of the 3GPP specifications beginning with Release 11. It is an optional enhancement to the LTE-

Advanced (LTE-A) air interface technology that was introduced in 3GPP Release 10.

The challenge with CoMP is backhaul. In order to coordinate their operations, cell sites must be connected with each other as well as with the core network, so this means that mobile operators will have to install a lot of expensive new backhaul equipment between cell sites. However, by pooling base stations in a hotel, the backhaul requirements are easily and cost-effectively managed.

With base stations housed in a central hotel, the base stations can coordinate their efforts easily and then transmit signals through a DAS to the desired area. In fact, mobile operators have already determined that the only way to make CoMP work in the real world is to pool base stations in a hotel and use remote radio heads or DAS to distribute their signals.

With CoMP, cell sites can become smart and dynamic, improving service to devices at the edge of a cell and creating happier customers.

Mobile operators want to improve services to reduce churn, but they also want to maximize the use of their resources and keep costs under control. Base station hotels, fiber conservation technologies, and CoMP work separately or together to help operators achieve these goals.

John Spindler is director of product management at TE Connectivity, where he is responsible for developing and managing an innovative wireless product portfolio for the company's Network Solutions Business Unit. For more information, visit www.te.com.



DISTRIBUTED ANTENNA SYSTEMS



IGT and Cummins Power Generation sign a contract to provide hybrid power to remote cell tower sites in Myanmar.

Hybrid Power Solutions for a Country-wide Cell Tower Network in Myanmar

Irrawaddy Green Towers selected Cummins Power Generation to provide power generated by hybrid power systems at more than 750 cell sites that IGT will construct in the next 12 months.

By Craig Gelderman

Myanmar, the second-largest country in Southeast Asia, is in the beginning of a growth phase and is expanding its infrastructure. One of the most important infrastructure elements in facilitating growth is a reliable mobile telecommunications system that serves both urban and rural areas. Until now, that has been difficult to

achieve because only about 25 percent of Myanmar's population has electricity, according to industry sources. In order to build a mobile telecommunications system and cover vast areas without reliable grid power, the developer in Myanmar, Irrawaddy Green Towers (IGT) determined that the best solution would be a network of cell towers with on-site power

generated by hybrid power systems from Cummins Power Generation.

A hybrid on-site power system employs a generator set with batteries and one or more renewable energy sources, such as solar or wind, in combination with an intelligent control system to dramatically reduce fuel consumption, operating costs and CO₂ emissions. Recently, IGT signed

ALTERNATIVE ANTENNA SITING



a contract with Cummins to supply solar hybrid, battery hybrid and diesel generator solutions for more than 750 cell tower sites that IGT will construct in Myanmar during the next 12 months.

Myanmar is one of the few remaining telecommunications frontiers, with an estimated 10 percent or less of its 60 million people holding a mobile phone subscription, according to industry estimates. That compares with penetration rates of 70 percent in Cambodia, 90 percent in Laos and 100 percent in Thailand. According to official statements, the Myanmar government plans to increase the percentage of phone owners to 80 percent by 2016.

“Although there are no shortages of renewable hybrid power solution providers, we chose Cummins Power Generation for their technical expertise as well as their local service capability and coverage,” said Charbel Abou-Jaoude, CEO of IGT, during the contract signing in Yangon, Myanmar. “Additionally, we were looking for a partner who is as committed to the growth of this country as we are,” he added.

Telenor Myanmar selected IGT to build and operate telecom towers for Telenor’s large-scale, countrywide mobile network. In early 2013, Telenor and Ooredoo (another service provider) won a license to launch a mobile network in Myanmar. According to Telenor’s website, the company will launch both mobile voice and Internet services using 2G and 3G GSM technology in 2014. Its plan is to be ready for LTE and future technologies and to offer service to 90 percent of the population of



A rural site in Myanmar powered by Cummins generator sets.

Myanmar within five years. Cummins is already one of the leading suppliers to Ooredoo, and with this new supply contract with IGT, Cummins will power two of that nation’s largest mobile networks.

Cummins’ advanced hybrid power systems are engineered to optimize capital expenditure while lowering total cost of ownership and ensuring uninterrupted operations. “The advantages of a hybrid system include significant reductions in fuel consumption, longer generator and battery life, improved uptime, reduced maintenance and lower CO₂ emissions,” said Jagpreet Singh, marketing manager of telecom business for Cummins Power Generation.

“Unlike other hybrid systems that

simply reduce generator run time, the Cummins system maximizes overall system efficiency by improving the ratio of available energy utilized by transmission loads to the fuel consumed by the generator. By leveraging our proven experience in hybrid power, we designed a hybrid product specifically for the telecom industry to provide the best value to our customers. The result is fuel savings of up to 70 percent,” said Singh.

The major components in Cummins’ hybrid power system include:

Generator set — sized from 8 kVA to 80 kVA with extra large fuel tanks and best-in-class ratings for high reliability and low fuel consumption

Hybrid Control Cabinet — intelligent Power Optimizer that also

/ FEATURES /



One of the biggest challenges in Myanmar is poor road infrastructure, which makes accessing sites a daunting task.

are fully charged, the generator set turns off and the cell site is powered by the batteries. When the charge of the batteries declines to a specified level, the generator set starts and recharges the batteries. For cell tower installations that may have grid power, the hybrid power system functions primarily as a standby power source. However, in developing countries such as Myanmar, grid power can be subject to frequent outages of varying duration, requiring the power system to be highly reliable and economical to operate.

Hybrid power systems reduce operating expenses by improving overall efficiency and cutting fuel use; they also reduce maintenance and improve engine longevity. For example, a typical generator set running 12 hours a day may have to be overhauled after about 14,000 hours of operations — or about three years. However, when used in a hybrid power system, that same generator set may need to operate for only six hours a day, and thus last at least twice as many years. Shorter run times also require fewer refueling trips and fewer oil changes, resulting in significant operation and maintenance reduction for network operators. This reduced need for refuelling and general maintenance has proved beneficial to the telecom sites because many of the locations are largely inaccessible and several lack even dirt roads.



Cummins' advanced hybrid power systems are engineered to optimize capital expenditure while lowering total cost of ownership and ensuring uninterrupted operations.

“Cummins Power Generation appreciates that our customers like Irrawaddy Green Towers and Ooredoo recognize our ability to innovate and deliver unique products and strong service to meet their needs,” said Antonio Leitao, Cummins' vice presi-

manages power distribution and monitors system operation and has security, maintenance and remote communications capability

Batteries — best-in-class deep-discharge batteries, pre-integrated with Cummins hybrid control and

optimized for long lifecycle and high performance

During operation, the generator set, alone or in combination with solar or wind energy input, charges the storage batteries. Once the batteries

ALTERNATIVE ANTENNA SITING



dent. "Our company is committed to continuing to invest in products and services that are designed to serve our customers even better."

Cummins Power Generation has a worldwide presence in the telecommunication industry and is known to bring innovative power solutions to its global market. Myanmar remains one of the last greenfield opportunities in telecommunications, and Cummins has established a strong service and support network to meet the country's unique challenges.

Craig Gelderman is senior marketing communications specialist at Cummins Power Generation, Columbus, Indiana. For more information, visit www.power.cummins.com.



Mobile networks powered by Cummins have been installed in parts of Myanmar where even roads have not reached yet.

Don't be surprised! Valmont Site Pro 1 has it all!

As the leading manufacturer of **wireless site components** we can offer you:

- Superior quality
- Unsurpassed customer service
- Same day shipping
- 100% satisfaction guarantee

Call us today or order online

☒ 1-888-GET-PRO1 | 1-888-438-7761
www.sitepro1.com



A **valmont** COMPANY

**PERFORMANCE YOU
CAN COUNT ON**

ALTERNATIVE ANTENNA SITING

Product Showcase

Brackets, Mounts and Hardware



MINI-CABLE HANGER SOLUTIONS FOR RET AND GROUND

Petrilla Technologies, a manufacturer of hardware including custom cable hanger solutions, has developed several mini-cable hangers for RET (remote electrical tilt), ground and other small-diameter cable applications. Specifically made to fit on 3/8-inch threaded rods, these hangers are designed for easy installation with existing standards. The hanger's compact size, less than 1½-inches on each side, provides a low-profile solution to mounting small cables, as the industry continues to decrease cable sizes. In addition to custom hangers, the company also manufactures custom rubber grommets for various hanger and cable sizes to meet the ever-changing requirements of the telecommunication industry. www.PetrillaTechnologies.com



BOOM MOUNT

Sabre Site Solutions' new HD V-Boom Mount is designed for heavy-duty equipment loads. This 12-foot boom mount, with a 3-foot standoff, has

the capacity to handle 12 8-foot-by-18-inch antennas and eight radio remote units (RRUs) per sector. The boom mount has been analyzed by a third-party engineer for 12 wind directions to ensure that it is strong enough to handle today's technology. Designed for ease of installation, the boom mount has adjustable connections to account for leg taper and azimuth.

www.SabreIndustries.com



PLATFORM MOUNT

Kenwood Telecom's proprietary Snub-Nosed Platform Mount provides additional azimuth coverage and versatility by flattening the traditional platform corners. In addition to the six-sector capability, the platform mount can be customized by the manufacturer to virtually any configuration of square or tube face, number and length of mast pipes, handrails and ring-mount options. Components for the mount, nicknamed "Snubby," are kept in stock and are available for immediate shipment or delivery.

www.kenwoodtelecom.com



V-FRAME BOOM GATE

The V-Frame Boom Gate mount from **Connect-It Wireless** is a heavy-duty application that mounts up to five antenna mast-pipe configurations. Constructed of galvanized steel, the V-Frame complies with some of the most stringent building codes in the country, including the 2010 Florida Building Code, TIA-EIA-222-G-2, and A.S.C.E. 7-10. The product, which has been approved and specified by multiple carriers, is a complete kit that includes a heavy-duty universal foot set with a vertical, welded pipe for solid support. At 181 MPH winds, the max-combined load area for the new V-Frame is 7,945 square inches. The mount is engineered to hold the extreme weights that 4G/LTE upgrades require; the max-combined load weight is a solid 650 pounds. The mount meets the needs of 4G equipment, which presents not only a heavier weight for the tower to bear, but (perhaps more importantly) a greater surface area to wind. This wind area loading is further intensified as additional equipment (e.g., radios, antennas, squid boxes, etc.) is installed at higher elevations.

www.ciwireless.com

PRODUCT SHOWCASE



YOU CAN ACTUALLY AFFORD TO USE IT



-  Affordable
-  Bright LED Indicators
-  Loud Buzzer
-  Operable with Gloves
-  All Weather Design
-  Long Lasting Battery
-  Rugged
-  Mobile Telecoms
380 MHz- 2.7GHz

Available through the following retailers:



field SENSE
Personal RF Monitor

fieldsense.com

/ DEPARTMENTS /

CUSTOM SMB PANEL MOUNT JACK DESIGNED FOR TEST EQUIPMENT

The design for this product resulted from a defense-contractor application that required a custom SMB jack coaxial connector to be attached to a piece of test equipment. The requirement included mechanical and electrical parameters as well as a pressure seal of the connector to the panel. **RF Industries' Aviel Electronics** division designed a panel-mounted SMB jack with a threaded, passivated, stainless steel, type 303 body and hex nuts. A silicone, rubber O-ring design on the body seals the finished assembly for pressurization. Black polyether ether ketone (PEEK) thermoplastic polymer was utilized as the internal insulator with DuPont Teflon as the insulator for the SMB connector.

www.avielelectronics.com



MONOPOLE REINFORCEMENT KIT FOR PLATFORMS OR T-ARMS

Valmont Site Pro 1's new universal reinforcement kit (Part# PRK-1245) simply bolts onto existing monopole T-Arms or platforms when increased dead load is required. The product was designed to address capacity issues, which are a greater concern today as the weight of multiple RRU's are added to existing mounts that were not designed for these loads. Maximum vertical load capacity gained is 12,000 pounds total. Kits are in stock in six U.S. locations for same-day shipment.

www.sitepro1.com



MOUNT FOR ROOFTOP ANTENNAS

The Qwikmount II from **Comsite Hardware** is designed to be the perfect answer when mounting smaller PCS, cellular, broadband wireless and two-way antennas on a rooftop. With just one bolt to assemble, the low-cost mount is ready to go in minutes, reducing installation time and cost. The product's ease of relocation allows site components to be moved quickly if needs change. Like the original Qwikmount, the Qwikmount II is water-ballasted and constructed of



You NO LONGER HAVE TO weld onto your painted tower to mount antennas or cables.

You NO LONGER HAVE TO remove tank coating to epoxy mounts for antennas or cables.

MAGNEMOUNT MOUNTING SYSTEMS

The Only Patented Magnetic Non-Penetrating Mount for Steel Tanks

have been in service for 8 years with no damage to inner or outer steel tank coatings.

For more information, please contact:

David Klein, President
(P) 330-963-7909
david@metal-cable.com
Web site:www.metal-cable.com



PRODUCT SHOWCASE





Tower Family
FOUNDATION



Providing Support by Standing Together

“The Nevada Wireless Association supports the efforts of the Tower Family Foundation and has made them a recipient in our annual charity golf tournament. Best of luck to the Foundation as you continue to grow and help those in need!”

*Chris Wener
Nevada Wireless Association President*

“As a climber with 17 years of experience, I've seen firsthand the hurt and the pain caused by the loss of a fallen friend and fellow tower climber. I am grateful and humbled to know there is an organization that has resources to assist tower climbers and their families during times of need.”

*John Gates
Tower Climber from ATS*

“I want to thank everyone involved for making this happen! Synergy Concepts will be donating to the Tower Family Foundation and encourages other companies in the industry to donate as well.”

*Russ Chittendon
Vice President of Synergy Concepts, Inc.*

TOWER INDUSTRY FAMILY SUPPORT CHARITABLE FOUNDATION

www.towerfamilyfoundation.org

Bigger



We've expanded our facility to deliver more poles faster.

Get your monopole, flagpole or disguised monopole project off the ground with structures from EE. Our new capabilities, equipment and personnel provides the quality and service that meets your needs. Give us a call and let's go.... bigger.



www.engend.com
1-888-270-3855

© 2013 Engineered Endeavors

PRODUCT SHOWCASE

rugged cross-linked polyethylene to last for many years. No rubber pads are needed as the plastic base and rounded edges protect the roof from damage.

www.comsitehardware.com



COMPACT QUICK-ASSEMBLY TEMPORARY MOUNT

The BT-D-12 mount from **Baird Mounting Systems** folds for compact transport and assembles quickly with no tools or outside hardware required. The adjustable feet and legs on the unit create a stable mounting platform on rough or uneven terrain. It is designed for use with satellite dishes up to 1.2 meters, wireless antennas and solar applications with up to 15 square feet of modules. With mast sizes to accommodate all major antenna manufactures and masts up to 10-foot tall, the BT-D-12 is the quick-deploy mount suitable for just about any temporary antenna-mounting needs.

www.bairdmounts.com



ANTENNA MOUNT THAT PANS AND TILTS

The Pan & Tilt 300 directional antenna

mount from **Pepro** is specifically designed for the wireless communications industry. The all-aluminum design makes this a rugged and light-weight (15 lb.) mount suitable for fixed and mobile tower applications. The unit offers the ability to adjust from the ground with either a manual or wireless handheld controller. This feature eliminates the need for certified climbers, unsafe ladders and bulky safety harnesses. It also eliminates the need to lower mobile towers for adjustments. The mounting surface is predrilled to accommodate a wide variety of antenna-mounting configurations.

www.peprollc.com

WALL-MOUNT BRACKETS

The LWWM-Series wall-mount brackets from **Wanho Manufacturing** provide a mounting solution for microwave, directional DAS or omnidirectional wireless antennas. These mounts will accept 1-inch up to 2-3/8-inch outside diameter mounting pipes, which may be purchased separately. The spacing between the two clamps is adjustable to maximize stability while accommodating different clamp spacing of directional antennas. All versions of the adjustable wall mounts are available to accommodate either hollow or solid walls. The hollow-wall version utilizes backing plates and four 12-inch galvanized threaded rods for installation, which may be purchased separately. The solid-wall version includes 1/2-inch x 3-3/4-inch wedge anchors, permitting installation of solid-wall mounts.

www.wanho.com



Solutions from the Ground Up



Cell Site



Data Center



DAS / Small Cell



Outsourced Services

BlueStream Professional Services provides full turnkey solutions for your wireless infrastructure needs. Service providers leverage our experience and breadth of services to increase their competitiveness and agility in rapidly changing market conditions.



www.BlueStreamPro.com

678-355-6200

/ DEPARTMENTS /



Advertiser Index

19.....Aero Solutions
 28.....AGL Conferences
 70.....Allstate Tower
 47.....BB&T - Atlantic Risk Management
 23.....Black & Veatch
 69.....BlueStream Professional Services
 70.....Charles S. Hayes
 09.....Concordia
 46.....Electric Conduit Construction
 68.....Engineered Endeavors
 15.....FDH
 65.....FieldSense

C3*.....GME Supply
 51.....High Gain Wireless
 12.....Hudson Design Group
 11.....Hughey & Phillips
 49.....Marvair
 66.....Metal & Cable
 27,C2*..National Association of Tower Erectors
 70.....Protingent Staffing
 70.....Provertic
 07.....Sabre Industries
 C4*.....SBA Communications
 70.....Slatercom-WCD=

05, 57...Solar Communications
 14.....Specialty Tower Lighting
 53.....Sunsight
 67.....Tower Family Foundation
 52.....Unimar
 13.....Utility Service Communications
 63.....Valmont SitePro
 17.....Waterford Consultants
 43.....WesTower
 70.....White Buffalo Environmental

*C2, C3 & C4 indicate cover pages

CHARLES S HAYES
 INFRASTRUCTURE FOR THE TELECOMMUNICATIONS INDUSTRY™

ANNE F. HAYES
 DIR. BUSINESS DEVELOPMENT
 814 MARIETTA STREET
 SOUTH BEND, IN 46601
 574-233-1296
WWW.TELECOMPARK.COM



A Structural Mapping Company Serving New England
733 Turnpike St. #163, North Andover, MA 01845
www.ProVertic.com



Manufacturer of Guyed & Self-Support Towers
 Complete Line of Tower Accessories
 Full Range of Maintenance & Installation Services

Kevin Roth
 VP of Sales

270-830-8512 ext. 304 P.O. Box 25 Henderson, KY 42419
 Fax: 270-830-8475 kroth@allstatetower.com
 Mobile: 270-831-3632 www.allstatetower.com



Slatercom-WCD **Dialight**

- DUAL RED-WHITE (E1/E2) LED SYSTEMS AVAILABLE FROM STOCK
- GENUINE DIALIGHT PRODUCTS & WARRANTY
- RAPID DELIVERY ON KITTED SYSTEMS
- UNBEATABLE PRICING

SALEM, OR (503) 581-5550 www.slatercom.com



PROTINGENT STAFFING

WE HIRE PROFESSIONALS
 FOR WIRELESS SITE DEVELOPMENT PROJECTS
 NATIONWIDE

Contract | Contract-to-Hire | Permanent

425.284.7777
www.protingent.com/telecom
 Bellevue, Washington



WHITE BUFFALO ENVIRONMENTAL INC.

EXPERIENCED ENVIRONMENTAL COMPLIANCE
 PROFESSIONALS

918-660-0999 • www.whitebuffalo.com
 Please see 2013 AGL Buyers Guide Listing

AD INDEX & PROFESSIONAL DIRECTORY



WHY DO YOU CLIMB?

"Up on the tower, it doesn't matter how bad of a day I'm having or what kind of mood I'm in. When I see the world from up there, everything changes."

- #RealTowerClimber



REAL TOWER CLIMBERS CHOOSE GME SUPPLY
AMERICA'S PREMIER OUTFITTER
www.gmesupply.com



© 2014 GME SUPPLY, ALL RIGHTS RESERVED.

GME Supply Co **CLIMB HIGHER™**
 (800) 940-6762



YOUR SIGNAL STARTS HERE.®



IN OUR BUSINESS, IT IS ALL ABOUT THE SIGNAL.

Our clients depend on SBA to provide the wireless infrastructure that allows them to transmit the signal to their customers. As their first choice provider of wireless infrastructure solutions, we are continuously setting the standard for customer satisfaction by **“Building Better Wireless”**.



- TOWER OWNERSHIP
- LEASING
- SITE MANAGEMENT
- SITE DEVELOPMENT
- CONSTRUCTION
- TECHNICAL SERVICES



800.487.SITE | sbasite.com

© 2014 SBA Communications Corporation. All Rights Reserved. The SBA logo, Your Signal Starts Here and Building Better Wireless are all registered trademarks owned by SBA Telecommunications, Inc. and affiliated SBA companies.