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NOVEMBER 2006

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THE LEGAL AFTERMATH
OF TOWER COLLAPSES

VALUATION:
WHAT IS YOUR TOWER
REALLY WORTH?

TECHNOLOGY:
ARRAY ANTENNA
DESIGNS

PCIA:
POST-SHOW COVERAGE

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The official magazine
for PCIA—
The Wireless
Infrastructure Association

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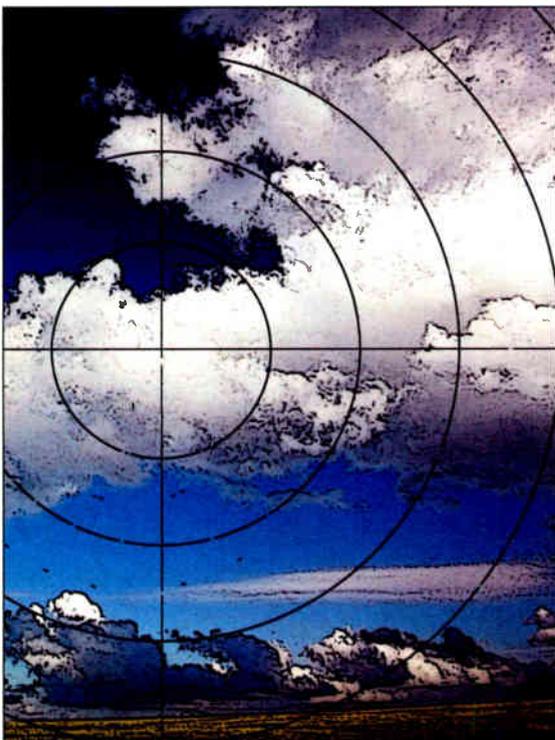
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Features

20 The Legal Landscape When a Tower Collapses

Vincent F. O'Flaherty, esq.

Anticipate risks associated with tower accidents and collapses, but be aware that contracts may not transfer or defer responsibility.

26 Centerspread: Tower of the Month

This month's sexy snapshot was submitted by Canada's Trylon TSE, eh.

28 Valuation: A Worthwhile Endeavor

R. Clayton Funk

The market is favorable enough that tower owners should perform valuations to keep their options open.

32 Copyright Protection—Exclusivity of Expression

John Bradshaw, esq., and Delaney DiStefano, esq.

Creative expressions you use in a telecom tower business might require the 'cannon' of copyright protection to stave off marauders.

34 Advanced Array Antenna Design and Beamforming

Thomas Ginter, P.Eng.

Some coverage deficiencies may be solvable by using asymmetrical antenna patterns that can still maintain higher-order sectorization.

34

Departments



16



on the cover

WCAX-TV, Stowe, VT, contracted Radian Communication Services to build two towers on Mt. Mansfield. The Radian RS75 towers have space for other TV and FM stations' antennas. The towers were built in sections, flown into place and stacked.

Photography by Ryan Parfitt, Radian Communication Services.

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6 Contributors

8 Line of Site

The industry gets re-energized—'decently.'

10 Built to Suit

It takes a good poker face to run a public towerco.

12 PCIA Proactivites

14 Risky Business

D&O liability insurance—Do you need it?

16 Materials and Forces

How ice load may *reduce* wind-load stress.

18 Capital Ideas

What gives tenant leases higher value?

41 Products

42 Backscatter

Crown Castle acquires Global Signal; PCIA wrap-up.

50 Advertising Index

50 Editorial Index

50 Professional Directory

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Wireless Communications Manufacturers Since 1972

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Dan Simmonds (far left) founded AN Wireless Tower in 2001. The company's primary business is manufacturing self-supporting towers for heights from 20 feet to 120 feet. AN Wireless Tower has its headquarters in Somerset, PA. Starting very small, Dan's company has relocated three times since its founding in July of 2001, and currently operates from a 10-acre property in southern Pennsylvania, just 4 miles from Interstate 76. While his company grows each year, Dan remains on a first-name basis with all customers of AN Wireless Tower. www.anwireless.com.

Pete Jernigan, P.E., is president of Tower Engineering Professionals (TEP). Founded 10 years ago, the company has five divisions: Civil, Structural, Surveying, Inspections and Environmental. Pete graduated from North Carolina State with a BSCE degree. He worked for a large engineering company for two years before starting TEP. The company has expanded every year, with the geotechnical and environmental division having started a few months ago. Next year, TEP will add a home construction division. www.tepgroup.net. Dan and Pete's article on ice and wind loads is on page 16.

Thomas Ginter explains a type of antenna that tower owners can anticipate seeing carriers place on their structures in years to come in his article starting on page 34. Thomas is vice president, Product Management, at TenXc. Prior to joining TenXc, Thomas was AVP, Product Marketing, for TruePosition with responsibility for product management, sales engineering and offer management. Thomas joined TruePosition in 1998 as director, Product Line Management, and led various departments from the company's early stage to hundreds of millions of dollars in annual revenues. His experience includes senior product planning and engineering roles with Celcore, Ericsson Radio Systems, NovAtel Communications and Micro Advance from 1986 to 1998. An author of multiple patents, Thomas holds a B.Sc. in Electrical Engineering from the University of Calgary and is a certified Professional Engineer.



What attorney **Vincent F. O'Flaherty** says in his article beginning on page 20 might scare some readers into being more careful, if they aren't already. He is of counsel with Spradley & Riesmeyer, P.C., Kansas City, MO. His practice focuses on providing advice to the tower industry. He has expertise in tower-accident prevention, tower-collapse investigation and causation analysis, and negotiation with governmental regulatory agencies, including the Department of Labor, OSHA and Canada Labour as shown at www.towerlitigators.com. He is a graduate of Creighton University and the University of Missouri—Columbia School of Law. Vincent also serves as personal lead counsel to notable clients in the entertainment field. This focus is complemented by extensive lead trial experience, both regionally and nationally, in the fields of products liability, contractual relations, broadcasting, insurance coverage and directors and officers liability (which we also cover on page 14).



R. Clayton Funk is a member of the family. He is an AGL adviser who steps out of his role as a regular columnist to offer a feature article on page 28 about finance—how to arrive at tower valuations. Clayton is a managing director at Media Venture Partners, San Francisco, with an office in Kansas City, MO. He joined MVP in 2004 after spending seven years with Kansas City-based investment-banking firm Nations Media Partners, where he was responsible for developing the firm's presence in the wireless tower and yellow pages publisher industries. Clayton has closed more than 50 tower deals encompassing sale-leasebacks for various wireless carriers, build-to-suits, and sales involving broadcast tower sites. He has been a featured speaker at various industry conferences. Clayton has a BA in Communications, *cum laude*, from Washburn University.



Attorneys **John Bradshaw** and **Delaney DiStefano** conclude their series on intellectual property protection with a discussion of copyright (page 32). Bradshaw is a patent and trademark attorney with Woodard Emhardt Moriarty McNett & Henry, Indianapolis. He has a BS in chemical engineering and an MS in chemical engineering. John received his JD, *summa cum laude*, from the Indiana University School of Law. DiStefano is a principal of Higgs Law Group, Rockville, MD. She has a BA and earned her JD from The George Washington University School of Law. She has prepared contracts for telecommunications tower and rooftop leases, radio-system operating agreements and reseller agreements. She is a member of the Federal Communications Bar Association and the Radio Club of America.



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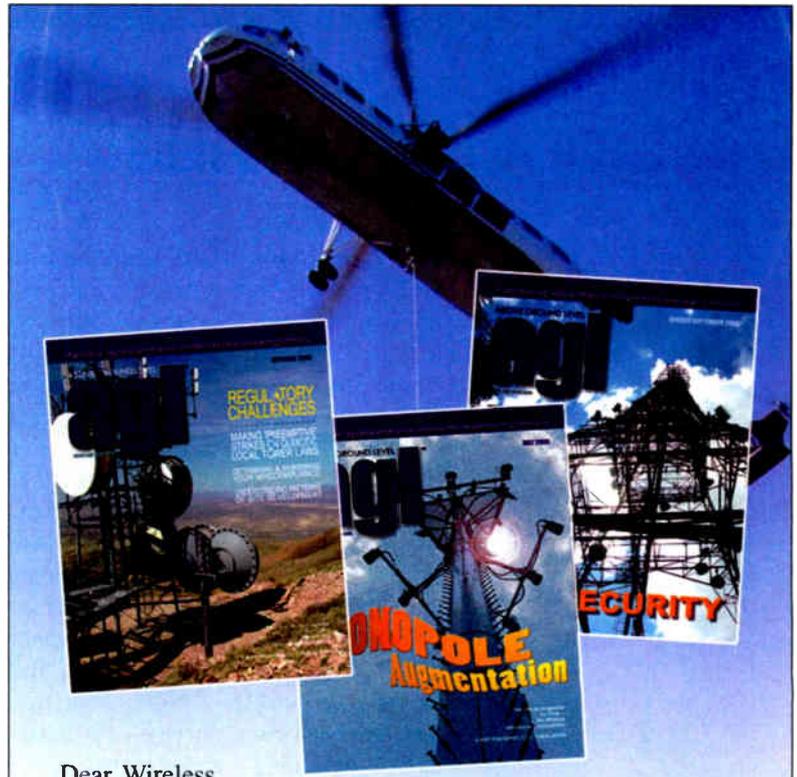
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NOV 06

Oooch! My ribs!

This is our first post-PCIA show issue. We have a slew of write-ups on the presentations and participants. But let me just say one little thing... WOW! The energy is back in the industry. Companies are building networks, sites are needed and there is going to be one *large* driver for more sites, namely AWS deployments. Then there is the positive market response in the wake of the Crown Castle/Global Signal deal. There are even rumors of impending IPOs out of the upper tier of privately held towercos.



The conclusion of the AWS auction during the PCIA show added impetus to all this energy. AWS could potentially add six tenants to every site out there. AWS signals are not as far-ranging as PCS or cellular, so the number of sites required for comparable coverage will be higher, perhaps 3:1.

Our readers are energized, too. I received many responses to my two articles in the October issue on non-ionizing radiation compliance and AM detuning. Both topics are of deep personal interest to me. I started and ran a company offering these services to the tower industry for a long time. I've since formed Waterford Consultants to do similar work (and a lot of different stuff, too.) Given the involved questions and concerns expressed in your correspondence, I'll spend a lot more time on those topics in upcoming articles.

A note on publishing: Feature articles take a long time to prepare—sometimes two months or more of working with authors, creating graphics and editing. We make the space to tell those stories. Columns, like mine,

Don's and the legal and financial columns, more closely oriented to current events, are often written right before our deadline. They fill pre-defined spaces, and the preparation time is short. So is time for proofreading... which brings us to the "ribs" in this month's title.

I'm proud we get this magazine out with a minimum of fuss and without *too* many errors. However, I've received considerable ribbing about the misprint in my own EME article. I was discussing "incident energy" and somehow it was printed as "indecent energy."

Now, I've never *seen* indecent energy—but perhaps we could make some money with it if we can find it. We'll take some ribbing for fun any time, if it shows you're *reading* us. We really enjoy your feedback. Speaking of which, how has your experience with the online digital version of the magazine been? *Do* you like it? Is it as useful as the print version? You have the option of receiving this magazine in print, by email—or *both*. Just visit www.agl-mag.com if you want to receive the digital version as well.

We're also contemplating companion publications to focus on other under-reported topics in telecommunications. We would love your suggestions. AGL is dedicated to the ownership and managerial side of the industry: insurance, finance and regulatory issues. We sense there is an audience hungry for more technical information about the "nuts-and-bolts" side of the industry: climbing safety, grounding details, safety protocols and installation procedures. Most direct subscribers to AGL would not be the target of a second publication, but many of you have operations and technical personnel in your organizations who would be. Please drop us a note with your thoughts.

Until next issue, be *nice* to the county administrator, don't build them taller than you *have* to and remember that most people don't *see* the same beauty in flashing strobes that we do (except maybe at Christmas). **agl**

by Rich Biby, Publisher
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You Can Ask, but They Won't Tell

My seat was in the front row for the "Titans of Towers" session at PCIA's Wireless Infrastructure Show on September 20 in Nashville, TN. Mike Fitch, president and CEO of PCIA, conducted the session and was seated on stage at one end of a panel of speakers.



Jeffrey Stoops, president and CEO of SBA Communications, sat to Mike's left. Next to Stoops, John Kelly, president and CEO of Crown Castle International, took a place. James Taiclet, chairman, president and CEO of American Tower, sat next to Kelley. "Bookending" the

group was Jerry Elliot, president and CEO of Global Signal.

These CEOs, representing the four large tower consolidators with stock that trades on public exchanges, knew something they couldn't tell. They knew who was talking with whom about mergers and acquisitions. At least two of them knew that Crown Castle was about to acquire Global Signal.

Some audience members knew, and couldn't tell. There were brokers in the audience who knew, or at least *believed* they knew, who had made offers to Stoops for SBA, and how close a possible acquisition transaction might have come to taking place. There were financial analysts in the audience who had their own opinions about mergers and acquisitions and, if they knew for certain, they couldn't tell.

Kelly and Elliot knew, and they couldn't tell. About two weeks later,

Crown Castle announced that it would acquire Global Signal for \$5.8 billion in stock and cash (*for more, see page 42*).

The day before, during the Wireless Investors' Conference session, a similar scene had played out on a panel with Stoops and Taiclet, along with Ben Moreland, CFO of Crown Castle; Steve Osgood, CFO of Global Signal; Don Bechter, managing director at Daniels & Associates; Ric Prentiss, managing director of equity research at Raymond James & Associates; and Clayton Moran, senior vice president at Stanford Group.

In this session, Stoops was the moderator, and I could almost hear him ask, "So, any of you want to make me an offer?" Almost. He *didn't* ask that, I want to emphasize. I merely dreamed that he might.

Osgood said Global Signal hadn't much been focused on acquisitions, lately, and had been more interested in buying the land under its towers. But he said they had been taking a look at underwriting any offers of tower portfolios that came their way.

An audience member asked Taiclet



whether there should be more public companies, or fewer. "There are motivating factors for consolidation," Taiclet responded. He said that, ultimately, it comes down to valuation, and he later asked, rhetorically, "Would a 30,000-tower company be attractive to customers?"—and answered, "Yes, but it would have to be done at the right price."

Moran added, "I'm surprised there

hasn't been *more* consolidation." There wasn't long to wait, eh?

Tower construction and ownership seems to be growing faster than consolidators can put deals together. TowerSource compiles the numbers, and its directory lists about 204,000 towers and rooftop sites. Fewer than half of those are in the hands of consolidators.

That sounds like good news for everyone. Entrepreneurs have plenty of room in which to maneuver. The consolidators have plenty of deals left to make—smaller ones, maybe, but plenty of them. And, *ahem*, a magazine such as AGL has plenty of subscribers to be reached by advertisers seeking the universe of tower owners.

State wireless associations

A change of topic, but back to Stoops. During the PCIA convention, SBA's CEO spoke to a dinner meeting of presidents and other leaders of existing state wireless associations and several that are in the process of forming.

He said something that I didn't want to put into the context of a story about state associations, because it would sound more peculiar *in context* than *out*

of context. (How about that?) Stoops said, "No group *plays* more than state wireless."

He had been talking about how much fun state wireless association members have when they get together and, yes, he mentioned parties, but one particular example is that almost all of them like to organize golf tournaments.

The state associations are piling up accomplishments, including highly visible charity work. A golf tournament organized by the Tennessee Wireless Association in August raised \$35,000 for charity. Another, organized by the MoKan Wireless Association that month, raised \$10,000 for charity.

With that kind of result, the state wireless associations should *play* all they want. **agl**

by Don Bishop, Exec. Editor
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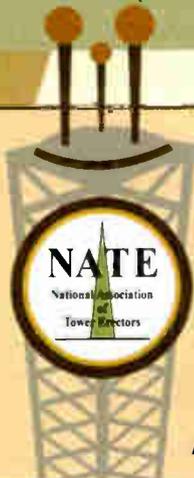
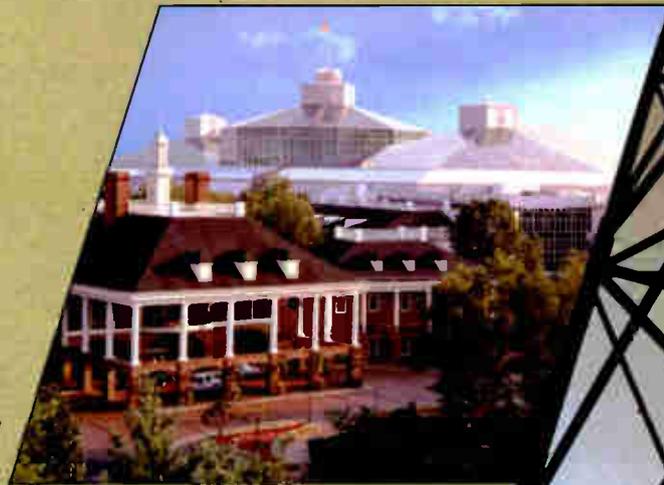
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Balancing the Interests

The goals of maintaining aviation safety and expanding wireless infrastructure can be kept compatible with updated and sensible rules.

by Anne M. Perkins

PCIA filed responses to two federal proceedings relating to towers and aviation safety during September. In both proceedings, at the FAA and at the FCC, PCIA addressed the challenge of maintaining aviation safety while expanding wireless infrastructure.

On Sept. 11, PCIA filed comments in the FAA's *Notice of Proposed Rulemaking* on its Part 77 rules. On Sept. 12, PCIA filed a *Petition for Rulemaking* asking the FCC to update and modernize Part 17 of its rules. Both sets of rules regulate antenna structures in navigable airspace.

Part 77 NPRM

On June 13, the FAA issued an *NPRM* proposing to amend its Part 77

rules. Part 77, "Objects Affecting Navigable Airspace," contains the regulations "which require a person to provide public notice of certain construction or alternations when that notice will promote safety in air commerce and the efficient use and preservation of the navigable airspace and of airport traffic capacity at public-use airports." The June *NPRM* was issued after many years of discussion and proposals by the FAA to revise Part 77. According to the FAA, significant changes in legislation as well as significant changes in the industry prevented the agency from issuing any prior changes.

The *NPRM* proposes to add notification requirements and obstruction standards for electromagnetic interference as

well as additional construction filing requirements. In its public comment, PCIA expressed concern with the FAA's recommendations, especially with regard to the significant delay the rules would impose as well as the lack of coordination by the FAA with the FCC.

Like PCIA, many commenters shared the same concerns, noting that these proposals lack a record or support for their implementation and have not been shown to be necessary. Overall, commenters expressed widespread opposition to the proposed rule changes.

The docket is now closed while the FAA reviews the filings. The FAA will determine whether to take any action, and, with the degree of widespread industry opposition, it is possible that the

California Wireless Facilities Siting Bill Is Enacted Into Law

On Sept. 29, California Gov. Arnold Schwarzenegger signed into law SB 1627, a bill on *Wireless Telecommunications Facilities*. The new law requires a city or county to administratively approve an application for a collocation facility via the issuance of a building permit, as long as certain provisions have been met at the time the original application was approved. The new law takes effect for collocation applications filed after Jan. 1, 2007.

Passage of SB 1627 came after a strong lobbying effort by the wireless industry. The bill, introduced by State Sen. Christine Kehoe (D-San Diego) in February, had T-Mobile as the principal telecom industry endorser. PCIA hired a state lobbying firm in April and became an official supporter of the legislation, along with several wireless carriers, tower companies, the San Diego Regional Chamber of Commerce and the California Public Utilities Commission. Working with the League of Municipalities and a city consultant, the industry was able to ensure that the League remained neutral on the legislation as it went through various committees in the state Assembly and Senate. Much of the language in the bill was taken from model legislation that PCIA finalized in the Spring.

Besides streamlining the collocation application process, the new law reaffirms that a municipality's review of

the effects of radio-frequency emissions may not exceed the authorization of Section 332(c)(7) of the Telecommunications Act. A city or county is also prohibited from limiting location of wireless facilities to sites owned by any particular parties within its jurisdiction. Another provision prevents a local government from requiring an escrow deposit for removal of a wireless telecommunications facility. The new law also prevents local governments from issuing permits with unreasonably short durations. Approved permits for wireless telecommunications facilities must now be valid for at least 10 years.

The real success of SB 1627 for both the industry and the local governments in California will come at the implementation stage. The League of Municipalities and the California Chapter of the American Planning Association will work with the telecom industry by hosting a series of seminars throughout the state that will bring together public planners, local government officials and industry participants who are responsible for telecom siting in California. This will ensure a better understanding of what changes this legislation will bring to the application process.

**Andrea Bruns, director
PCIA Government Relations**

FAA will be deterred from taking unnecessary steps.

Part 17 Petition for Rulemaking

In 1995, the Commission issued its Part 17 rules governing the “construction, marking and lighting of antenna structures.” The purpose behind the rules is to prescribe procedures and guidelines for antenna structure owners that ensure air safety. These rules have not been significantly updated since 1995. However, in the intervening decade, the technology used to light and monitor operations at antenna structures has improved considerably.

For example, tower company, carrier and utility network operating centers (NOCs) now receive continuous telemetry regarding site operational status that a decade ago could only be obtained by on-site inspection. Thus, many of the Part 17 rules need revision. In an effort to bridge the gap between outdated rules and technological

development, PCIA filed a *Petition for Rulemaking* with the FCC, asking the Commission to update its rules.

In its filing, PCIA recommended that the Commission eliminate the requirement to conduct quarterly physical inspections where a NOC-based, remote-monitoring system is operating. PCIA also recommended that the Commission eliminate the requirement to provide a paper copy of the Antenna Structure Registration (Form 854R) because the FCC’s electronic ASR System has been online for several years now. In addition, PCIA asked the Commission to amend its rules to ensure that they are aligned with FAA standards.

The above recommendations are consistent with the past position of the FCC’s Wireless Telecommunications Bureau (WTB). In the FCC’s 2004 *Biennial Review Proceeding*, the WTB stated that the FCC should promptly “institute a proceeding to examine the Part 17 rules to modify or eliminate” those rules. The

WTB noted that, in their current form, those rules “create unnecessary administrative burdens or are apt to confuse owners and licensees who attempt to comply with Part 17 rules.”

PCIA believes updating the rules will further the public interest by taking advantage of technological advances, clarifying the obligations of antenna structure owners and licensees, and adding uniformity to requirements among federal agencies. **agl**

Perkins, who is also a lawyer, is manager of Industry Affairs for PCIA.

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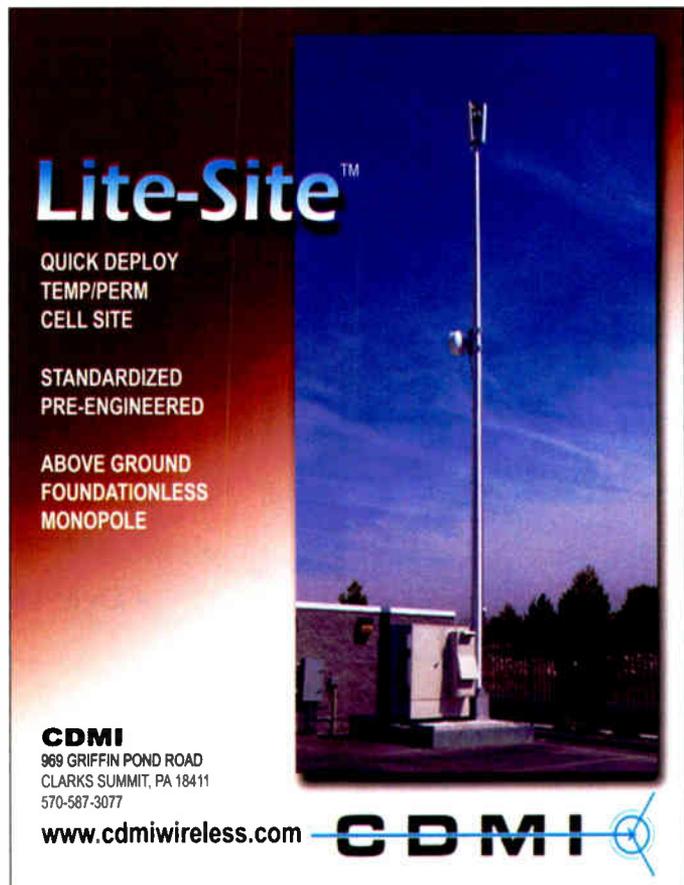


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D&O Liability Insurance

by David Saul, AAI

Directors and officers liability claims result in millions of dollars in lawsuits each year.

Every day, newspapers are filled with articles about companies being sued over accounting fraud, mergers and acquisitions, signs of financial weakness and conflicts of interest. Courts are overflowing with shareholders, competitors, customers and government entities making damaging claims against directors and officers—many times resulting in seven-figure verdicts.

Directors and officers (D&O) liability insurance provides specialized coverage for the directors and officers of your company. This coverage protects these individuals against losses that may result from alleged errors in judgment, breaches of duty or wrongful acts in the course of their work for your organization.

D&O liability insurance only covers non-bodily injury claims. Non-bodily claims include employment-related claims and mismanagement of funds.

Fear of non-bodily injury lawsuits would be one reason to have D&O insurance. Although there are few reported cases, it doesn't mean that claims have not been filed and then either settled out of court or dropped.

Generally, there are two types of lawsuits in which a claim might be brought against a board member: *derivative lawsuits* and *direct or third-party lawsuits*.

Derivative lawsuits are claims against a board member on behalf of the corporation (typically, for mismanagement of assets). Depending on individual state laws, usually only a few people have "standing," or the right, to

bring such claims. They are: 1) board members suing other board members; 2) members of an organization suing their board (if at least 5 percent of the total members join the lawsuit); and 3) the state attorney general. Your insurance representative will know if this is allowed in your state.

Because of these restrictive standing rules, few derivative claims are ever made. It should be noted that claims of these types are not made for awards to an individual, but rather to make the corporation "whole."

Direct, or third-party, lawsuits are brought by an employee or by a person not connected with the corporation who asserts a claim against it or its board on account of some non-bodily injury.

If your D&O liability policy includes *employment practices liability* (EPL),



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then termination and discrimination are the largest exposure in these types of claims. If you have a small, friendly staff, and feel unlikely to have employment claims resulting in a lawsuit, you might not think it necessary to extend your D&O insurance to include EPL. However, when employees believe they have been wronged—and are angry—they may file a claim even if it *is* baseless. At that point, you will have to hire lawyers. Your D&O/EPL policy then becomes a legal defense policy.

In this connection, the “deep pocket” theory is relevant. This theory holds that only people with money are likely to be sued. Lawyers may file a suit based on a bogus claim against “deep pocket” board members with the hope of securing a settlement for their client. Organizations that have a board made up of “ordinary” people who aren’t known to have vast amounts of money may then be comfortable without D&O insurance.

If an organization decides that it needs D&O insurance, it should be

aware that D&O policies vary greatly (unlike general liability policies, which are somewhat standard). Some policies are unbelievably expensive and some may have serious coverage limitations. When shopping for a policy, keep in mind: who *is* covered and who is *not*; what types of lawsuits are *excluded* from coverage; and what is the rating and payment history of the underwriter.

Who is covered? All policies, obviously, include an organization’s directors and officers. Officers include the executive director and possibly a few “key” employees. However, many policies don’t include staff and volunteers—or the entity itself. If a claim is filed against a board member, in many cases it also will be filed against the company.

What is excluded? When purchasing D&O insurance, be aware of what is *not* included.

Many D&O policies exclude employment-related claims (which, as mentioned before, are the majority of

claims brought against a board) and non-pecuniary actions. A non-pecuniary, or non-monetary claim, is one where a plaintiff is not asking for monetary damages. The claim is ethical or ideological in nature (i.e., a suit against the board for not fulfilling its mission).

What is the rating? Be sure to investigate the insurance company and its financial integrity. Find out what the rating of the company is. Never sign on with a company rated less than “A.”

A.M. Best & Company and Standard & Poor’s are two of the larger companies that provide underwriter ratings. Also, determine whether the company has a good record of claims payments by asking your broker or agent to show you how it is viewed by the rating organizations. **agl**

David Saul is vice president of Atlantic Risk Management, Columbia, MD, and an accredited advisor in insurance (AAI). His email address is: dsaul@atlanticrisk.com.

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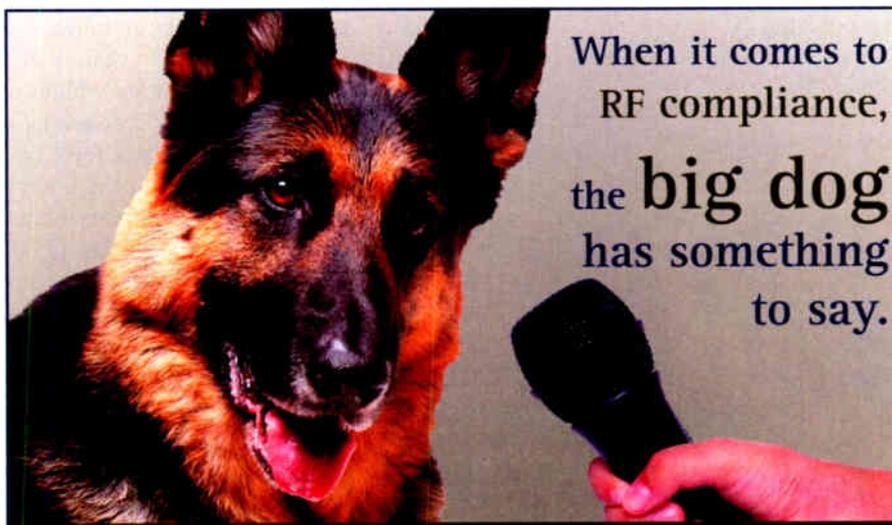
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How Ice Load May Reduce Wind-load Stress

Ice may ‘round’ some flat steel members, improving structural aerodynamics. A tower may be less stressed *with* ice than without it.

by Dan Simmonds and Pete Jernigan, P.E.

Self-supporting towers are designed for the forces developed by the *dead load* and the *wind load*, with and without an *ice load*. The dead load force is the weight of the tower members and

members and appurtenances.

These forces are used to develop two loading cases. Case 1 is the dead load of the tower with the appropriate wind load applied. Case 2 is the dead load of the tower, the weight of the formed, accumulated ice and the wind applied at a reduced load.

Ice will add weight and increase wind *area*. Nevertheless, the reduction in wind *speed* and the improvement in wind *flow* more than compensate for increases in weight and area. The result is a tower that is *less* stressed *with* ice than without.

In general, the forces developed in Case 2 impart less force on a tower. According to the governing U.S. antenna support structure standard (ANSI/TIA-222-G), the force developed by a 100-mph wind without ice will be reduced to a force developed by 75 mph with ice. This is a 44 percent reduction of pressure generated by wind. Further, ice may round some of the flat steel members, improving aerodynamics of the structure. This can be seen in the photo at the left. Notice that, when iced over, the sharp edges are dulled, thus improving wind flow.

In addition to the tower structure, attention must be given to

the appurtenances. These might be antennas, tower-mounted transceivers, lighting hardware, feedlines or connections. For instance, a given length of unsupported standard coax or CAT5 line will be vulnerable to failure when

encased in ice. UHF, Type N and similar connectors must be fully sealed to prevent moisture from entering the shield (outer conductor) of the line during the ice-melt stage. Impedance change is another unwanted effect of line saturation and stretch. This could require premature line replacement.

Tower alignment and stability are functions of the foundation and the soils supporting it. Consideration must be given to soils that are subject to frost effect or frost heave and soils that are subject to a high water table effect or settlement. We mention the settlement effect because there are areas where towers are subject to icing, yet the soils might not freeze simultaneously. Stability would be related to resistance to overturning, and alignment would be related to heave or settlement.

Local frost depth also must be considered when erecting a tower. The base of the tower foundation should be at or below the frost line. The pictured tower is located in eastern North Dakota, where the frost line is deeper than 7 feet. A tower foundation might shift if it is not at or below the frost line, thus altering tower alignment.

Similarly, a high local water table, creating an unstable soil condition, might contribute to settlement of the foundation, thus altering tower alignment. **agl**



A 100-foot tower at the Casselton, ND, beet-piler site (manufacturer, AN Wireless Tower).

appurtenances, such as antennas and cables. The wind load is the force of wind blowing on the tower and appurtenances. The ice load force is that added weight caused by ice that forms and accumulates on the tower

16 above ground level

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What gives tenant leases higher value?

Small changes in leases pay big dividends. Use the same techniques you use for your lessees—in reverse—when negotiating with lessors to boost tower value, each way.

by Jarred Saba

Negotiating the terms of a favorable telecom lease has a direct effect on the future value of your tower company. You build the future value of your company as you negotiate, lease-by-lease and clause-by-clause. Resist the temptation to accept boilerplate language and terms, because negotiating small changes in your leases today will have a direct reflection on the future value. Increase the value of the leases by making a few simple adjustments before lease execution.

From a finance standpoint, several clauses add more value than most people realize.

The term or clause that gives the most direct value is the rent. Obviously, the higher the rent, the more revenue the tower company receives. If the tenant lease is generating \$1,000 instead of

\$800 a month in income, then the net tower cash flow increases by \$200.

A lesser-known way to increase the value of the lease involves receiving rent in an upfront annual payment. Assume the agreed upon rent is \$1,000 a month. How should the payment schedule be structured? From a present-value calculation, on Day 1 the lease is worth about 5 percent more if annual payments are required—an upfront payment instead of extended payments during the year. The carrier's financial obligation stays the same, but the value of the lease increases.

The frequency of escalators also has a large effect on the value of leases. The

difference in value between a 15 percent, 5-year-term escalator and a 3 percent, annual escalator is also about 5 percent. Although both escalators add up to 15 percent after 5 years, on a present-value basis, the lease is worth 5 percent more if the escalators increase annually instead of corresponding to the lease term. This



is due to the compounding effect of the rent. In Year 6, the rents would be almost identical (\$1,150 for the term escalator vs. \$1,159 for the annual escalator), but the true increase in value occurs during Years 1 to 5. The lease that increases on a term basis would require \$60,000 in rent payments (\$1,000 a month for 60 months). The lease that increases annually would require \$63,710. That's about \$3,700 (or 6 percent) more over the same 60 months.

When the annual payment of \$12,000 with a 3 percent annual escalator is compared to a \$1,000-per-month rent with a 15 percent term escalator, the difference

in value increases even more. On a present-value calculation, the annual payment with the annual escalator is worth over 10 percent more than the monthly payment with the term escalator. The percentage of change is now a number worth looking at. If you really think about it, the leases with this structure increased by more than 10 percent with no extra work.

A tower owner can increase the value of the towers by using the opposite principles when negotiating ground rents with landowners. Negotiating favorable terms has a direct reflection on the net tower cash flow, which should be maximized. By combining monthly payments with a term escalator, the tower owner can save the same percentages in operating expenses.

Understanding how the numbers work is essential in the tower business. These might seem like small percentages, but this is a sure-fire way to increase the value of your towers with minimal extra effort. Yes, on one tower, the dollar increase may seem insignificant. But if you utilize this type of lease structure consistently in your tower business, then over time the monetary rewards will be well worth it. **agl**

Jarred Saba is vice president of the Tower Lending Group and the Corporate Finance Group for Wireless Capital Partners, Santa Monica, CA. You can email him at jsaba@wirelesscapital.com.

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The Legal Landscape When a Tower Collapses

Tower owners, engineers and contractors can protect themselves contractually by anticipating certain risks associated with tower accidents and collapses. However, there are legal duties and responsibilities that contracts might not transfer or defer.

by Vincent F. O'Flaherty, esq.



Photography by Glen Gillen

News reports of tower-related calamities have been all-too frequent in 2006. In February, an 800-foot tower collapsed near Tyler, TX. In June, two 1,000-foot towers fell to the ground in Georgia. (Four soldiers died when their helicopter struck a tower. Post-accident salvage work contributed to the felling of an adjacent tower.) As of this writing, 15 workers have died in falls from, and accidents on, towers. In times of tragedy and significant business disruption, families and owners turn to the legal community for assistance.

This article summarizes the legal landscape when a tower collapses and how incidents variously affect three groups within the industry: (1) tower

owners and lessors, (2) contractors and servicers, and (3) design and consulting engineers.

Duties and responsibilities of tower owners/lessors

Tower owners and lessors are not immune from claims against them following a tower collapse. Courts have examined several issues in the tower-owner context: (1) theories of negligence, (2) liabilities of previous owners, (3) an owner's liability for work done by contractors and (4) insurance coverage.

Negligence theories — Generally speaking, owners and those responsible for maintaining and leasing towers have a legal duty to act reasonably to prevent

accidents and to warn others of dangers of which they know, or should know, and are not openly obvious to those working on or near towers for a particular business purpose.¹ A failure to do so is *negligence*.

Negligence by a tower owner can be asserted in two ways. The first way is as a defense by a person or company accused by the owner to have damaged or destroyed a tower. Such a party can rightfully assert that the damages claimed by the owner should be barred or reduced because of the owner's own fault for failing to advise or warn the

¹ *Restatement (Second) of Torts* §341A (1965).



person or company of all dangers of which the owner knew, or should have been expected to have known. The owner is in the unique position of having, in the case of some broadcast towers, as much as 30 to 40 years of knowledge and documentary history. Inadequate recordkeeping, changes in management and engineering personnel over the years, and various consultants' reports can be pieced together as evidence of an owner's negligence. A failure to provide those working on towers access to tower records and work history will expose owners to the possibility of significant reduction of damages in the event of a catastrophic claim.

This is particularly important, given the ages of many towers in existence and the increasing body of knowledge and understanding of tower dynamics. Owners who are hiring contractors will be found to have knowledge and responsibility for all upgrades, additions and other work performed on a tower over the years of its life. A failure to properly maintain work records and/or a failure to supply contractors with access to any and all applicable records for their review will increase a tower owner's shared responsibility in the event of an accident.

Whether or not the injured party knew of (or in the exercise of ordinary care, *could* have known of) the

condition which controlled is a necessary fact in examining liability issues. Nevertheless, in an age of comparative fault, even an injured party's knowledge of the risk will not always absolve an owner of liability.²

The second way negligence of an owner can be asserted is by way of a direct claim by a person suffering personal injury as a result of a collapse. It is a general rule of law that owners that contract with independent contractors to do work are not liable for harm caused to another by the acts or omissions of the contractor.³

There are several exceptions to the rule that fall into three broad categories: (1) the "Non-delegable Duty Doctrine," which does not permit an owner to shift liability risks to a contractor in certain areas; (2) negligence in selecting, instructing or supervising a contractor; and (3) certain tasks which are inherently or specially dangerous.

Each state has its own complex set of rules that apply in this situation that must be examined proactively.

*Kelly v. LIN Television of Texas, L.P.*⁴ asserted an attempt at holding an owner

² *Restatement (Second) of Torts* §§343 and 343(A).

³ *Restatement (Second) of Torts* §409.

⁴ *Kelly v. LIN Television of Texas, L.P.*, 27 S.W. 3d 564 (TX Ct. App.—Eastland 2000).

liable for injuries to a tower contractor's employee. A 1,500-foot TV tower collapsed when a 10,000-pound piece of equipment broke free from the tower and struck a guy wire. Two of the independent contractor's employees were killed in the collapse. The families of the deceased workers asserted wrongful death claims against the tower owner and others.

The claim was made, under Texas law, that the tower owner was negligent because it exercised or retained control over the manner in which the work was performed. Further, it was asserted that the tower owner had actual knowledge of the danger or condition resulting in the deaths and failed to warn of such danger.

Claims presented included negligence, negligence *per se*, *res ipsa loquitur* (explained in a following section), negligent misrepresentation, fraudulent misrepresentation and constructive fraud.

The court held that the plaintiffs failed to present sufficient evidence that the station owner retained control over the workplace. Although the owner's maintenance supervisor was present and observed the work being done at the site, he was not in charge of the manner in which the subcontractor performed, and this detail was critical to the court's decision. Additionally, the court found that although the station owner discussed the status of the project with the independent contractor and oversaw reductions to power, this did not support an inference of owner control over the workplace.

Another claim of owner's negligence was asserted in *Campbell v. Barnett*.⁵ In that case, a 1,600-foot tower in New Mexico collapsed during a storm involving snow, sleet and high winds in 1960. The plaintiff was injured when portions of the falling tower crushed him in a nearby building. The plaintiff asserted that the owner was liable for the negligence of the tower designer in failing to design and build the tower with sufficient strength and stability to

⁵ *Campbell v. Barnett*, 351 F. 2d 342 (10th Cir. 1965).



withstand wind and ice conditions. The court noted that state law permitted an owner to be liable if the owner discovered a danger, or if it was obvious to him and that it was foreseeable that danger would result. The court permitted the case to go to a jury, which delivered a verdict in favor of the owner. That verdict was affirmed on appeal.

Liability of prior owners — The general rule is that prior owners of towers have no duty to keep a property safe after its sale or transfer.⁶ Prior tower owners, however, have been subjected to claims by tower purchasers following a tower's demise.

One way such a claim has been asserted has been through the body of law in the *Restatement (Second) of Torts* §353 which provides an exception to the general rule of no liability for prior owners.⁷ Section 353 requires a showing that the prior owner(s) knew or

should have known that a dangerous condition existed on the tower and failed to disclose that dangerous condition. If such a duty does exist, §353 also provides that the prior owner's liability continues only until the new owner has had a reasonable opportunity to discover the condition and to take precautions.

A claim of liability against prior owners was asserted in *Kelly v. LIN*.⁸ The court refused to impose liability on the prior owners. There was evidence that the prior owners transferred all tower records to the new owner and that all maintenance employees were transferred as well. Additional evidence of tower maintenance being regularly performed helps shield the prior owner from liability. The court found that there was no remaining duty on the part of the prior owner.

A similar claim against a prior tower owner was made in *Woodward*

*Communications, Inc. v. Shockley Communications Corp.*⁹ In 1996, Shockley sold to Woodward the assets of a radio station. Included within the assets was a 640-foot tower, which had been built in 1948. The closing for the sale took place in July 1996. The tower collapsed on Dec. 31, 1996, during a wind and ice storm. It was determined that the tower failed when a metal bolt broke. Woodward brought breach of contract and breach of express warranty claims against Shockley.

Woodward cited sales documentation that contained a representation by the seller that it would "keep in good repair and operating efficiency, all tangible, personal property." The tower was defined to be tangible personal property. The issue before the court was whether or not the failed metal bolt was a "latent defect," which led to the tower not being in good repair and operating efficiency at the time of the sale.

The court found in favor of the seller and refused to impose liability for breach of contract or breach of warranty. The court found that the language "keep in good repair and operating efficiency" was a commonly understood term. The seller did not represent or warrant at the sale that there were no latent or hidden defects in the tower. The court held that the seller did not have any obligation or responsibility with regards to the latent defect. Also of significance to the court was an inspection report,

⁶ *Kelly* 27 S.W. 3d at 571.

⁷ *Restatement (Second) of Torts* §353.

⁸ *Kelly*, 27 S.W. 3d at 564.

⁹ *Woodward Communications, Inc. v. Shockley Communications Corp.*, 2001 W.I. App. 30 (Dec. 7, 2000).

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issued just prior to the sale, which indicated that the condition of the tower was “good” or “OK.” There was no evidence that there were any repairs necessary to keep the tower in good repair and operating efficiency. Therefore, the seller met all of its obligations.

Owners can deal with these risks by way of indemnity agreements with a contractor and insurance protection. However, this does not absolutely relieve the owner from liability exposure.

Insurance coverage issues — Insurers are becoming more cautious in their underwriting and renewal of coverage for towers. A tower owner should be cognizant that insurance companies may attempt to deny and/or limit coverage for property damage following a tower’s collapse. Additionally, contractors performing work on a tower may have their coverage challenged following an accident. An insurance carrier’s denial of coverage for its insured contractor weakens an owner’s ability to obtain full compensation following a calamity.

In *TV-3, Inc. v. Royal Insurance Company of America*,¹⁰ a 2,000-foot tower collapsed in October 1997 in Mississippi. The TV-3 litigation followed the insurance carrier’s denial of benefits to its insured, the TV station. The station brought suit for breach of contract, breach of duty of good faith and fair dealing, fraud, and unfair or deceptive trade practices. The insurance

carrier denied coverage based on an exception in its policy for towers “in the course of construction or undergoing repairs or alterations, other than routine maintenance.” Although the opinion was concerned with a motion to transfer venue, the case is instructive on insurance risks with which an owner may be faced following a collapse.

Another insurance scenario facing tower owners is the potential lack of coverage for a contractor doing work on the tower at the time of its collapse. In *National Union Fire Insurance Co. of Pittsburgh v. Structural Systems Technology, Inc.*,¹¹ three employees of a tower contractor were killed when a 2,000-foot tower collapsed in Missouri in 1988. The court interpreted a Commercial General Liability Policy and Products Complete Operation Policy for the general contractor. The contractor’s insurance carrier denied coverage, which placed the station at risk for having a large part of its business-interruption damages uninsured. The tower owner was named in the suit and argued in favor of coverage. The court found coverage to exist.

An opposite result was reached in *Royal Insurance Company v. Duhamel Broadcasting Enterprises, Inc.*¹² A

1,965-foot broadcast tower collapsed while being reinforced with new diagonal and horizontal members in 2002 in Nebraska. The station’s property insurer successfully denied coverage for the loss because the insurance policy excluded coverage for towers undergoing alteration and/or for towers collapsing due to faulty workmanship. Nevertheless, the station owner still had a remedy. In collateral litigation filed against the faulty contractor’s insurance carriers, the station found coverage for its loss.¹³ To succeed, the station needed to sift through the following types of insurance coverage: Inland Marine, Commercial General Liability, Professional Liability and Architects and Engineers Professional Liability.

Insurance coverage issues also arose following the 1997 collapse of a large broadcast tower in Louisiana.¹⁴

Duties/responsibilities of tower contractors and other workers

A tower contractor has three sets of concerns in the event of an accident: (1) contractual and liability claims from its customer, the owner; (2) liability claims of those who did not hire the contractor, including lessees and personal injury claims; and (3) governmental oversight from OSHA or other

¹⁰ *TV-3, Inc. v. Royal Insurance Company of America*, 28 F. Supp. 2d 407 (E.D. Tx. 1998).

¹¹ *National Union Fire Insurance Co. of Pittsburgh v. Structural Systems Technology, Inc.*, 964 F. 2d 759 (8th Cir. 1992).

¹² *Royal Insurance Co. v. Duhamel Broadcasting Enterprises*, 170 Fed. App. 438 (8th Cir. 2006).

¹³ *Fireman’s Fund v. Structural Systems Technology, Inc.*, 426 F. Supp. 2d 1009 (D. Neb. 2006).

¹⁴ *Boston Old Colony Ins. Co. v. Tiner Associates, Inc.*, 288 F. 3d 222 (5th Cir. 2002).

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Contractual and liability claims — The first place to start examining a contractor's liability for a tower collapse or accident is the contractual relationship between the owner and the contractor. To the extent the contractor breached any affirmative duty to the owner, a common-law cause of action for breach of an express contract would arise.¹⁵ Express warranties also can be found in product literature provided to an owner before entering into the contract.

Related contractual theories concerning breaches of implied warranties also may be asserted. Under a contract theory, the issue of the comparative fault of the tower owner is not a determinative factor. However, it will be asserted by the contractor that any failure by the tower owner to warn of any blatant defects in the tower structure, which causally related to the tower's collapse, would amount to a material breach of the contract.

Beyond contractual theories, other theories of liability including *negligence*, *res ipsa loquitur* and *strict liability* will be asserted against a tower contractor. It is acknowledged that a contractor that is paid to render services to a tower owner is subject to liability

for any physical harm resulting from the contractor's failure to exercise reasonable care if the tower owner suffered harm because of reliance on the contractor. Such a failure is *negligence*.¹⁶

An example of a negligence claim asserted against a tower manufacturer is shown in *One Beacon Insurance Co. v. Broadcast Development Group, Inc.*¹⁷ The case arose from the wreckage of about 350 feet of a partially constructed 1,300-foot broadcast tower that collapsed in 2000 in Kentucky. A jury found that the manufacturer negligently welded portions of the tower. Defects in the welding contributed to cause the tower's collapse, for which the manufacturer was held responsible.

Another theory of liability related to negligence is the long-recognized doctrine of *res ipsa loquitur*. "Res ipsa loquitur" is Latin for "The thing speaks for itself." Negligence can be inferred by the mere fact that the accident happened and that, absent someone being negligent or at fault, the accident should not have happened. The key element is that the contractor has exclusive control of the damaged product and that the event would not ordinarily

have happened if reasonable care had been used.¹⁸

An additional cause of action is *strict liability*. This theory holds a contractor liable if it sold a product which was in a defective condition or unreasonably dangerous to a user or consumer. The contractor has liability for any physical harm caused by the defective product.¹⁹

Responsibility for a subcontractor's negligence — There are also situations where a general contractor will be held liable for the negligence of subcontractors performing work on towers. In *Channel 20, Inc. v. Worldwide Tower Services, Inc.*,²⁰ the court concluded that a general contractor that was in control of the premises owed a duty to the employees of subcontractors similar to that owed by an owner or occupier of land to its invitees. The court found the duty attaches, regardless of whether the general contractor is in actual physical possession of the premises. Actual possession was not a necessary element of control, so long as there was a right to manage—whether or not it was ever actually exercised. Therefore, the court found it proper to hold the general contractor liable for failing to discover hidden dangerous conditions and to warn the subcontractor or its employees of such conditions.

Additionally, courts have held tower contractors liable for failing to properly supervise the work of subcontractors.²¹ A third theory of liability consists of imputing a subcontractor's fault to the general contractor under agency principles.²²

Duties and responsibilities of design and consulting engineers

The role of the design and consulting engineer in a tower accident cannot be under-evaluated. As professionals

¹⁵ *Fireman's Fund v. Structural Systems Technology, Inc.*, 426 F. Supp. 2d 1009, 1014–15 (D. Neb. 2006).

¹⁶ *Ibid.*

¹⁷ *One Beacon Insurance Co. v. Broadcast Development Group, Inc.*, 147 Fed. App. 535 (6th Cir. 2005).

¹⁸ *Hudson v. Townsend Associates, Inc.*, 704 F. Supp. 207 (D. Kan. 1988).

¹⁹ *Restatement (Second) of Torts* §402(A).

²⁰ *Channel 20, Inc. v. Worldwide Tower Services, Inc.*, 607 F. Supp. 551 (S.D. Tx. 1985).

²¹ *Fireman's Fund v. Structural Systems Technologies, Inc.*, 426 F. Supp. 2d 1009, 1014–1015 (D.Neb. 2006).

²² *Ibid.*

carrying duties and responsibilities that go with their professional licenses, engineers owe a duty to the tower owners who hire them—and to the public—to exercise that degree of skill, learning and care ordinarily exercised and practiced by other professionals and engineers under the same or similar circumstances. Failure to do so will be recognized as negligence, thereby exposing engineers to liability for damages associated with a tower's collapse.

Each state's laws impose varying rules for examining liability of professional engineers in the event of a tower's collapse. In addition to negligence theories based on active negligence and/or failure to warn, other areas looked at by the courts include breach of contract, strict liability and fraud.

Express warranty — A television station that truly experienced bad luck was KELO in South Dakota. In 1968, it lost a new 2,000-foot tower that was struck by an airplane. Thereafter, another 2,000-foot tower was built. Unfortunately, that tower collapsed during a blizzard in 1975. The engineering firm that designed the second tower, Dresser Industries, was subjected to several suits in which its liability as a designer was examined. In *Community Television Services, Inc. v. Dresser Industries*,²³ the designer was sued under various theories of liability for negligence, strict liability and breach of express warranty. The jury found that the designer breached its express warranty, and damages of over \$1.2 million were assessed.

On appeal, the court focused on Dresser's liability for failing to meet windload design specifications as contained in the sales contract and related sales literature. The court agreed that the engineer could not be held to be an insurer of its product as designed. However, the engineer had provided a catalog to the buyer, which was a basis of the bargain of sale. The *statements* provided in the catalog were a *warranty* that the engineer's tower would be properly designed so as to safely withstand windloads. Nothing in

the sales literature indicated that the broad statements in the sales literature were superseded or cancelled by technical specifications in the contract. Therefore, there was sufficient evidence to support the finding that the engineer breached its warranty that the tower would withstand wind and ice loads common in the area.

Statute of limitations — Design engineers also face potential suits long

after a tower has been designed. In *KSLA-TV, Inc. v. Radio Corporation of America*,²⁴ a 1,700-foot tower was designed, fabricated and sold in 1964. It collapsed in 1977 due to undetermined causes. The designer successfully asserted a statute of limitations defense.

continued on page 40

²⁴ *KSLA-TV, Inc. v. Radio Corporation of America*, 693 F. 2d 544 (5th Cir. 1982).

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²³ *Community Television Services, Inc.*, 435 F. Supp. at 214.

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MANUFACTURER:

Trylon TSF

TOWER TYPE:

2400 Series All-Weld Guyed

HEIGHT:

270 feet

APPLICATION:

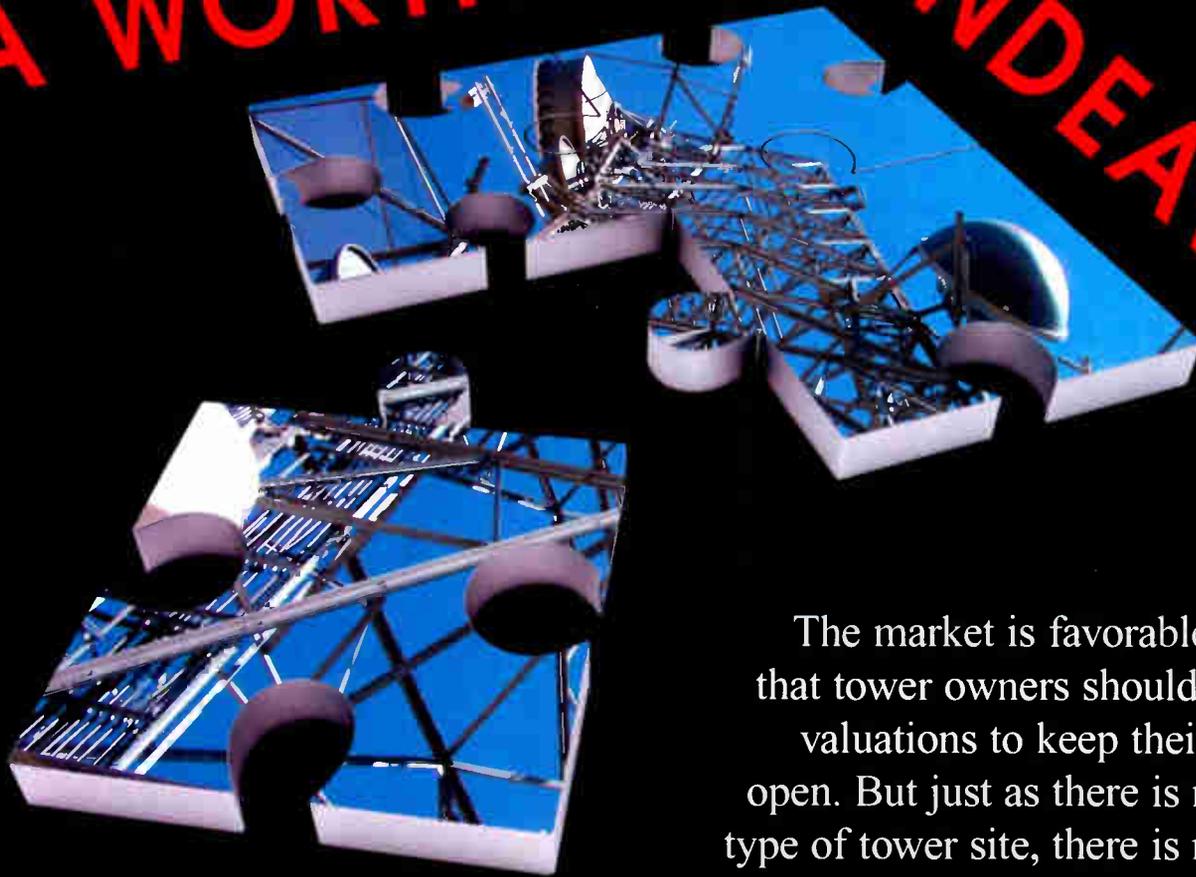
Cellular Network

LOCATION:

Cambridge, Ontario

Valuation:

A WORTHWHILE ENDEAVOR



The market is favorable enough that tower owners should perform valuations to keep their options open. But just as there is no single type of tower site, there is no single “magic number” with which to calculate a tower’s worth.

What is a tower *really* worth? Potential sellers, lenders, investors and buyers have asked this question repeatedly over the past several years. The answer depends on the *perceived free-cash-flow growth* of the tower, which can vary widely because of a number of factors.

DCF analysis

Before diving into a complicated explanation as to why there isn't some "one size fits all" answer, let me briefly clarify what I mean by "cash flow." The *value* of a tower is the tower's ability to generate and grow sustainable *free* cash flow. The free cash flow is then projected over a number of years (in effect, into perpetuity) and discounted back to the present day at a rate that provides for an adequate return for a buyer. This is known as a *discounted* cash flow (DCF) analysis.

At this point, you may be asking why even discuss free cash flow and a DCF analysis, when you commonly hear about deals getting priced as a multiple of *tower cash flow* (TCF), or revenue less tower-related expenses (such as ground leases, insurance, maintenance, taxes, utilities and monitoring). In essence, a "multiple of TCF" is a shorthand method of performing a DCF analysis. For example, we currently often hear about deals getting priced at 13x to 17x TCF. Buyers will determine those multiples by performing a DCF analysis and *dividing* the result by the tower cash flow. In today's market, based on the growth assumptions and return expectations that are modeled into a DCF analysis, the resulting value, divided by the annual TCF, is typically in the 13x to 17x annual TCF range.

The reason we can use TCF as a "proxy" for free cash flow is one of the things that makes the tower industry so great. Once a tower is constructed, ongoing capital expenditures are minimal. Unlike other sectors of real estate, there are no toilets to fix and a minimum of tenant complaints and improvement issues that might require additional expenditures.

Additionally, any non-tower-related expenses (i.e., selling, general and administrative costs) are typically not assumed by the buyer. As a result of coupling minimized ongoing expenses with an easily maintained recurring revenue stream, the TCF of the seller typically translates directly into free cash flow for the buyer.

Of course, there are many additional factors that influence the value of a tower. Let's run through four examples of towers and tower cash flow, in the boxes below, to guide the discussion of what determines value. For ease of illustration, let's assume all four sample towers have had all their expenses factored into the TCF number:

TOWER #1
 This 190-foot monopole, built five years ago at the request of a tenant, is currently empty because the original anchor tenant filed bankruptcy and backed out of its commitment to collocate on the tower. The tower owner is paying \$500 per month for the ground lease and \$500 per year for property taxes. The tower cash flow is negative, with the site losing at least \$12,000 per year.

TOWER #2
 With one tenant on the site paying the equivalent of \$800 per month beyond the ground rent (in this example, \$1,600 per month), this 250-foot guyed tower is located in a rural area without zoning restrictions. The tower has ample space for additional tenants and was built at this specific location for the anchor tenant. The tower cash flow, after expenses, is about \$10,000 per year.

TOWER #3
 The two carriers on this 150-foot monopole, sited in a suburban area of a major metropolitan city, are contributing \$30,000 to tower cash flow. The monopole was designed to hold an additional three tenants, but there is a 10-story building adjacent to the site, and the building owner has started marketing the rooftop space to wireless carriers.

TOWER #4
 This 220 foot self-supporting tower, with 10 tenants occupying the site, is a cash-flow "monster" generating \$150,000 in annual tower cash flow. The tower owner, who built the site a few years ago on land he owned next to a major interstate, leases the tower to all types of tenants, including PCS, cellular, public safety, wireless internet and paging tenants. The tower is nearing maximum capacity.

Now, let's see if we can apply a TCF multiple to the towers and get closer to determining the values of the sites. With the current market towers trades being between 13x and 17x tower cash flow, let's split the difference, use 15x for our example, and see where we end up.

Tower #1 – With this site losing \$12,000 per year, 15x the negative TCF would result in a value of -\$180,000. In other words, if you owned this tower and

tried to value it on a multiple of TCF, you would end up *paying* the buyer \$180,000 to take this tower off your hands. That's not too appealing, is it? In all fairness, this is a unique situation and would be treated as such when valuing the site. I'll discuss later how an "empty" tower such as this site is valued.

Tower #2 – This site, generating roughly \$10,000 per year in TCF, would be valued at \$150,000, assuming our 15x number was used to determine a sale price. Depending on *where* you built the site, \$150,000 might not cover your original cost to build the tower, making this value also unappealing to most tower owners. Similar to the Tower #1 example, a newly built, single-tenant tower is also

treated as a unique asset and should not be priced using the general rule of thumb of a multiple of TCF.

Tower #3 – With \$30,000 in TCF, this site would be valued at \$450,000 when given a 15x TCF multiple. When industry folks talk about the multiples being paid for towers and what towers are "worth," Tower #3 is the prototypical example both in terms of the TCF multiple being "at market" and the price

Does the CCI/GSL Deal Represent a New Market High?

The acquisition of Global Signal (GSL) by Crown Castle International (CCI) announced in October caused many tower owners to immediately look at the value of that deal and wonder:

“Are my towers now worth over 20× tower cash flow?”

If only valuation was *that* easy. It is misleading to think *all* towers will see a significant rise in value.

Although both CCI and GSL have referred to this transaction as a “merger,” CCI will clearly be the surviving entity, and this is not a “stock-only” deal, hence it is more appropriate to call it an “acquisition.”

An acquisition transaction between two large, publicly traded companies such as CCI and GSL is markedly different than, for example, a smaller tower developer selling a portfolio to a larger company. While both types of asset acquisition have a buyer performing a discounted cash flow (DCF) analysis and examining the pricing on comparable transactions, the pure *scale* of a transaction between two companies such as CCI and GSL brings more complicated factors into play.

For example, combining two large companies inevitably has cost savings, or synergies, that are considered when determining the appropriate price to pay. Questions will be asked, such as: “Will there be some operational redundancies?” and “Will all employees need to be retained?” A buyer will look for all ways to

reduce expenses after an acquisition if there are overlapping functions within the two companies.

Additionally, a buyer will analyze how the deal should best be structured:

“Will the consideration be for stock, cash or some combination thereof?”

“How much leverage can be placed on the combined company—and at what pricing?”

“Will the acquisition affect our credit rating?”

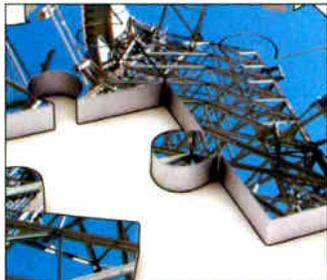
The buyer will use this information to help determine if a deal can get done and at what price. The buyer will evaluate the size of the premium, if any, over the seller's current stock price that it is willing to pay and whether that price will be accretive to the buyer (i.e., at a multiple lower than the buyer's current trading multiple).

GSL, being the first public tower company to complete the securitization process, was attractive to CCI, which has completed its own securitization, and there was already a template on how CCI could value the revenue stream being generated by the GSL portfolio. Additionally, the significant portfolio of towers likely added to the premium valuation in the deal.

GSL was clearly valued at a high number, but there aren't many portfolios available to buy that fit with CCI as well and have GSL's size and quality of cash-flow stream.

paid for the tower being at the same “market level.” Even when you bring the 13× to 17× range into pricing, the per-tower range of \$390,000 to \$510,000 is in the strike zone of where many deals are getting priced.

Tower #4 – The large number of tenants and the diversified tenant base make this site unique both in terms of the amount and type of tower cash flow generated by the tower. Applying a 15× TCF multiple to the \$150,000 in annual cash flow equates to a purchase price of \$2.25 million. This is obviously a much higher-than-normal price per tower, and a



seller would likely take that offer and run all the way to the bank. I'll discuss later how this tower would typically be priced lower both in terms of a TCF multiple and price per tower.

You might wonder, at this point, why only Tower #3, out of four tower

examples, seems to pass the “test” of our 15× TCF valuation. As mentioned earlier, not all towers are created equal. It is difficult to use blanket assumptions and gross generalizations to say towers as a general asset class are all *worth* some simple metric like a multiple of tower cash flow. That is why the use of a multiple is really a short-hand method for a DCF analysis. Most buyers of towers like those in the examples will typically run a DCF analysis and ultimately get a multiple much different than 15× for each situation.

Tower #1, with no tenants, obviously cannot be valued using a multiple of tower cash flow, given the simple fact that the tower is currently losing money. Towers with no tenants are valued at anywhere from \$0 (some owners simply *give* negative cash flow sites to another owner to avoid losing money) to as much as \$50,000 per tower if the buyer is confident it will get a tenant on the site in the immediate future. That being said, a fair amount of risk is associated with a negative-TCF site, so a buyer is likely to use a higher discount rate when valuing this tower.

Tower #2 is the type of site that,

because of its low cash flow, is priced in today's marketplace on more of a price per tower basis instead of as a multiple of tower cash flow. Depending on a wide range of characteristics, towers built specifically for an anchor tenant, but with perceived market upside, are selling for anywhere between \$200,000 and \$300,000. For some buyers, this is below the average price per tower in other acquisitions (as in the example of Tower #3), and for the seller it can be a sale price above the cost to develop the site, so “everybody wins.” Again, buyers will look at the potential cash-flow growth of the tower, and the potential risk associated with that growth, to arrive at a price for the tower.

With towers like Tower #4, it can become more complicated to determine the “value” of the site, and that value will range widely from buyer to buyer (and seller to seller). Back in the late 1990s, it seemed that all forms of revenue were valued the same. After several paging companies and other non-broadband tenants consolidated or went through bankruptcy, tower buyers started heavily scrutinizing the credit worthiness and

stability of tower customers. While licensed broadband carriers such as Cingular, Verizon, T-Mobile and Sprint Nextel continue to rank at the top of the list of "preferred" tenants, common wisdom in the tower industry also holds that there is little risk that government tenants, or private-enterprise tenants such as FedEx, will leave, once installed.

The yet-unproven business plans of unlicensed wireless Internet providers and the challenges that continue to face the paging industry cause buyers to discount those revenue streams despite some tower owners' confidence that those providers will be long-term customers.

Further compounding the "value" of Tower #4 is the higher than normal price per tower, even assuming a below-market 10x TCF valuation. While broadcast towers and "beachfront" towers (i.e., ones that are impossible to replicate) will trade upward from \$1 million or more on a per-site basis, buyers rarely feel comfortable buying more than a handful of such sites at any one time. There are even fewer sellers willing to sell off such a large amount of tower cash flow unless a premium is offered for these kinds of sites.

Other factors affecting value

So, it's not so simple. Don't you wish you could just take a "market multiple" of anywhere from 13x to 17x tower cash flow, apply it to a tower's annualized TCF and determine the value of a tower? The process of determining the value of a tower involves many considerations. While there are ways to try and simplify valuation, there are also a slew of factors to consider when valuing tower portfolios.

Now, the previous examples provide some details about the tower, including current TCF. But current TCF is only one factor in determining value. What are other factors that affect value?

As discussed, towers are valued on their ability to generate and grow sustainable free cash flow. So, we also need to look at the future of the tower, both in terms of capacity and market potential:

1. As a general rule, the fewer tenants there are on your tower, the higher the TCF multiple that a buyer will pay for the asset. A tower with one tenant, in theory, will receive a higher

TCF multiple value than a tower with five tenants because of the expected growth. A tower with a significant number of tenants has, in some views, been "too successful" to warrant a high acquisition multiple.

2. Comprehensive recordkeeping and detailed documentation can help a buyer justify paying a higher purchase price, particularly in this age of securitization. Buyers also appreciate clean documentation because it can help the transac-

tion to progress smoothly, saving everyone time and money.

3. A larger portfolio, with outstanding recordkeeping and documentation, may help to justify an increased multiple, because the portfolio is able to take on more leverage at a lower cost. (A lower cost of capital will help boost the value returned by the DCF analysis.)

continued on page 40

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Copyright Protection— Exclusivity of Expression

Part 3—Software, photographs, advertisements, promotions and many other creative expressions you use in a telecom tower business might require the ‘cannon’ of copyright protection to stave off marauders.

by John Bradshaw, esq., and Delaney DiStefano, esq.

Copyright is probably the most *familiar* form of intellectual property. Considering the popularity of downloading music from dubious Internet sources, copyright may also be the most *violated* form of intellectual property, at least for those under the age of 25.

Copyright protects any “original work of authorship” that is or becomes “fixed in a tangible medium of expression.” Original works of authorship include, among other things, original works of literature, performance, music, photographs and film. Aside from a spontaneous dance by a street-corner performer, fixation is usually evident, because most works of interest are

judged based on artistic or literary merit. Thus, almost any piece of software is eligible for copyright protection no matter how “uncreative” the software developer may seem. However, problems can arise if you confuse the mere fact of hard work and effort with the exercise of judgment involved in creativity.

For example, prior to 1991, most localities usually had one phone book because the local phone company asserted copyright to its contents. However, in a landmark case that year, the U.S. Supreme Court disagreed. Names and telephone numbers are *factual data* and thus not copyrightable in and of themselves. Although selection and arrangement of data can involve creativity,

the Supreme Court held that selecting data based on geographic area and arranging that data based on alphabetical order of surname did not involve even the

lowest level of creativity necessary for copyright protection. For example, by virtue of recent changes in the law, many copyrights endure for 95 years from their date of first publication. The most important of these exclusive rights are typically those to *reproduce and distribute* the work. For, as the word indicates, a *copyright* owner generally has the “right” to prevent anyone else from unauthorized *copying* of the copyrighted work.

Because the legal focus is on the *act* of copying, copyright does not protect against *independent creation* by another. This does not mean that similarities between works are irrelevant. Unauthorized copying will often be inferred from substantial similarities in the works, provided the alleged copier had access to the original work. However, if one can truly establish that one’s work was not derived from the copyrighted work—in other words, that there was no copying and the similarities are attributable to other reasons (such as coincidence)—there would be no copyright infringement.

Another frequently misunderstood limitation to copyright protection is that *ideas* are not protected. It is the *expression* of the ideas that is protected. Drawing the line between an idea (unprotectable) and the expression of that idea (protectable) is notoriously difficult, but the *idea* of a piece of software that causes a computer to perform a certain set of functions to produce a result is typically not protected by the copyright in the software. Thus, a customer who makes bootleg copies of a piece of software is committing

A customer who makes bootleg copies of a piece of software is committing infringement because he is copying the expression embodied in the software.

written or recorded in some fashion. Thus, the issue most in question with regard to whether something is eligible for copyright protection is *originality*.

Originality

The standard of originality is low, but it has two facets. First, there must be *independent creation*, which simply means that the work cannot have been copied wholesale from another. Second, the work must involve a *modicum of creativity*. This means the amount of creativity required is extremely low, and is not

lowest level of creativity necessary for copyright protection.

Note that the Court did not foreclose copyright to *all* compilations of data. However, when dealing with compilations of factual data, the extent of copyright protection generally depends on the level of creativity involved in selecting and arranging the data.

What do you get?

Copyright gives the owner certain exclusive rights in the work, and these exclusive rights can last for a long time.

infringement by copying the expression embodied in the software. However, a competitor who sets out to create software to perform the same function can usually do so in a way that does not appropriate the protectable expression (the underlying code) of the underlying unprotectable ideas (the resulting operations of the computer).

The mere fact that smart competitors may be able to create competitive software once they learn of a good idea does not mean that all is lost, because the practicality of doing so without running afoul of the copyright laws depends on the situation. Nonetheless, in any endeavor, and particularly in the software realm, it is best to think of copyright protection as but one of several layers of protection. If there is something functionally unique about the way a piece of software operates or the results it can accomplish, it is wise to consider supplementing copyright protection with additional avenues of protection, such as by applying for a patent and/or keeping the source code as a trade secret.

How to get one?

Copyright is governed exclusively by federal statute, and Congress has established the U.S. Copyright Office to issue copyright registrations. The process of obtaining a registration is straightforward and involves filling out the appropriate form, providing a deposit copy of the work, and paying a modest but non-refundable fee (typically less than \$100). There are a number of forms covering the different types of works, but each is basically self-explanatory and relatively easy to fill out. There are also options for redacting selected portions of the work or providing less than a complete copy to avoid disclosure of sensitive information, and these options are typically especially useful when registering software code.

A copyright *registration* is not a *grant* of a copyright, because in theory copyright protection *exists* at the moment an original work is fixed in a tangible form. However, as the saying

goes: "In theory, there is no difference between theory and practice; in practice, there is." Congress has wisely provided significant inducements to register works with the U.S. Copyright Office.

One must have a copyright registration before a court is able to enforce a copyright because registration is a pre-



requisite to bringing an enforcement action. In other words, you may have a valid copyright, and the defendant may be blatantly infringing, but until you get a registration, a court will not *hear* the case. But perhaps more importantly, if one obtains a registration *before* the infringement occurs, or within three months of the first publication of the work, statutory damages, court costs and attorney's fees are all *recoverable*.

An ounce of prevention

One would think that the ownership of a copyright would be easy to determine, and the general rule is that ownership stems from authorship. In cases where there is one person sitting at his desk writing an original work of fiction, it can be easy to determine ownership.

However, in cases that involve companies or joint ventures, ownership can be less obvious. It is always best to address these issues up front when undertaking a collaborative effort or hiring someone to create something on your behalf.

There is a presumption that the copyright of works created by employees for their employer in the course of their work are owned by the employer unless the employee can show otherwise. In the case of joint ventures, or commissioning work by another company or person (independent contractor situations) it is important to have a contract that spells out who owns the intellectual property at the end of the day. It could be, in the case of a joint venture, that both parties own the work equally. This is a situation where a little upfront work makes all the difference.

Why wait until the product is developed and ready to go on the market, only to have to prove ownership? The advice is the same with employees. Despite the presumption that the intellectual property is owned by the employer, make sure any employment contract spells out *who owns what*.

Copyright law is constantly changing and evolving as it tries to catch up with technology and the Internet, and also to deal with a global economy where the laws of other countries differ from ours. There are many more nuances, and the advice of a legal advisor who deals with intellectual property can help you protect your rights—and ensure your activities are not infringing on the rights of another. **agl**

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DiStefano is a principal of Higgs Law Group, Rockville, MD. Her email address is ddistefano@higgslawgroup.com. Parts 1 and 2 of this series, concluded this issue, appeared in the July and August/September issues of AGL.

Some coverage deficiencies may be solvable by using asymmetrical antenna patterns that can still maintain higher-order sectorization. Spectral efficiencies thus obtained may extend network lifespans and assist deployment of next-generation technologies.

Advanced Array Antenna Design and Beamforming

by Thomas Ginter, P.Eng.

Isolate signals from noise, increase the information density of channels and create fidelity in the links—these objectives lie at the heart of wireless microwave communications. They pushed us from analog to digital to increasingly sophisticated modulation technologies, including GSM, CDMA and OFDM. New innovations are now being researched, standardized and developed to achieve ever-greater improvements in spectral efficiencies.

Spatial processing is becoming a core capability. The next challenge is integration and implementation within networks. While 2G and 2.5G systems, such as GSM/EDGE and CDMA, did not include specific mechanisms to accommodate advanced spatial processing, such as MIMO and STC, the latest generation of wireless air interfaces do: UMTS-LTE, W-CDMA and 802.16e (WiMAX). Implementation strategies and challenges for these techniques affect antenna systems, radio design and baseband processing, both at the terminal and at the base stations, and are crucial elements in cost-effective network deployments.

New modulation technologies can substantially increase fundamental system capacity, but what about meeting ever-increasing channel-capacity demands in 2G and 2.5G systems? As spectrally advanced technologies, such as UMTS-LTE, undergo standards development, or, as with 802.16e, wait for product development, testing and maturation, current networks must meet ever-increasing capacity demands. Can improvements in deployed systems bridge the gap cost-effectively?

After study, my colleagues and I have proposed 2G and 2.5G spectral efficiency as high as 2× by combining two older concepts: *higher-order sectorization* and the construction of

specialized antenna beam-pattern shapes. The work applies equally to the latest air interfaces and AMC-enabled 4G modulation techniques, such as OFDM. Meanwhile, it extends the life of existing networks.

The combination avoids complex changes to active radio components. It uses advancements in array-antenna design and RF-planning tools. “Good, old-fashioned, microwave antenna design” remains a key component of advanced system performance—with state-of-the-art EM modeling and simulation tools, *and* the latest materials and design methods.

The following information describes the technique and specific simulations demonstrating improved spectral performance results.

The capacity challenge

With subscribers now numbering about two billion global users, minutes of voice usage coupled to high-bandwidth data services create a constantly rising need for additional service capacity. Reports indicate some wireless carriers in developed, industrialized nations restrict Internet applications 3G subscribers can use, to preserve network capacity.

The struggle to preserve bandwidth,

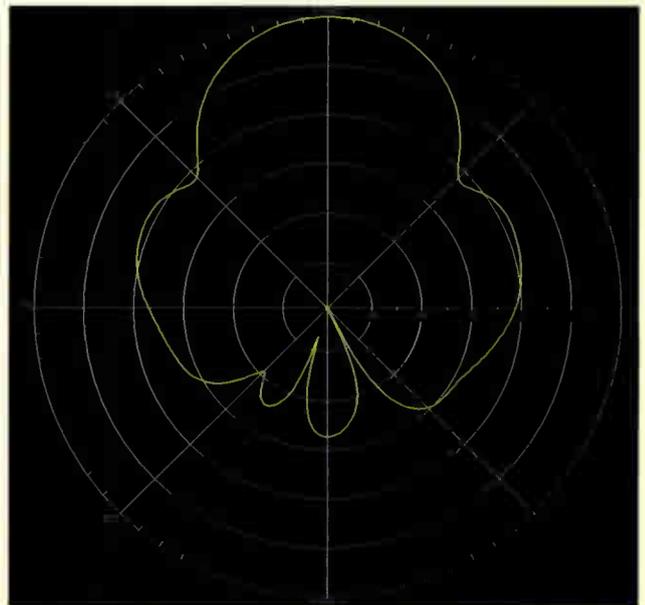


Figure 1. Traditional GSM antenna pattern.

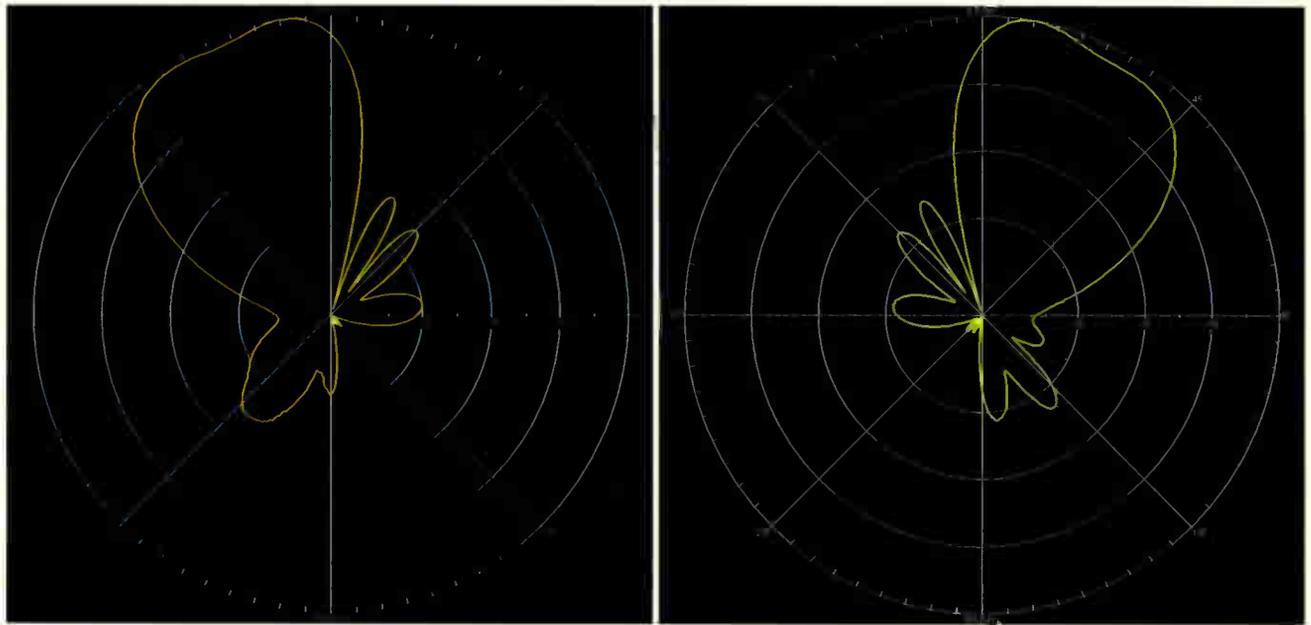


Figure 2. Bi-sector array 'left' and 'right' beam.

while offering a good Web-surfing experience, prompted some carriers to charge monthly fees based on individual usage levels. Carriers in developing world markets have a different motivation: Subscriber count per base station can be three to four times higher than in mature systems in developed countries. This unprecedented demand for POTS ("plain old telephone service") can be so high that blocking rates can exceed 10 percent.

Some operators rely on purchasing spectrum or adding cellsites to accommodate quarter-over-quarter traffic and service growth. Rising costs, spectrum-acquisition delays and cellsite scarcity challenge service providers to meet growth demands profitably. These expensive and time-consuming conventional solutions are often inhibited by obtaining permissions, lease negotiations and community-zoning concerns. Existing 2G and 2.5G networks have immediate capacity issues that cannot wait.

Higher-order sectorization

The oldest, most common form of spectral efficiency improvement is *sectorization*. A cellsite is split into multiple sectors to yield extra capacity—spatial processing in its simplest form. By far, the most common sectorization scheme is three sectors per base station site. Using four, five or six sectors is

higher-order sectorization.

Also, by far the most common antenna for three-sector applications is the 65-degree azimuth beamwidth antenna. Many models are available for global wireless bands: 850-band cellular, 1900-band PCS, 900-band GSM, 1800-band DCS and 2100-band UMTS, to name but a few. Millions of 65-degree antennas are deployed globally in three-sector configurations.

Given the obvious capacity advantage of higher-order sectorization with four, five or six sectors, why is this an uncommon practice? First, three-sector designs provide the optimal geometric coverage pattern of interlinked sites—the classic hexagon pattern. Four-sector and five-sector sites create coverage geometries with holes or excess overlap between sites. Six-sector geometries fit "within" traditional three-sector deployment patterns and can be implemented with 33-degree azimuth beamwidth antennas.

However, RF simulations show that six 33-degree antennas, spaced with 60-degree separation, while better than four or five sectors, deliver suboptimal *homogeneous coverage*. Traditional 33-degree beam patterns are symmetric about the bore sight and, when radially configured, deliver both excess overlap between adjacent beams and high cusping loss at the apex of the traditional

three-sector pattern. In other words, the patterns do not form a constant envelope of gain across the full 360-degree coverage area.

In the former case, too much radio overlap for TDMA-based systems, such as GSM, many users would experience handoffs. In the latter case, large cusps between beams, coverage holes will result from handoff failures. (See Figure 1 on 35.) Similarly, for DS-CDMA systems, such as CDMA2000, coverage discontinuities result in excess soft handoff or raised noise floors because of increased handset power in coverage holes.

New thinking may overcome this coverage failure: Step away from traditional symmetrical antenna patterns, and investigate whether *asymmetrical* patterns can resolve coverage deficiencies while still maintaining a higher-order sectorization goal.

Asymmetric azimuth beam patterns

Solving dual overlap/cusping problems of 33-degree antenna applications begins by treating the coverage of two 33-degree antennas as a single unit to replace the original 65-degree antenna's coverage area. Under this model, the inner overlap of the two 33-degree antennas is on the original 65-degree antenna's bore sight. The objective for designing a



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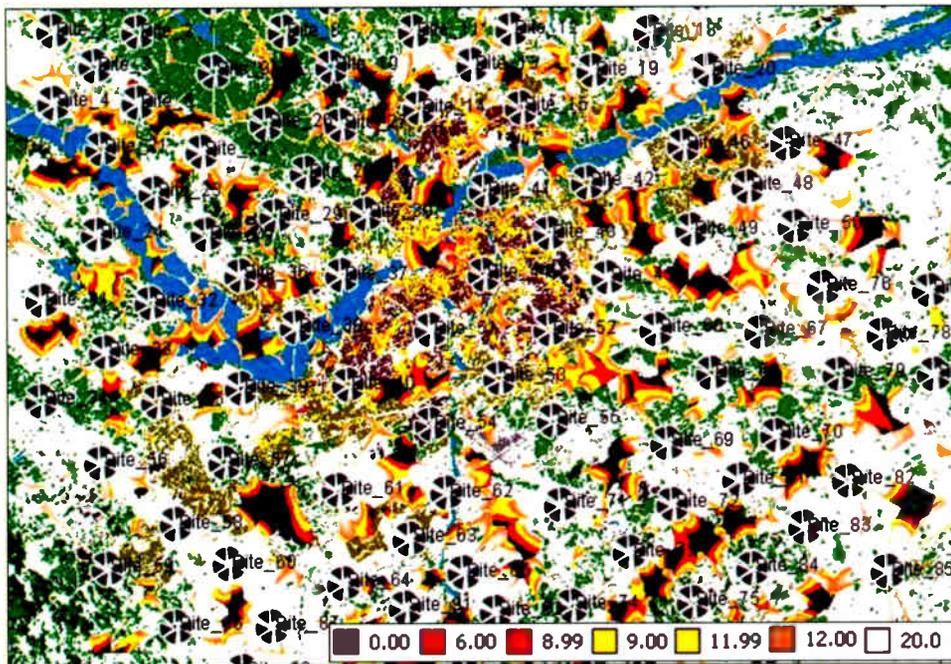


Figure 3. Total carrier-to-interference ratio (C/I) in decibels.

replacement system conducive to higher-order sectorization is then simplified to: (1) minimizing the overlap of the two replacement beams along the original bore sight; (2) minimizing the cusp at the bore sight; and (3) improving the outer-edge rolloff to avoid excess intersector overlap. These goals can be met by designing a matched pair of asymmetric left-hand and right-hand beams that together replace the original 65-degree antenna. (See Figure 2 on page 36). The final step is to create an antenna that supports this matched pair of asymmetric beams, which has been dubbed the “bi-sector.”

Creating the bi-sector requires advanced array-antenna design and beamforming mechanisms. The resulting bi-sector array produces two beams from a single antenna facet that have little overlap and superior outer-edge rolloff compared to standard “off-the-shelf” 65-degree or 33-degree. Coverage patterns are therefore more optimized and homogeneous.

Although designing such an array antenna has its own problems—particularly using beamforming techniques to generate two matched beams from a single antenna facet—this information focuses on results from applying the antenna to a network, not design and construction considerations.

38 above ground level

Because it matches a traditional 65-degree coverage area, the new antenna can be deployed on a sector-by-sector basis without disrupting existing antenna orientations. Its use can be focused on a replacement strategy only for sectors with capacity congestion. A congested site may need one antenna split or “bi-sected” with the two-beam pattern replacement, while another site may need two or three sector antennas replaced to gain the spectral-efficiency advantage.

Capacity and performance

The PlanetEV simulation tool proved the bi-sector design capacity gains. Such tools readily analyze the performance effect of various antenna RF coverage designs, and PlanetEV was instrumental to the iterative bi-sector design process. For the simulation, we choose a familiar GSM radio network in Ottawa, Ontario. Terrain and clutter maps for Ottawa were obtained, and a traffic model was developed that based the subscriber density on clutter density. The overall size of the simulation area was 100 cell sites, with a mix of urban, suburban and rural terrain.

The three-step simulation began when the Ottawa network capacity was “baselined” by simulating traffic conditions under which all sites were allocated traditional 65-degree antennas in

a three-sector model. To support this step, broadcast control channel (BCCH) and traffic channel (TCH) plans consistent with real-world performance were constructed. Next, all sites were replaced in the simulation with a standard model of a 33-degree antenna under a six-sector deployment, while maintaining gross site orientation.

We observed the *carrier-to-interference ratio (C/I)*, *frame-error rate (FER)* and other radio *key performance indicators (KPIs)* of the network and any resulting degradation of performance caused by excess overlap or coverage holes. Last, we incrementally replaced the cellsites with bi-sector arrays to observe the effect on the baseline C/I performance. Throughout the simulation, care was taken to keep constant the many configuration parameters, such as downtilt, base station maximum power and other variables in a like-for-like comparison.

The final simulation configuration included 15 channels of BCCH and an additional loading of 30 traffic channels above what the baseline three-sector configuration would allow.

Figure 3 (*above left*) shows the resulting C/I map of the coverage area, following Step 2 where the original three-sector sites were replaced with six-sector, 33-degree antenna configurations. The diagram shows C/I steps from -10 dB to +15 dB, with the black areas indicating the worst C/I and the clear areas indicating 15 dB or better C/I. The result identifies the drawback of using off-the-shelf 33-degree antennas in this application: Poor C/I performance occurs in an unacceptably large portion of the network. This poor C/I performance is directly attributable to two aspects of the design: lack of adequate RF coverage along the bore sight of the original 65-degree antenna where the cusp between adjacent 33-degree antennas would appear, or increased interference caused by excess overlap between adjacent sectors.

Next, the simulation investigated the replacement of pairs of the 33-degree antennas with the proposed bi-sector array. Note that each replacement pair was consistent with the coverage of the original 65-degree antenna bore sight. The simulation began with 10 percent of the

sites being replaced by a bi-sector array, and thereafter with replacements at levels of 20, 30, 50 and finally 100 percent. In all simulations conducted, there was marked improvement in the C/I and FER (not shown here).

Figure 4 at the right shows the result of 100 percent deployment of the bi-sector array, with an obvious improvement of C/I conditions and most former trouble spots now receiving adequate signal. The simulation indicates that the bi-sector array performance enhances system capacity, with the significant advantage of maintaining the orientation of the underlying RF network.

Finally, with the simulation effort complete, the final calculation of system capacity was obtained. With a baseline capacity of the network under the initial deployment using three-sector, 65-degree antennas, it was found that the use of standard 33-degree antennas in a six-sector configuration was 35 percent greater, or 1.35x the original capacity (as averaged over several simulation efforts).

The replacement strategy with the bi-sector asymmetric azimuth pattern array obtained a startling 1.7x to 1.75x improvement in capacity over the baseline (again, averaged over several simulation efforts). The conclusion is that the bi-sector outperforms off-the-shelf

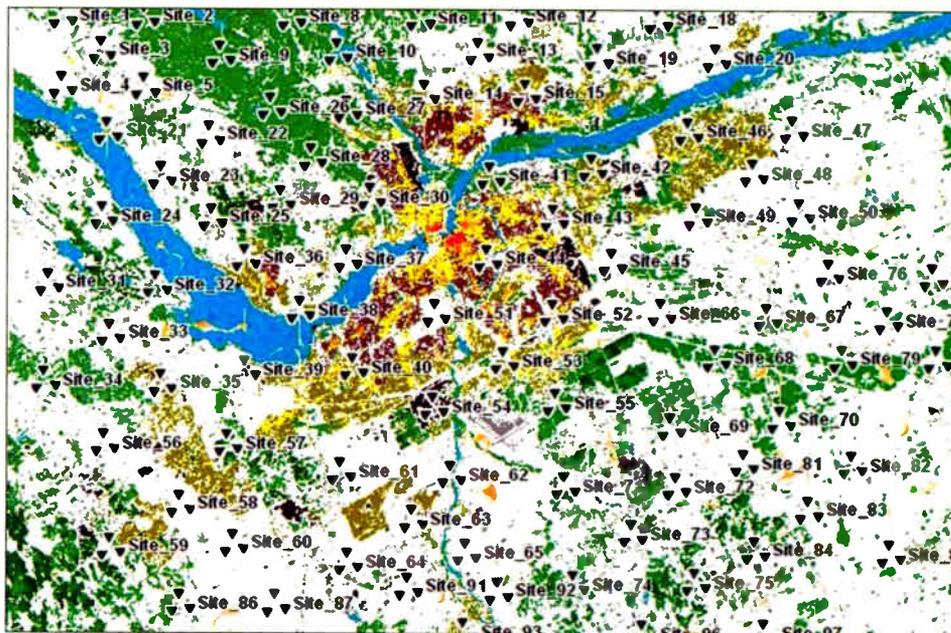


Figure 4. Total carrier-to-interference ratio using the bi-sector array.

33-degree antennas twofold.

A new approach for new networks

Spectral-efficiency improvements based on crafting and applying new antenna-pattern shapes are directly applicable to 2G and 2.5G networks like GSM/EDGE and CDMA2000, and they can extend network lifespans as 3G and 4G technologies roll out. These approaches are only now entering the marketplace because of the availability of low-cost,

array-structure, microwave antenna designs and sophisticated “automated radio planning” tools that reduce the effort required to change RF network designs. These options are practical and wholly compatible complements to further spectral efficiency approaches soon to be available with advanced protocols such as 802.16e and UMTS-LTE. **agl**

Ginter is vice president for product management for TenXc Wireless, Ottawa.

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COLLAPSE—continued from page 25

In *Mt. Hood Radio & Television Broadcasting Corporation v. Dresser Industries, Inc.*,²⁵ another tower, designed in 1954, collapsed 17 years later because of a defective guy line. The court found no liability for the designer due to the implication of the 10-year statute of limitations.

Res ipsa loquitur — In 1973, a 70-foot Missouri radio tower collapsed. In the case, *City of Kennett, Missouri v. Akers*,²⁶ the designer was alleged to be negligent. The court held that the doctrine of *res ipsa loquitur* applied because the falling of an antenna tower is an unusual occurrence and does not ordinarily happen in the absence of negligence.

Negligence — The case of *Northern*

²⁵ *Mt. Hood Radio & Television Broadcasting Corporation v. Dresser Industries, Inc.*, 530 P. 2d 72 (Ore. 1974).

²⁶ *City of Kennett, Missouri v. Akers*, 564 S.W. 2d 41 (Mo. 1978).

*States Power Co. v. ITT Meyer Industries*²⁷ involved the collapses of five transmission towers in Minnesota in 1979. The cause of the collapses was found to be defective screw anchors designed by the defendant. Claims of breach of warranty and negligence were made. The court affirmed the finding of breaches of warranty and negligence.

Strict Liability — A wrongful-death action following the collapse of a 40-foot tower in 1981 in Ohio was brought against the tower designer and manufacturer in *Moerch v. Srepcu Electronics*.²⁸ Claims of negligence in the design and manufacture of the product, and failure to provide warnings and instructions, were made, along with the theory of strict liability. A jury found the defendant designer strictly liable for the loss. On appeal, the court affirmed

²⁷ *Northern States Power Co. v. ITT Meyer Industries*, 777 F. 2d 405 (8th Cir. 1985).

²⁸ *Moerch v. Srepcu Electronics*, 1988 Oh. App. LEXIS 1181 (Oh. Ct. App. 1988).

the trial court's finding.

A tower supporting a wind-energy generator collapsed in Illinois in 1988. The plaintiff, which sustained property damage, sued the tower designers in *Loos v. American Energy Savers, Inc.*²⁹ The court granted judgment in favor of the designer and manufacturer.

Responsibilities beyond contracts

By anticipating risks associated with tower accidents, tower owners, engineers and contractors may seek to protect themselves contractually from liability. However, today's legal landscape warrants recognition that all those involved in a tower project have overlapping duties and responsibilities that involve more than a pure contract analysis. **agl**

O'Flaherty is of counsel with Spradley & Riesmeyer, P.C., Kansas City, MO.

²⁹ *Loos v. American Energy Savers, Inc.*, 522 N.E. 2d 841 (Ill. App. 1988).

financial assessment*VALUATION—continued from page 31*

Ultimately, the cliché is true: "The value of anything is what someone else will pay for it." Different buyers with different levels of risk and different growth assumptions will run different models. Value of property can change from market to market, location by location; even the *timing* of a sale can affect valuation.

Solicit a wide range of offers from well-capitalized acquirers. Just because your neighbor sold his towers to one consolidator doesn't mean that another large buyer of towers won't make a better offer. Perhaps even a recently formed tower company, looking to grow its tower portfolio and put its investors' capital to work, will be the most aggressive bidder for your tower portfolio. Asking only one or two buyers for their valuation *limits your options*.

Beauty in the eye of the deed-holder?

So, what is a tower *really* worth? Well, as a seller, the simple question to reflect on is what is the tower worth to *you*? What

cash flow do you expect to receive from the tower, and what is that cash flow worth to you? If you think the tower is worth \$250,000 but three different buyers offer you at least \$500,000 for the site, will you *argue* with their valuing your tower twice as much as you do? Conversely, you may think your tower is worth \$1 million, but if five different buyers tell you it is worth \$500,000, the "market value" is \$500,000.

Will your tower be worth \$1 million someday? Maybe, but if a tower is worth more to you than to a buyer, you should *keep it*. As veteran site owners know, the relative simplicity of owning and operating towers makes it a phenomenal industry with few risks.

When our firm, Media Venture Partners, is asked our opinion on whether now is a good time to sell, our answer depends on the seller's *goals and objectives* and how we think the market will view the potential growth of the portfolio. Every tower is different, and every tower owner's business objectives and situations are unique. Only *you* can determine if selling now, later—or *ever*—

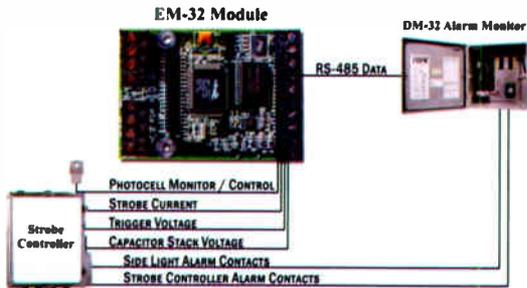
is the best option for you.

Given the current market, is this an optimal time to contemplate the sale of your towers? Given where values are now, compared to five years ago, the answer in many cases is "Yes." The market is at its highest point in nearly five years, so this is not a *bad* time to examine all your options if you ever considered divesting.

Will the market get hotter or cool off down the road? With over \$13 billion spent on the AWS licenses, analysts project even more demand for tower space as those auction winners employ that spectrum. Given the cyclical nature of business, however, the market will likely cool off—at some point.

Consult with someone familiar with the dynamics and drivers that affect tower values before deciding. If you *do* decide to sell some or all of your sites, make it a *worth-while* endeavor. **agl**

Funk is vice president of Media Venture Partners, San Francisco. Jason Hill, managing director of Media Venture Partners, contributed to this article.



Expansion module for site monitor

Hark Tower Systems' EM-32 expansion module for the DM-32 tower site-monitor allows remote diagnosis of any strobe-based obstruction light. The EM-32 features push-on connectors to simplify sampling of the test points. It measures capacitor stack voltages, both high and low points, as well as the strobe current and the trigger voltages of the obstruction-light system. These parameters can be read out in actual values for remote diagnostics. The system also monitors the lighting-system photocell for proper activity. A standard two-wire connection links the EM-32 to the DM-32.

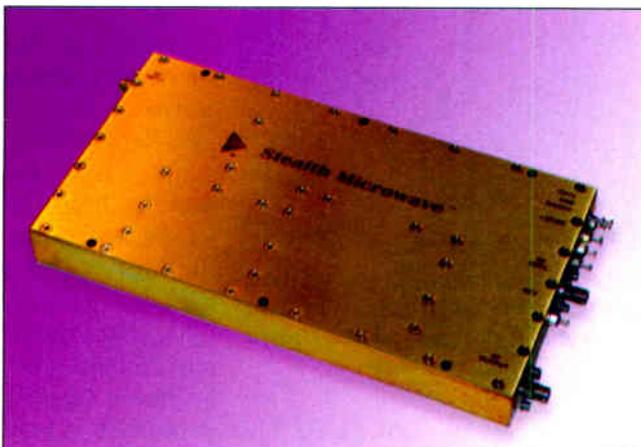
www.harksystems.com



Training video for dish-mount installation

A free training video from Radio Waves shows how to properly install and align the company's mini-mount used for 1" and 2" parabolic microwave dishes. The video is designed ensure that installers have all the required tools and training to properly install and align the microwave antennas.

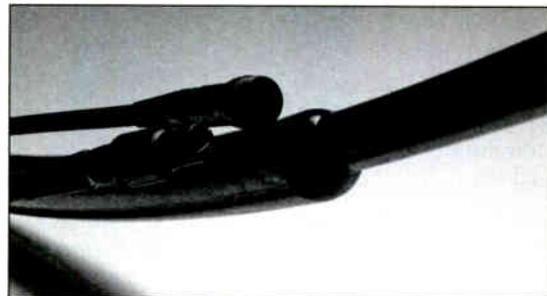
www.radiowavesinc.com



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The SM3436-47L GaAs FET amplifier from Stealth Microwave is designed for 3.5 GHz broadband wireless applications. The unit operates from 3.4 to 3.6 GHz with a P1dB of +47 dBm and an OIP3 of +64 dBm. Small signal gain is 53dB with a flatness of ±0.5 dB across the band. Standard features include a single +12Vdc supply, thermal protection with automatic reset and over/reverse voltage protection. The amplifier is available in lab unit and 19-inch rack configurations.

www.stealthmicrowave.com



Terminal distribution system for DAS

The OptiSheath Premier FlexNAP terminal distribution system, designed to be applicable to distributed antenna systems (DAS), consists of high-fiber-count fiber-optic cables with pre-installed TAP points at customer-designated positions. The system, from Corning Cable Systems, eliminates time-consuming cable preparation and splicing operations associated with attaching the remote node to the trunk. A push/twist with the preconnectorized drop cable can connect from 1 to 12 optical fibers to the remote node.

www.corning.com/cablesystems

Crown Castle Acquires Global Signal for \$5.8 billion

On Oct. 6, Crown Castle International (CCI) and Global Signal (GSL) announced an agreement whereby CCI would acquire GSL in a stock-and-cash transaction valued at \$5.8 billion, including debt. The two companies' combined portfolio will include more than 24,000 wireless sites, with 16,240 of its towers in the top 100 BTAs.

"We expect this extraordinary combination of companies, with the most towers in the best markets, to create significant value for our customers and shareholders," said John P. Kelly, Crown Castle's CEO. He said the combined portfolio would obtain 76 percent of its site-rental revenues from the four largest U.S. wireless carriers.

"This transaction reflects our continued commitment to undertaking endeavors that we believe will maximize recurring cash flow per share, which we feel is the best way to create and increase shareholder value," Kelly said. "We believe this combination enhances our ability to achieve our long-term goal of 20 to 25 percent annual recurring cash flow per share growth."

Based on pro forma results for both companies as of June 30, 2006, the combined company will have about \$16 billion in total enterprise value, annualized site-rental revenues of \$1.2 billion and annualized, adjusted EBITDA of \$659 million. Recurring cash flow, defined as adjusted EBITDA, less interest expense, less sustaining capital expenditures,

based on pro forma annualized results for the second quarter 2006 for the combined company, was \$329 million.

The merger is expected to generate cost synergies of between \$12 million and \$15 million annually, which are expected to be realized within 12 months after closing.

Ben Moreland, CCI's CFO, said,

we believe this transaction is near and long-term accretive to recurring cash flow per share relative to our stand-alone expectations."

Following the closing, CCI's board of directors will consist of all eight outside directors from CCI's existing board of directors and three outside directors from GSL, as well as Kelly and Moreland.

Three of GSL's current board members, Wesley R. Edens, Robert H. Niehaus and David C. Abrams, are expected to join CCI's board after the deal closes.

As a result, the CCI board will increase from 10 to 13 members.

The corporate headquarters for the combined company will remain in Houston. Kelly will remain CEO, and Moreland will remain CFO. No continuing role was mentioned for Jerry Elliot, GSL's current president and CEO, or Steven Osgood,

GSL's CFO. Elliot joined GSL in May. Edens filled the president and CEO posts after the exit of David Grain, GSL's president from January 2003 to December 2005. Steven Osgood became GSL's CFO on April 24 when the previous CFO, William Freeman, retired.

A sale of GSL to either CCI or American Tower had been the subject of rumors since December 2005, one industry broker said. "The sale fell apart, and that's when you saw the departures of Grain and Freeman. They set their departures for a potential sale," he said.



Crown Castle CEO John P. Kelly (left) and Global Signal CEO Jerry Elliott appeared together during a panel discussion at PCIA in Nashville. Two weeks later, the \$5.8 billion acquisition of Global's site portfolio by Crown was announced by the two companies.

"The new company will have a cost of debt capital and flexibility that is unrivaled in the tower industry. We believe that this transaction enhances our expected growth rates of revenue, adjusted EBITDA and recurring cash flow due to the relatively lower occupancy on the Global Signal towers and the significant lease-up potential.

"Further, we have a proven track record of integrating acquisitions without disrupting the delivery of services to our customers. In addition, in keeping with our capital allocation strategy,

The broker said the sale itself was not a surprise, but the valuation was. "On a per-share basis, it is equivalent to \$55 per share [for GSL], where the closing price the day before was \$48. Global had no reason to sell, but its major shareholders were willing," the broker said.

Paul R. Estes, executive vice president of Cequel III and president of Cequel Sites, said that the acquisition was good for the industry. "It demonstrates the tower industry has strong underlying business fundamentals and is positioned for growth." Cequel III assumed management responsibilities for privately held AAT Communications in May 2002, and sold it to SBA Communications for a reported \$1 billion in April.

Asked about the acquisition's effect on smaller tower companies, Estes said, "Unless they had ambitions of acquiring Global Signal, the effect is positive. A tower

Crown Castle's assessment of its acquisition of Global Signal:

- Strategic and operational fit with Crown Castle's existing assets.
- More than 23,500 combined towers, with more than 16,000 towers in the top 100 BTAs.
- Increases the expected growth in revenues and cash flow.
- Near- and long-term accretive to recurring cash flow per share.

company does not have to be the largest owner of sites to be successful."

After selling AAT, Cequel III reentered the tower business, forming Cequel Sites, and Estes said the GSL acquisition "means we made the right decision to get back in. We are bullish and always have been. Something of this size supports our view of the industry."

Thomas A. Murray, CEO of Community Wireless Structures, said his reaction to the acquisition was that it makes sense to continue building towers. "The

process of building from scratch is long, cumbersome and frustrating at times. If the valuations at the end of the day are this high, it makes new site development well worth the effort," he said.

"One thing that occurs to me when I hear of a deal like this is 'digestion and indigestion.' Global bit off a lot when it bought Sprint Towers. Now Crown has done the same. Crown has great systems in place. They're probably up to the task of digesting Global Signal," Murray said.

PCIA 'cuts a new record' in Nashville

Zoning issues, disaster preparedness, DAS deployment, broadband application, new industry standards and federal regulation were among a host of topics a record-setting number of antenna-siting professionals sat down to discuss in Nashville, TN, in September.

PCIA—The Wireless Infrastructure Association, conducted its annual

convention at the Gaylord Opryland Resort and Convention Center in Nashville, TN, Sept. 19–21. PCIA is the principal trade association representing companies that make up the wireless telecommunications and broadcast infrastructure industry. PCIA's members own and manage more than 65,000 telecommunications towers and antenna facilities that

support analog, digital and broadcast services across the country.

PCIA said that this year's convention attracted 1,400 registrants, the highest attendance so far to its annual Wireless Infrastructure Show, and marked the third year in a row the show has grown in attendance.

"I felt that this year's show was our finest," said PCIA president and CEO Michael Fitch. "The success of the PCIA show is evident in the increased number of attendees. PCIA diligently works to provide the best educational content and networking experience possible and these numbers reflect our efforts."

The association also announced its board of directors and officers for the coming year. Jeffrey Stoops will continue to serve as chairman; Jim Taiclet as secretary and vice chairman; and David Weisman as treasurer. Jerry Elliot, John Kelly and Tam Murray were re-elected to the board; Michael Fitch remains appointed to the board; and Marc Ganzi was appointed to the Board.

Next year's convention will be held at the Rosen Shingle Creek Resort in Orlando, FL, October 1–4.

DAS Forum launches at PCIA Nashville show

On Sept. 19 at its Nashville, TN, show, PCIA launched the Distributed Antenna System (DAS) Forum, to promote understanding, acceptance and deployment of DAS. The group is a neutral, non-profit organization that includes a broad base of industry professionals. The DAS Forum will educate potential customers about DAS solutions, document DAS success stories and help interested parties obtain thorough and accurate information about the benefits and costs of DAS technology.

DAS Forum Founding Members are Corning Cable, Crown Castle International, Donohue & Blue and Sprint Nextel.

On Oct. 25, the DAS Forum announced its president and committee chairs for 2006–2007. Allen Dixon, Corning Cable Systems, will serve as the initial president. The DAS Forum will initially encompass three committees: Advocacy, Technology, and Market Development and Communications. Catherine Blue, Donohue and Blue, will chair the Advocacy Committee, Sunil Prasad, Sprint Nextel, will chair the Technology Committee and Hunter Stuart, Crown Castle, will chair the Market Development and Communications Committee.

The DAS Forum will exhibit at the National League of Cities Conference, December 5–9, in Reno, NV.

Nashville show al

The State Wireless Association Program (SWAP) hosted a "Presidential Dinner" on Sept. 18 at the Gaylord Opryland Resort and Convention Center in Nashville, TN, the night before the PCIA Wireless Infrastructure Show opened.

PCIA's chairman, Jeffrey Stoops, president and CEO of SBA Communications, said that when PCIA shifted its focus to wireless infrastructure and the tower industry several years ago, the association was still federally oriented. "As we exchanged war stories, it became clear that the fight now is fought at the state level. As a guy in the tower industry, I can't remember the last federal issue that troubled me. It is all at the state level," he said. "There are so many successes at the state wireless association level, it is a no-brainer for PCIA to support this group," Stoops said. "Plus it's *fun*. No group parties and plays more than state wireless."

Praising state association successes, Stoops referred to the Tennessee Wireless Association obtaining legislation that facilitates antenna collocation on existing towers. He also described a Beaufort County, SC, case where a local commission was "prodded by crop dusters" and a movement began to require aviation obstruction marking on towers as short as 100 feet. "Through PCIA's involvement and folks in the industry and prospective members and companies, we defeated that," he said. In Albuquerque, NM, a suggestion was made that *all* new towers would have to be camouflaged. "We know how much *that* would cost," Stoops said. "We're supporting the counter-effort through PCIA, and that's where the fight is being fought."

New state associations enlist in the fight

About 25 of 50 states either have wireless associations now or have one in the process of forming. Jeff Peters of C Faulkner Engineering, Austin, TX, represented the organizers of the Texas Wireless Association. The association was scheduled to have its official launch Oct. 26 in Dallas. Jon Dohm of Crown Castle represented the group organizing the California Wireless Association. He said the California association might launch in early 2007.

Todd Stiles of Strategic Communications Services, president of the Pennsylvania Wireless Association, said that the association now numbers nearly 200 members and attracted 106 golfers to its first charity tournament. Brian Hurley of Excell Communications, president of the Carolinas Wireless Association, said that group would have its one-year anniversary in October. Ron Toler of SiteExcell, president of the Arkansas-Oklahoma Wireless Association, said his association also had marked its first anniversary and had tournament plans. David Downie of Milestone Communications, president of the Georgia Wireless Association, said the group's third golf tournament was set for Nov. 3, followed by a holiday social on Dec. 12. John Stevens of Crown Castle represented the group forming the Arizona Wireless

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Association, which is expected to launch Nov. 15.

Ross Kauffman, vice president of the Tennessee Wireless Association, noted that its August golf tournament raised \$35,000 for charity. "We had our fall meeting [Sept. 14]. FCC Commissioner Deborah Taylor Tate commissioner was our speaker. She was a state regulator in Tennessee. She got an eye-opening on what is going on with state wireless associations," he said. Kauffman said the Tennessee group has 300 members and is trying to expand its presence around the state, seeking members from Memphis and Knoxville.

Jay Webber, president of the MoKan Wireless Association (Missouri and Kansas) said the group had its first golf tournament in August and attracted 125 players. The tournament raised \$10,000 for charity. Jeff Previte of EBI Consulting represented the group forming the New England Wireless Association, which was set to hold its official kick-off meeting Nov. 8. Doug Dimitroff, a partner at the law firm of Phillips Lytle, represented the group forming the New York Wireless Association. "We want to a launch by the end of the year," he said.

Andy Rotenstreich, an attorney at the law firm of Haskell Slaughter and president of the Alabama Wireless Associa-

tion, the second state group formed after Tennessee's, offered examples of by-laws and articles of incorporation to those wanting to organize a state wireless association.

Hunter Stuart of Crown Castle, president of the Tennessee Wireless Association, said that it is worth the time and commitment given by volunteers to the state wireless associations. "You have to bring the industry together and be the catalyst. Our success is driven by your success," he said.

Janet Gill, PCIA's director of marketing and member relations, encouraged state association volunteers to post agendas and samples of meeting presentations to the SWAP website. She encouraged volunteers to exchange speaker lists so other associations might be aware of those resources.

Michael Fitch, president and CEO of PCIA, has been touring the country, speaking at as many of the organizational meetings as possible. The PCIA executive lauded the state wireless associations' local presence, credibility and ability to reach out to people and be understood by them. He said PCIA has resources built up over a number of years and funding support that state groups neither have nor aspire to, and encouraged them to make the most of the national resource.



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GTP acquires Midwest Tower Partners Portfolio; Blackstone continues to mull options

Global Tower Partners (GTP), Boca Raton, FL, announced on Oct. 11 the signing of a definitive agreement to acquire certain wireless communication tower assets from Midwest Tower Partners, a control investment of Arlington, Virginia-based MCG Capital.

The Midwest tower acquisition will contribute 83 existing tower facilities to GTP's rapidly growing national tower portfolio.

"The Midwest acquisition is a continuation of our investment thesis to acquire high quality tower assets at an accretive price to our stakeholders," said Marc C. Ganzi, CEO of GTP. "We have a long-standing relationship with the Midwest management team and think they have teamed with MCG Capital to do an excellent job developing and maintaining these highly strategic tower locations located throughout the Midwest portion of the country."

"The Midwest portfolio was a unique opportunity for GTP to get a great set of towers that complement our existing core Midwest markets," said Terry Armant, senior vice president of Development,

GTP. "Furthermore, we look forward to delivering these locations to our customers in an effort to address their rapidly growing coverage needs."

After the Midwest acquisition closes, GTP will own, manage and master lease some 10,400 sites throughout the United States, including over 2,200 owned communications towers. The transaction is expected to close during this quarter.

Meanwhile, buyout and initial public offering rumors regarding GTP circulated widely during October. There was speculation that Blackstone Group, a buyout fund that purchased GTP for a reported \$225 million in April 2005, might be ready to sell its stake in the company or make an initial public offering of stock.

Clayton Moran, senior vice president of Media and Communications with Stanford Group, said in a published report in October that GTP might be valued as high as \$1.5 billion.

Speaking to an audience at the PCIA Wireless Infrastructure Show in Nashville, TN, on Sept. 19, Moran said that

the number of public tower companies could grow before it begins to shrink. Perhaps referring to GTP, Moran said, "We have one private company with 1,800 towers. That is possibly large enough to go public."

Although rumors of an impending IPO for GTP have not been denied, CEO Ganzi was quoted in public statements in mid-October as flatly denying that Blackstone might divest GTP. Ganzi said that GTP management and the Blackstone Group have every intention of growing the company.

On June 1, when it announced an agreement to acquire 77 towers from Chinook Wireless, GTP said it owned or master-leased 9,728 sites, including 1,996 owned towers. GTP acquired TCP Communications earlier this year, a transaction that added to GTP's portfolio 209 existing towers and another 24 that were under development at the time.

TCP was represented by Media Venture Partners in the transaction.

Speculation still persists that Morgan Stanley may have been given the nod by Blackstone to help it with an IPO for GTP.

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South Dakota sets record with 2006 tower builds

A state that encourages tower construction to support cellular network expansion, South Dakota, has seen new towers constructed this year in many parts of the state. The chairman of the South Dakota Public Utilities Commission, Bob Sahr, indicated that 2006 could be the best year the state has seen for cell site construction.

The agency has pursued a wireless initiative for three years to bring cellular service to small towns. Forty new sites were built in 2004; 25 new sites in 2005; and more than 40 are expected to be built by the end of this year. Sahr put the total number of sites in the state at about 340.

National Grid Wireless acquires ClearShot Communications

National Grid Wireless US, Boxborough, MA, announced on Oct. 3 its acquisition of ClearShot Communications from ClearShot Holdings. The deal adds a portfolio of 235 towers to the company's existing base of over 200 towers, expanding its operations across the eastern and central United States.

National Grid Wireless will integrate ClearShot, including its towers and long-term contracts with wireless carriers, into its existing U.S. wireless infrastructure business.

Doug Wiest, CEO of National Grid Wireless, said the company sees the acquisition as "another stepping-stone on our path to making tower infrastructure a more material part of our business. By combining the strength and reach of both National Grid Wireless and ClearShot, we will be able to

DAS deployment gives fans' wireless calls a sporting chance in Phoenix

During the new Cardinal Stadium's debut at the beginning of this football season, many Phoenix, AZ, fans made cell-phone calls to friends and family from the facility. Thanks to SRP Telecom, the vast majority of those calls went through successfully. Wireless coverage in Westgate and the area surrounding the Cardinal Stadium and Glendale Arena was spotty until this fall. Dead spots and weak signals predominated, and a major sporting event would have overwhelmed capacity.

SRP Telecom helped NewPath Networks increase wireless coverage in and around the stadium by deploying the the first major Distributed Antenna System (DAS) in Arizona.

NewPath designs and operates fiber-fed wireless carrier networks to improve signal strength and network capacity.

Eight antenna nodes were installed on power poles and street lights in the Westgate area that are connected to SRP fiber-optic cable routed from a nearby SRP electrical substation. A secondary DAS was also built within the stadium.

"Each wireless carrier using the system might have had to build as many as three full cellsites to provide the same coverage quality," said Allen Garrison, SRP Telecom wireless manager. Michael Sherman, SRP Telecom manager, added "DAS promotes wireless service with minimal visual impact. The antennas blend in and are not readily noticeable unless you're looking for them. This technology supports the City of Glendale's objectives for siting wireless facilities and is sensitive to citizens of the area."

Carriers already signed on to lease capacity from the DAS include Cingular and T-Mobile. NewPath expects other carriers to join them. SRP Telecom is assisting NewPath to assess other nearby locations, particularly in high-demand wireless service areas such as downtown Tempe, downtown Scottsdale and at Williams Gateway Airport.

Salt River Project (SRP) is the major electricity and water provider to the greater Phoenix area. SRP Telecom was created in 1996 to allow third parties to utilize SRP's excess fiber-optic capacity, used primarily for high-speed communications for its utility operations and wireless facilities.

deliver more infrastructure solutions to our customers in the Northeast, as well as expand our offerings to customers in the Southeast and Central regions of the United States."

The purchase is consistent with National Grid's declared strategy to expand its business through both internal growth and strategic acquisition, providing more wireless infrastructure and service options for its clients. National Grid's U.S. customers include national wireless carriers and regional wireless operators that require network deployments from site leasing and development to comprehensive managed infrastructure solutions.

"We believe National Grid Wireless will be a solid business partner for ClearShot," said Brooke Dolan, CEO of ClearShot. "Their strategic outlook and shared customer driven philosophy in the use of our tower assets supports the expansion of this important infrastructure."

National Grid Wireless US provides turnkey wireless infrastructure, fiber networks and wireless services throughout the United States. National Grid Wireless is a wholly owned subsidiary of National Grid, the world's fourth-largest publicly held utility.

Media Venture Partners, San Francisco, advised National Grid Wireless on this transaction.

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TowerCo increases credit facility to \$75 M; continues march toward 1,000-tower goal

Cary, NC-based TowerCo, which in two years of operation has amassed a 360-tower portfolio, announced on Oct. 18 that its senior credit facility from CapitalSource Finance has been increased to \$75 million from \$35 million.

CapitalSource, headquartered in Chevy Chase, MD, is a specialized commercial financier operating as a REIT and offering first-mortgage, asset-based, cash-flow and mezzanine financing to small and mid-sized borrowers. The company had outstanding \$10.5 billion in loan commitments as of June 30.

New York-based investment banking firm DH Capital served as exclusive financial advisor to TowerCo for the Capital Source loan.

TowerCo said that the three-year, cash-flow-based loan would fund its current pipeline of committed tower builds that will take the company beyond 600 towers. The company's business plan is to amass a portfolio of 1,000 towers before the end of the decade.

"We are pleased with the growth TowerCo has achieved in its first two years and confident we will continue to fulfill the promises we have made to our customers and our investors," said Richard J. Byrne, TowerCo CEO. "This expansion of our senior credit facility, along with the support we received from our equity investors Tailwind Capital and Soros Strategic Partners, will support our goal to become a significant player in the tower industry."

TowerCo, which leases space on its multi-tenant towers to wireless service providers, said its agreements with leading wireless service providers will increase its tower ownership to more than 600 towers.

TowerCo was founded in September 2004 by industry veterans Byrne and Scot Lloyd, COO, as management, with support from Tailwind Capital, an independent private equity firm that manages the \$1.3 billion TWCP Funds.

As TowerCo's Cary, NC, location might suggest, both Byrne and Lloyd,

as well as several other TowerCo executives, held responsible positions with publicly traded tower company SpectraSite Communications before it was acquired by American Tower in 2005. Byrne served as president of SpectraSite's tower division. He also served as national director of business development at Nextel Communications, where he was responsible for the first major sale of Nextel's owned towers, a transaction valued at \$630 million. Lloyd served as executive vice president of sales and marketing at Global Signal and as vice president of sales at SpectraSite.

TowerCo's first two years have seen several significant investments and agreements for the company:

In April 2005, TowerCo entered into an exclusive agreement to build and buy towers for Nextel Partners. (In January 2006, TowerCo projected that it would purchase or develop 300 wireless communications towers for Nextel Partners through 2008.)

In August 2005, TowerCo secured the initial \$35 million senior credit facility from CapitalSource Finance.

TowerCo said at the time that the three-year, cash flow-based loan would help fund an aggressive growth strategy enabling it to expand its tower ownership to 1,000 by the end of 2009.

In January 2006, TowerCo raised \$30 million of equity from Soros Strategic Partners, an entity managed by Soros Fund Management, bringing total equity capital committed to the company at that time to \$60 million. DH Capital also served as TowerCo's investment advisor in the Soros transaction, as well as in the first Capital Source transaction.

In February, Cingular Wireless named TowerCo as one of its five national built-to-suit providers, expanding the relationship TowerCo began in 2005, covering 50 towers in Michigan and Ohio. TowerCo said it expects to do business with Cingular across the United States.

In April, TowerCo turned EBITDA positive. The company said it expected to meet its revenue and profit objectives during its infrastructure build and that it would continue to leverage its SG&A expenses with increasing revenues as it added towers, and tenants to them.

EME literature survey concludes there is no convincing evidence to support concerns about base-station RFE

Shock journalism and "I read it on the Internet" notwithstanding, there is no significant scientific literature indicating health risks to the general population from base-station sites, according to a report released by PCIA—The Wireless Infrastructure Association.

During its September meeting in Nashville, TN, PCIA announced the initial results of a literature review summarizing studies addressing potential health effects of radio-frequency emissions from wireless telecommunications base stations.

The project reviewed current literature discussing the environmental effects of electromagnetic emissions (EME), specifically radiofrequency emissions

(RFE) associated with mobile-telephone base stations, to determine to what extent wireless telecommunications facilities pose human health risks from current RFE exposures.

The reviewed publications, including those by government agencies, consistently concluded that there is no convincing evidence that RFE exposure from base stations presents a hazard to the general population.

Mike Fitch, president & CEO of PCIA responded, "PCIA hopes that this important data will assuage the sometimes emotional fears about RF, and that this issue will no longer have any impact on decisions on wireless infrastructure siting."

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PCIA, CTIA designated as AWS Clearinghouses

The FCC's Wireless Telecommunications Bureau (WTB) designated two non-profit trade associations to serve as AWS Clearinghouses in a decision announced on Oct. 4.

PCIA—The Wireless Infrastructure Association and CTIA—The Wireless Association both will act as cost-sharing clearinghouses for relocating wireless licensees as a result of the 2006 Advanced Wireless Services (AWS) auction. Each clearinghouse is tasked with administering fair and equitable cost-sharing functions for the relocation of Broadband Radio Service, Fixed Microwave Service, and Mobile Satellite Service incumbent licensees from the 2.1 GHz band.

"PCIA is pleased that the Commission recognized the public interest in designating PCIA as an AWS Clearinghouse," said PCIA's president and CEO, Michael Fitch. "Leveraging our experience from the Microwave Clearinghouse, coupled with our current level of proficiency, PCIA is well positioned to ensure an efficient relocation for all interested parties."

Steve Largent, CTIA's president and CEO, said the clearinghouse program would ensure "licensees can comply with FCC rules and ensure reimbursement for their relocation investments by new entrants for years to come."

In making AWS spectrum available, the FCC requires that new licensees pay to relocate existing systems operating in the 2.1 GHz band. New entrants subsequently entering the market must share relocation costs by reimbursing a proportion of those costs that have already been paid by others. The clearinghouse program distributes the burden of relocation equitably and promotes the rapid buildout of new networks. Both clearinghouses encourage companies to register relocation costs to ensure notification of all cost-sharing opportunities.

CTIA has contracted with Ashburn, VA-based Comsearch, a provider of engineering services and software, to handle the day-to-day operations of

relocation and cost sharing.

The WTB's decision followed its June 15 *Public Notice* soliciting proposals from entities interested in serving as a clearinghouse. **agl**

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AM Coordination Services	page 50	Pendulum Instr./XL Microwave	page 15
Atlantic Risk Management	page 2	Radio Waves	page 22
Biby Publishing	pages 6, 47, 49	RCC Consultants	page 46
CDMI	page 13	Shane Davis & Associates	page 44
Elk River	page 23	Specialty Tower Lighting	page 13
FarLight	page 39	Subcarrier Communications	page 52
Hark Tower Systems	page 31	Talley Communications	page 17
Higgs Law Group	page 50	Telewave	page 5
ITL	page 45	Tessco Technologies	pages 9, 37
Lawrence Behr Associates	page 15	Times Microwave Systems	page 17
McIntire	page 45	Utility Service Communications	page 14
NATE	page 11	Valmont Structures	page 25
PCIA	page 51	Waterford Consultants	page 19
PCTEL Antenna Products Group	page 9	Wireless Capital Partners	page 47

editorial index

American Tower	page 10	Morgan Stanley	page 46
Blackstone Group	page 46	National Grid Wireless US	page 47
CapitalSource Finance	page 48	NewPath Networks	page 47
Cingular Wireless	pages 47, 48	Nextel Partners	page 48
ClearShot Communications	page 47	PCIA	pages 8, 12-13, 43-46, 48, 49
Corning Cable Systems	pages 41, 43	Radio Waves	page 41
Crown Castle Int'l	pages 8, 10, 30, 42-43	Raymond James & Associates	page 10
CTIA	page 49	SBA Communications	page 10
Daniels & Associates	page 10	Soros Strategic Partners	page 48
DAS Forum	page 43	Sprint Nextel	page 43
DH Capital	page 48	SRP Telecom	page 47
Donahue & Blue	page 43	Stanford Group	page 10, 46
Global Signal	pages 8, 10, 30, 42-43	Stealth Microwave	page 41
Global Tower Partners	page 46	T-Mobile	pages 12, 47
Hark Tower Systems	page 41	Tailwind Capital	page 48
Media Venture Partners	pages 40, 46, 47	TowerCo	page 48
Midwest Tower Partners	page 46	Trylon TSF	pages 26-27

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