

# RADIO WORLD

Your guide to radio technology

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## This is not a test! (Oh, hang on a sec ...)

Changes are in store for the national alerting infrastructure.



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# Radio rules!

This NAB resource is a helpful guide for anyone in U.S. radio



Paul  
McLane  
Editor in Chief

**D**o you know precisely what information needs to be included in your station log? Are you current with the rules governing gaming ads?

Do you know the legal definitions of obscenity and plugola?

A short new training course from the National Association of Broadcasters can help with these questions.

The association is offering the scenario-based training to help people in U.S. radio gain a better understanding of regulations from the Federal Communications Commission. The course includes a lesson and four "learning activities" that take less than an hour to work through.

You also get an online PDF of the NAB's guidebook that summarizes FCC rules and policies about programming and station operation. The guide has been updated for 2021. Its material is divided into four sections.

The Content section explains rules about the broadcast of phone conversations, contests and promotions, defamation and privacy, hoax broadcasts, obscenity, payola and similar topics. Your air talent and promotions folks definitely need to be current on this material.

The Advertising section covers alcohol, lotteries and gaming, political advertising, tobacco and marijuana issues and donor acknowledgements, among other things. Some of these topics are sensitive and fast-changing and may vary by your locale. This is obviously an important section for your sales team.

Station Operation & Management digs into topics like the EAS rules, EEO, elimination of the main studio rule, RF radiation, station logs and tower lighting.

And there's a whole section on Public Files & Reporting. I think most broadcasters forgot to review those rules in recent years, given the rash of consent decrees that the FCC has recently announced; those settlements don't involve financial penalties, but sooner or later I suspect the commission will decide that broadcasters have had fair warning to get their online public files in order.

"Radio Rules: A Guide to FCC Regulations for Radio Stations" is written so that anyone working in radio can understand it. While the course and guidebook don't replace your station attorney, they might save you from having to make an uncomfortable call to that lawyer down the road.

The course costs \$89.99 (much less for NAB members). Info is at <https://education.nab.org/courses/28060>.

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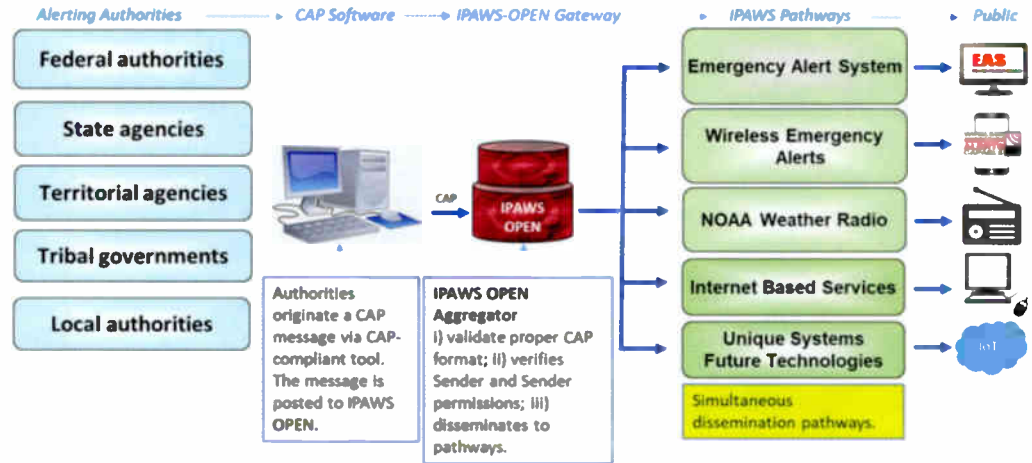
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### OPINION

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## State, Territorial, Tribal, Local - Level



system more fragile, and can result in message congestion and overlapping new and old information at a time when clarity is most critical.”

He continued: “EAS has always given any originator the ability to repeat information by simply sending an additional alert. This is a matter of training and procedures at the origination point, and perhaps modifications to alert origination tools to permit the easy reissuing of an alert. This is the best way to address the issue.”

Roy Baum, director of engineering and technology for Alpha Media in Topeka, Kan., said he is “adamantly opposed” to building any automatic repeat function into the existing alert generation system.

“If the emergency message is worth repeating, the entity generating the alert should review it and reissue it with updated information, presidential or otherwise. The current EAS equipment can handle this scenario without any problems,” said Baum, who chairs the Kansas State Emergency Communications Committee.

He said the EAS system was intended to be a “first alert” system, not a “continuous-flow-of-information” system.

### “Inflexible”

Adrienne Abbott, Nevada’s state EAS chair, said broadcasters should pay close attention to the FCC’s planned directives to state governments, especially if there is a vacuum in emergency planning in a given state.

“If a state or local official has ever been denied a request for an EAS activation or feels that the broadcasters aren’t giving EAS enough attention, this is an opportunity for those officials to take over EAS,” Abbott said. “To me, this should be a warning to broadcasters to get more involved in EAS and the SECC.”

Larry Wilkins, director of engineering services for the Alabama Broadcasters Association and the state’s EAS chair, thinks that “overall, the EAS system works well” in his state, but said state-level committees can be a weak link.

“Some states just do not have an effective SECC with representatives from all those involved. In Alabama our SECC includes state emergency

**Above**  
The Integrated Public Alert and Warning System open platform for emergency networks receives alerts from authorized originators and authenticates, validates and delivers them for dissemination over EAS, WEA and other channels.

management, governor’s office, National Weather Service, state broadcasters association, state cable association and radio and television engineers,” Wilkins said.

“The more diversified the list of EAS contributors, the better.”

Another state chair thinks the FCC is focusing on national-level messaging when errors with local alerts and weather hazards tend to be far more common.

“I would hope that more attention would also be paid to local alerts,” said Mike Langner, SECC chair for the state of New Mexico. “Amber Alerts are frequently issued with insufficient information or in some cases too much irrelevant information. Many states now issue Silver Alerts, and, of course, there are already well-established Blue Alerts.”

Langner’s primary concern is a lack of required training so that alert originators know exactly how to do it and how to avoid false ones.

“As I understand it, the failures so far have overwhelmingly been failures of human operators and not failures of the various systems’ hardware and software,” he said.

In addition, Langner says, the level of involvement by radio and TV managers in EAS planning tends to wax and wane.

“As stations are bought and sold and managements’ public service philosophies and practices change, State

Emergency Communications Committees should be able to readily change monitoring assignments in state plans to reflect reality on the ground,” he said.

“Currently the system for changing monitoring assignments is cumbersome, requiring a waiver of the old monitoring assignments from the

**“To me, this should be a warning to broadcasters to get more involved in EAS and the SECC.”**



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FCC. The system shouldn't be so inflexible."

## Online alerts

In addition to its NPRM, the commission issued a Notice of Inquiry to explore whether it is technically feasible to deliver EAS alerts through the internet, including through streaming services, and whether and how to use the internet to enhance the alerting capabilities of broadcasters and other current participants.

Several observers said the idea has merit.

"The current EAS rules do not require radio stations that carry EAS alerts, including presidential EAN alerts, to carry the alerts or tests on their internet streams," one said.

"Should the commission eventually adopt the idea of sending EAS via internet streaming, broadcasters who are streaming their program may have to make routing changes depending where their EAS unit is located, which could be at the station or out at the transmitter site."

Gary Timm, the Wisconsin SECC chair, said the commission should encourage all broadcaster EAS participants to include alerts on their internet streaming feeds, given that "an increasing number of people are listening to the radio via their internet-connected in-home speakers."

In many cases, he said, streaming feeds at a broadcast station are upstream of the EAS encoder/decoder in the audio chain.

Adrienne Abbott in Nevada said it is likely there will be concern among emergency alerting experts about overuse of EAS and WEA.

"There also will probably be pushback by some in the EAS community on the additional requirements for reporting false EAS activations," Abbott said.

Comments in the EAS NPRM are due to the FCC by April 20, and replies due May 4. The Notice of Inquiry about internet alerting has separate deadlines, with comments due May 14 and replies June 14. 📡



## EMF Asks for Quick Action on FM6

The Educational Media Foundation asked the FCC to decide quickly about FM6 stations, those low-power TV stations known as Franken FMs that effectively operate as radio stations in some cities on 87.7 MHz just below the FM band.

Those will go away when LPTV stations are required to cease analog service on July 13 as part of the nation's digital TV migration.

FM6 stations are already six years past when we first thought the stations would be forced to shut down. Many broadcasters, including NPR, think these operations should not be allowed, because the underlying TV licenses were not issued with radio service in mind.

The FCC has been considering allowing an exemption to keep them operating.

EMF operates the K-Love and Air1 networks. It also has an FM6 signal of its own in San Jose, Calif. It says "FM-to-LPTV" stations don't cause interference and provide useful service. 📡



## A New Name for Entercom

Entercom, one of the biggest names in U.S. commercial radio, changed that name to emphasize a focus on the broader world of audio. Entercom Communications Corp. Audacy. It will also "sunset" the name of its digital platform Radio.com.

The new corporate name emphasizes the role of audio in the company's business; it also has echoes of "audacity." The company's stock ticker symbol was set to change from ETM to AUD in early April. 📡



## Bob du Treil Senior Dies

Louis "Bob" R. du Treil Sr., an award-winning consultant who was also the son and the father of prominent engineers, has died at age 88. His death was announced by the Association of Federal Communications Consulting Engineers, of which du Treil was a past president.

In 2011 the former owner and president of du Treil, Lundin & Rackley was honored by the National Association of Broadcasters with its Engineering Achievement Award. NAB cited his reputation as a creative and insightful engineer and his work including contributions to international discussions on mediumwave (AM) directional antenna technology in the 1980s.

Colleagues told Radio World in 2011 that du Treil's strength was in visualizing designs for

directional arrays and then making innovative proposals to the FCC in cases that had no clear-cut precedents.

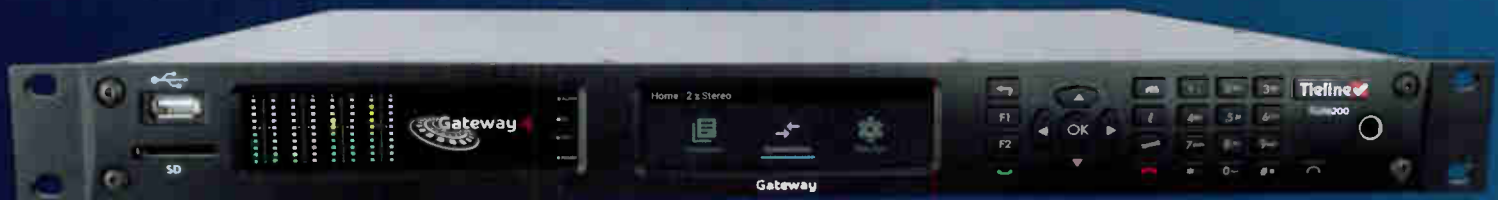
Du Treil was introduced to radio by his father Joe, a prominent engineer who contributed to construction of WWL in the late 1920s and early 1930s.

In 1983 he launched du Treil-Rackley with Ronald Rackley. It soon merged with A.D. Ring & Associates, which was headed by John Lundin, to form du Treil, Lundin & Rackley Inc. Several of its employees have served on the AFCCE board. "dLR continues to the present day under the leadership of Bob's namesake, Bob du Treil Jr, and partner, Jeff Reynolds," according to AFCCE. 📡



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\* The Gateway-4 codec supports 4 channels only and is not upgradable to support more channels.



## NeoGroupe NeoScreener Call Screening Tools

Software developer NeoGroupe released a suite of tools for remote screening of calls for radio talk shows.

NeoScreenerSmart is a mobile application for iOS and Android, available from those online stores.

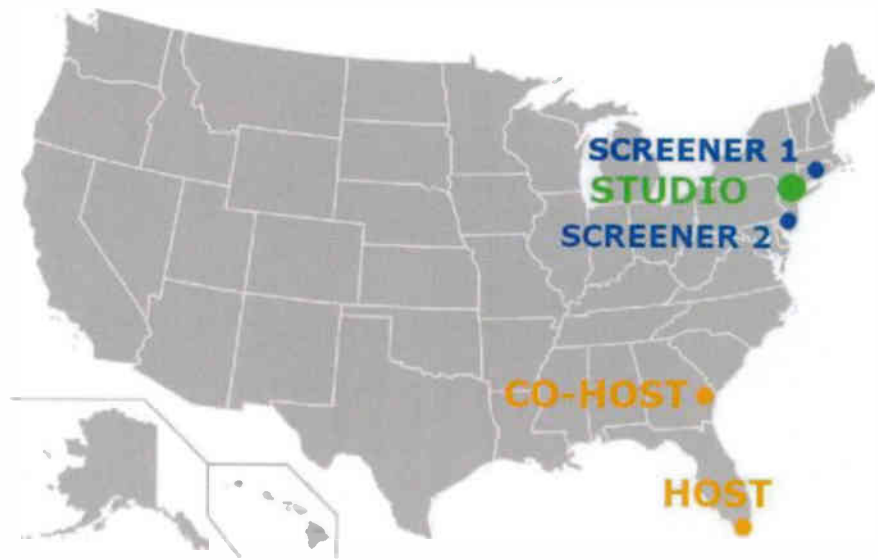
The company highlights VPN compatibility of its NeoScreener Windows application software, for both audio and control of phone lines.

No brands of telephone sets are required; the call screener can operate phone lines from his/her home using a USB headset and microphone. NeoGroupe also highlights its cloud-hosted shared database.

The company cited examples of how the system can be used. A studio in New York City has a Telos VoIP phone system. Call screeners can be at home in New Jersey and in Connecticut, securely using the NeoScreener application. The host uses the NeoScreener application in Florida and sees the cued calls. He is able to air them in New York.

A co-host uses the iOS application on an iPad in Georgia to see the same calls that the host sees. He also has the same abilities to air calls, hold or drop them from the mobile application.

This allows the continuing remote operation of the show as when it



operated in the studio, side-stepping COVID and travel restrictions.

NeoScreener has also modules to handle prizes, winners, texting for callback and website interfaces. It is available in 10 languages. NeoScreener offers compatibility with major phone systems and recently added support for AEQ Systel VoIP Systems and the AVT THipPro line of phone systems.

Info: [www.neogroupe.com](http://www.neogroupe.com)

## Telos VXs Is Virtual VoIP System

Telos Alliance has launched the Telos VXs Virtual VoIP System, a descendant of the hardware-based VX introduced a decade ago.

"Broadcasters can deploy VXs on their servers in the rack room, on shared servers in the centralized data center, or in cloud instances,"

the company stated.

"These deployment options deliver the benefits of virtualization, such as easier facility-wide upgrades, cost-efficiency and automated deployment without site visits." The platform is scalable from a single or multiple studios to a multi-location system.

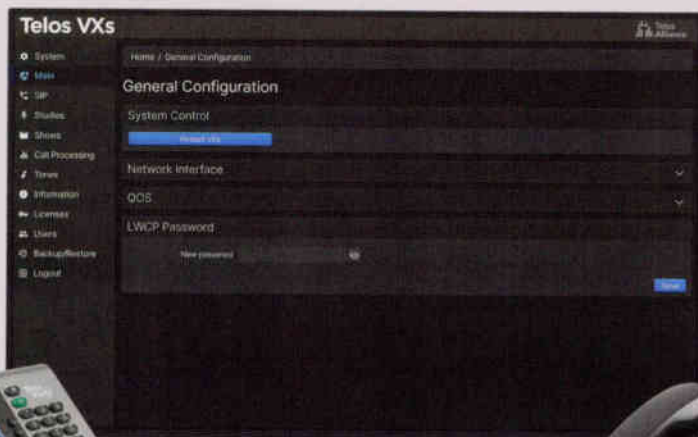
Features include fifth-generation audio processing, Smart AGC, three-band adaptive Digital Dynamic EQ, three-band adaptive spectral processor, noise gating and Acoustic Echo Cancellation. "HD voice calls benefit from VX's native support of the G.722 codec, instantly improving caller speech quality," Telos stated.

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alongside AES67-enabled Dante devices.

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Info: [telosalliance.com](http://telosalliance.com)





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John Bisset

has spent over 50 years in the broadcasting industry and is still learning.

He handles western U.S. radio sales for the Telos Alliance, holds SBE CPBE certification is a past recipient of the SBE's Educator of the Year Award.



**Send your tips!**

Workbench submissions are encouraged and qualify for SBE recertification.

Email [johnpbisset@gmail.com](mailto:johnpbisset@gmail.com).

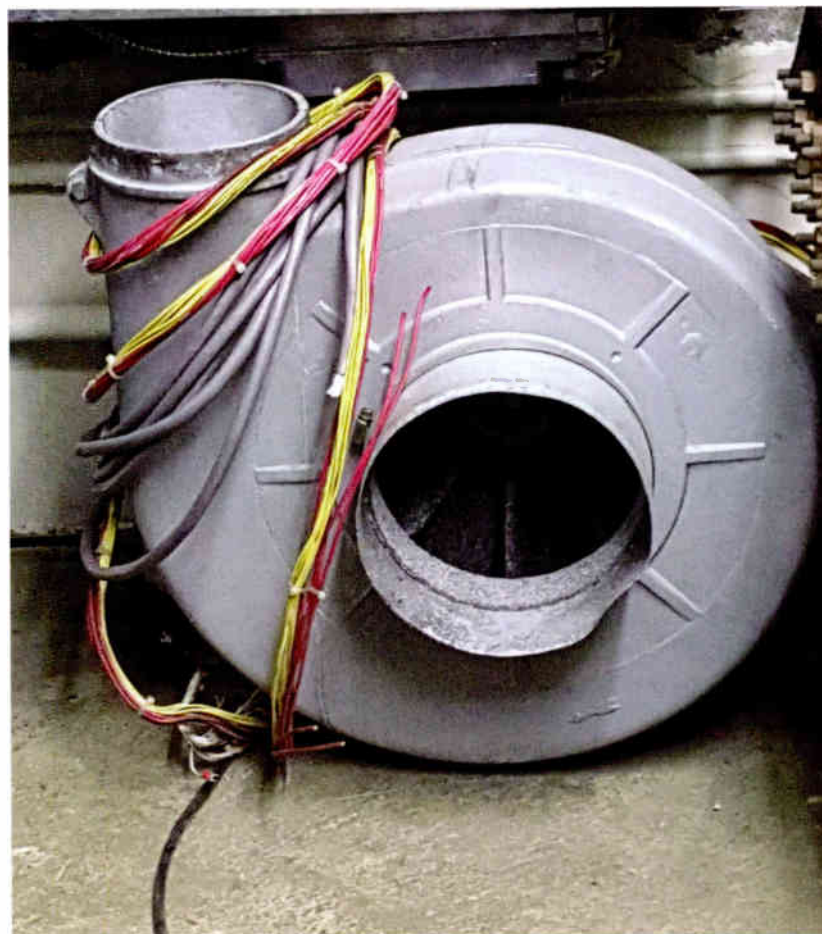
# Blower motors and AM data points

Keep one of these babies handy at your high-power transmitter site

If you've never lost a blower motor in a high-power transmitter, your time is probably coming!

It is a helpless feeling when the transmitter completely shuts down. Then add the frustration of trying to find a replacement, not to mention removing the old motor and assembly.

Honolulu contract engineer Dale Machado found a replacement blower and motor assembly to keep on hand, and added to the insurance policy by pre-wiring it. Creating the wiring harness is one less thing to think about when you are off the air. In the case of three-phase motors, pre-wiring also reduces the chance you'll miswire the phase, causing the motor to run backwards!



## Data points

Consulting Engineer and frequent Workbench contributor Frank Hertel of Newman-Kees RF Measurement and Engineering compiled useful information for engineers working with AM stations. Frank bases the information on his own experience and on documents available from Kintronic Laboratories ([www.kintronic.com](http://www.kintronic.com)).

Frank has been called in after lightning hits to repair a number of antenna tuning units at the base of AM towers. Lightning knows no season! Frank's summary keeps things simple and easy to understand.

First discussed are estimated impedances for a single reference tower that is series-fed, and operating at 1000 kHz (1 MHz) at heights of 150, 90 and 60 electrical degrees. Under these conditions, the values in the first table are typical:

(150 deg. height)	782R	-j13	(Capacitive Reactance)
(90 deg. Height)	44R	+j18	(Inductive Reactance)
(60 deg. Height)	11R	-j113	(Capacitive Reactance)

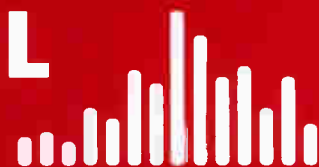
If you are using an isocoupler on your (*single*) series-fed tower, it is assumed that the isocoupler has a typical capacitance of around 100 pF (*or more*). Thus, the isocoupler will present its added shunt value, to your single series-fed tower.

When the isocoupler's shunt value is added in parallel to the impedance of your single series-fed tower, the addition of the isocoupler will shift the single tower's impedance and typically yield the approximate values in the second table:

(150 deg. Height)	623R	-j315	(Capacitive Reactance)
(90 deg. Height)	45R	+j17	(Inductive Reactance)
(60 deg. Height)	10R	-j105	(Capacitive Reactance)

**Above right**  
A spare transmitter blower is a great idea. Pre-wiring it is even better!

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Frank adds that a single 90 degree height, series-fed tower will normally use a simpler ATU matching circuit. This circuit may be more efficient as a result of needing fewer components and lessened power loss, but this is debatable. A single series-fed tower that is shorter than 90 degrees will yield a low R value with capacitive reactance. A single series-fed tower that is taller than 90 degrees will yield a higher R value with capacitive reactance.

Finally, it is worth noting that a tower height of slightly more than 90 degrees should yield an R value of approximately 50 ohms with a manageable reactance value.

Spring is in full swing for many readers. If you find yourself doing AM work and needing AM components, visit the Kintronic site.

### Unbalanced-to-balanced adaptor

San Francisco contract and project engineer Bill Ruck has built a number of unbalanced-to-balanced adaptors over the years. He is careful to pay attention to absolute phase — if you're not, the design can invert the audio.

There is an easy fix to this; the input inverting op amp output is connected to Pin 3. The inverted unity gain IC

“If you find yourself doing AM work and needing components, visit the Kintronic site.”


connection is Pin 2. Swapping Pins 2 and 3 will ensure that the output is in absolute phase with the input signal.

Bill prefers to use +/-15 VDC as a power source, but he has also used inexpensive DC-to-DC converters to take a nominal 9 to 12VDC signal and make +/-15VDC.

And Bill has found it wise to add a small capacitor across the op amp feedback resistor in order to limit bandwidth and make the amplifier stable. Although this is not critical, he tries to pick a capacitor value to be equal to the resistance at around 150 kHz.

### Storage strap

Over the years, we've shown a variety of cable management solutions from brands like Velcro and other hook-and-loop manufacturers. But the one shown at left serves a dual purpose. The metal grommet helps organize and hang bundles of remote broadcast cables. In your Technical Operations Center, the grommet secures large bundles of cables, especially of the Ethernet variety. The fastener secures the cables without deforming the wire wrap.

This heavy-duty nylon strap is available from Kopyy and they come in small, medium and large sizes. There is a quantity discount. Go to <https://kopyy.co/> and search for "storage strap." 



**Right**  
A heavy-duty hook-and-loop cable organizer with grommet.



### TONS OF GREAT TIPS!

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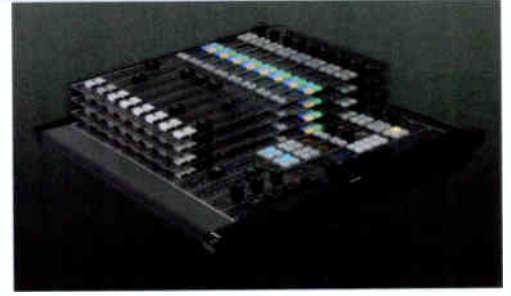
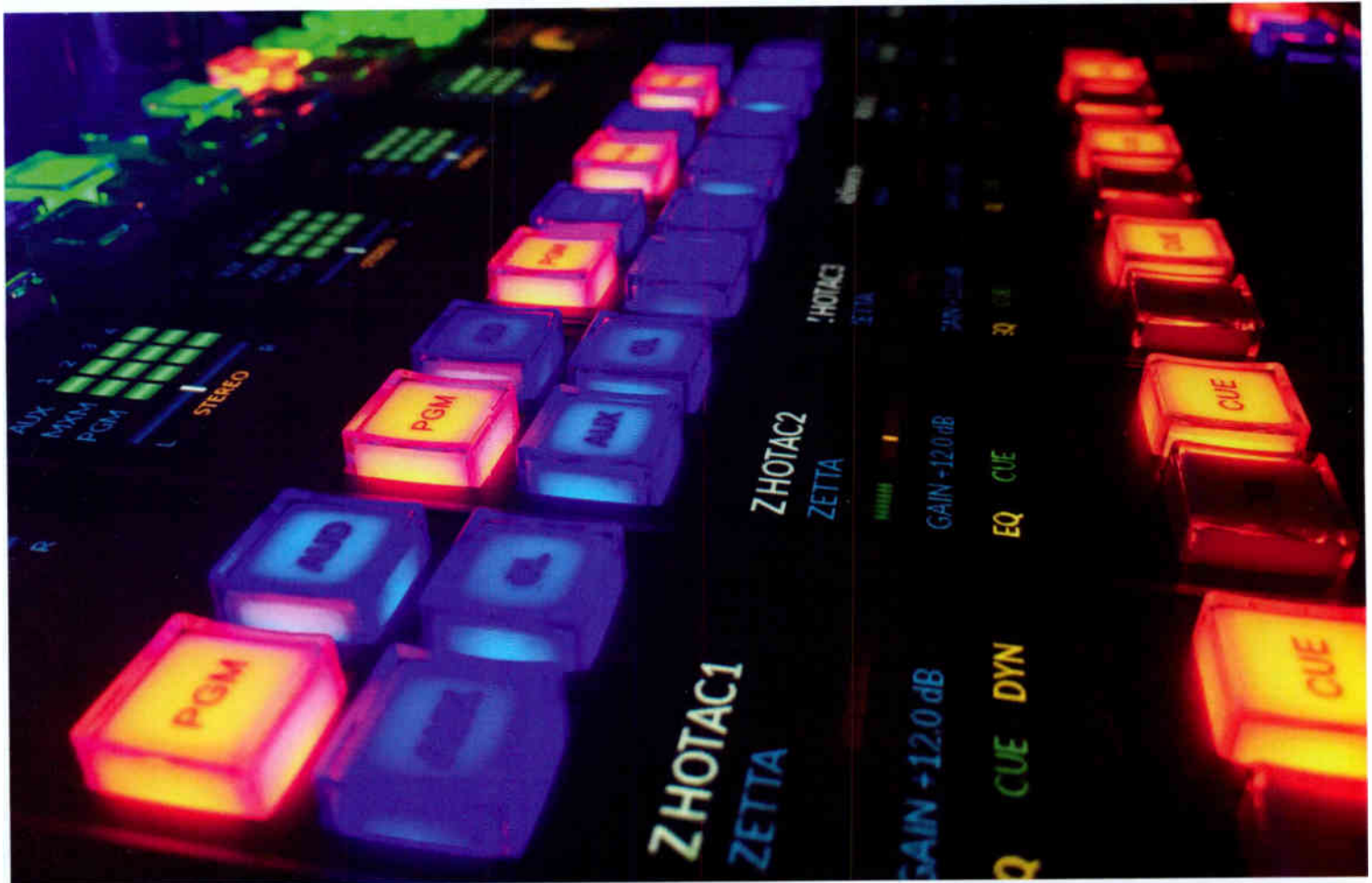


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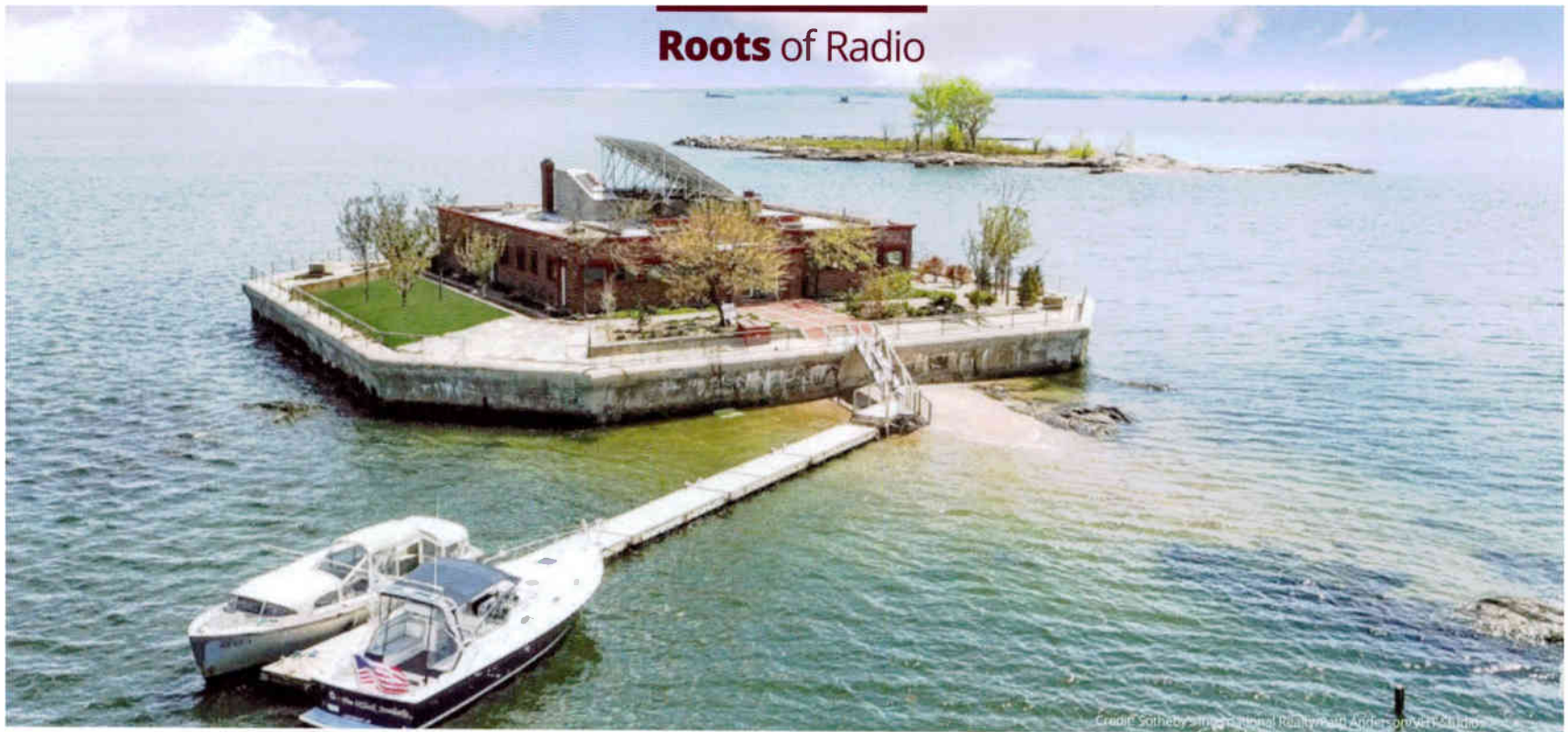
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**Writer**  
Charles S. Fitch  
P.E.

## WCBS: A radio island in the stream

How a powerhouse AM station ended up with a distinctive tower on a little rock outcrop

18



**Comment**  
on this or any story. Email [radioworld@futurenet.com](mailto:radioworld@futurenet.com).

**T**his is the story of a station whose transmitter for two decades sat on an island — arguably the most famous such “island station,” WCBS 880.

The non-directional 50,000 watt powerhouse station, now owned by Audacy, the former Entercom, has been doing the demanding 24/7 format of news, sports and information for more than 50 years. At times it has been the nation’s most listened to station.

How did its transmitter end up on an island?

The saga of this flagship of the Columbia Broadcasting System started with the cigar business of Samuel Paley in the early 1920s. He owned a distribution company at a time when one of America’s growing male vices was a good cigar — or multiple cigars — a day. He dealt mainly with imports and focused on building brand recognition and brand loyalty to succeed in this emerging business.

Radio was “trending” at the time, the “new big thing.” Ad placement was the bailiwick of Sam’s son William Paley; they started using radio — ads and mentions — to get cigars into as many mouths as possible.

The power and the cost-effectiveness of radio piqued the younger Paley’s interest. Shortly thereafter the CBS epic began when he took over management of a nascent

network of 16 stations, the Columbia Phonographic Broadcasting System. In short order the Paley family and partners bought the operation. With 51 percent ownership, he ran and now controlled the network.

The file on WCBS starts with a different set of call letters. In 1924 the Atlantic Broadcasting Company applied for a New York station and got the apropos call of WABC. As with many stations of this period, WABC meandered around the dial until in 1932 it wound up on 860 kHz with 50 kW non-directional and a transmitter in Wayne, N.J.

The population of metropolitan New York was expanding along roads and transportation lanes into Brooklyn, via the famous bridge, and New Jersey, via the Holland Tunnel. Those demographic trends and travel corridors influenced the choice of new transmitter sites. Managers of other early stations serving New York City such as WOR and WEFB did likewise.

### Central location

In 1936, CBS purchased the signal, adding to its station portfolio and distribution network.

In 1940 it sought to move the transmitter from New Jersey to what was then called Little Pea Island, located in lower Long Island Sound and northeast of Manhattan.

**Above**  
Columbia Island today, on the market for \$13 million.



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# Roots of Radio

CBS bought the island and installed an aux transmitter for testing. The results demonstrated that the seawater conductivity would ensure formidable coverage in New York and New Jersey, and bonus extensive penetration into populous sections of Connecticut.

With the 1941 North American Regional Broadcasting Agreement, the station moved from 860 to 880 kHz shortly before the final move.

Little Pea Island — later renamed Columbia Island — is a modest tidal rock of about one acre in size. It became home to an extraordinary engineering installation featuring a 410-foot self-supporting top-loaded tower. In 1941 two underwater cables brought power from New Rochelle to the site, and operations began.

News accounts said CBS spent approximately \$500,000 (the equivalent of about \$9 million now) to construct the tower, transmitter with backup and the building, including emergency housing for 10 workers.

A headline in the New York Times in October 1941 read: "Radio 'Island' Comes to Life; WABC's New Transmitter Is Called an Engineering Dream — Built on a Man-Made Rock in Long Island Sound."

Daily boat runs brought a change of operating crew, food, potable water and other creature comforts from the "mainland." Weather and waves were not always cooperative. The bedrooms, kitchen and other quarters were put to use by stranded crews when circumstances isolated the site.

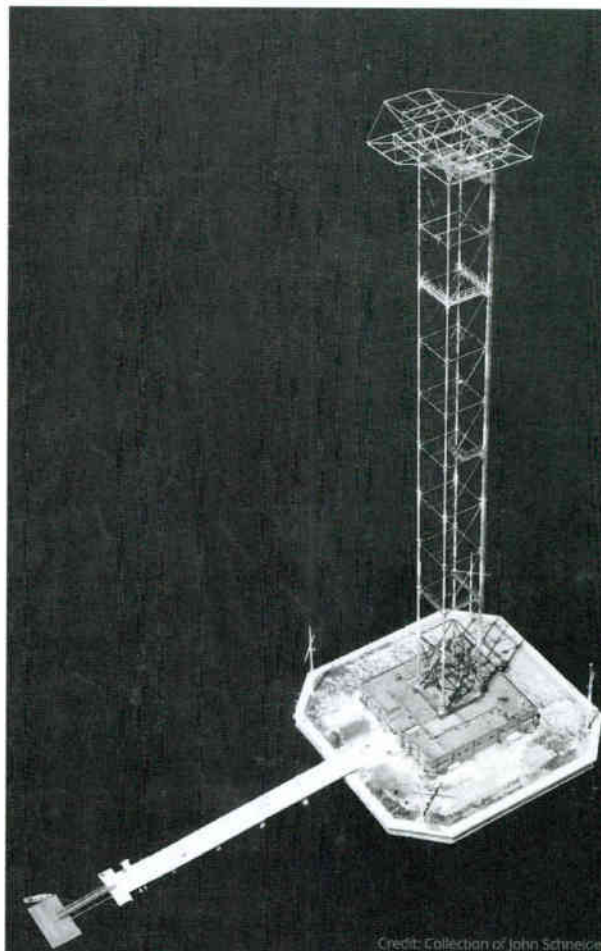
Federal Radio, a division of IT&T, built the transmitter from its own advanced design. Few details for this rig are available but Federal used it as a model for CBS's later shortwave station further out Long Island. Evidently this earlier, similar 50 kW unit was plate modulated. The high voltage supply took three-phase power direct from the power company at 4600 volts using banks of mercury vapor rectifier tubes to make DC. Filaments were transformer-powered unlike earlier motor generator schemes.

Jim Weldon of border blaster fame worked on the Columbia Island station as a Federal Radio engineer.

The official starting date was Oct. 18, 1941, with Kate Smith and Orson Welles, personalities well connected with CBS, participating in the inauguration. In 1946 the company received approval to change the station call letters to WCBS.

Up until the late 1950s transmitters were operated on site by engineers who were on duty whenever the station was on air.

The station had a tremendous signal penetration and was the very definition of a



Credit: Collection of John Schneider

"clear-channel, Class A station" that reached well into the heartland of America. Further, the saltwater location provided possibly an even bigger reach throughout the Atlantic, making it the voice of New York City to many far away at sea in war and the following peace.

Like other similar important big stations including WTIC and WCCO, WCBS during World War II had a guard detail to protect the facility from sabotage or disruption.



Access to the island was by boat.

The Federal engineer, Beth Klein Collection

**Above right**  
This image of the 410-foot self-supporting top-loaded tower appeared in a 1941 ad in Broadcasting magazine for Federal Telegraph transmission equipment. It was headlined "The New WABC: Key Station of the Columbia Broadcasting System." The ad stated that the facility would deliver "performance characteristics unsurpassed by any similar installation in the history of broadcasting."

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One story, legendary but probably true, is that in thick fog, the crew once found its way to the island by following the induction field created by the currents flowing in the underwater power cable.

## Moving on

Columbia Island provided a superb signal for CBS, but this rock was an expensive site to operate under any definition.

With the emergence of TV and the dropoff in network radio revenues, CBS explored locations nearby that were easier and more convenient to reach.

Eventually the corporate engineers settled on High Island just off the Bronx shore as a more practical site with a desirable land connection via a sandbar bridge.

After some delay and birthing pains, WCBS moved to that site in early 1962, where it remains today.

WNBC, 660, was diplexed into the tower shortly thereafter when crooner Perry Como decided he wanted the nearby site that NBC was developing for his New York City home! WNBC is now sister station WFAN 660. (It was this site that was knocked off the air by the fatal crash of a private airplane in 1967 on the day before WCBS launched its all-news format.)

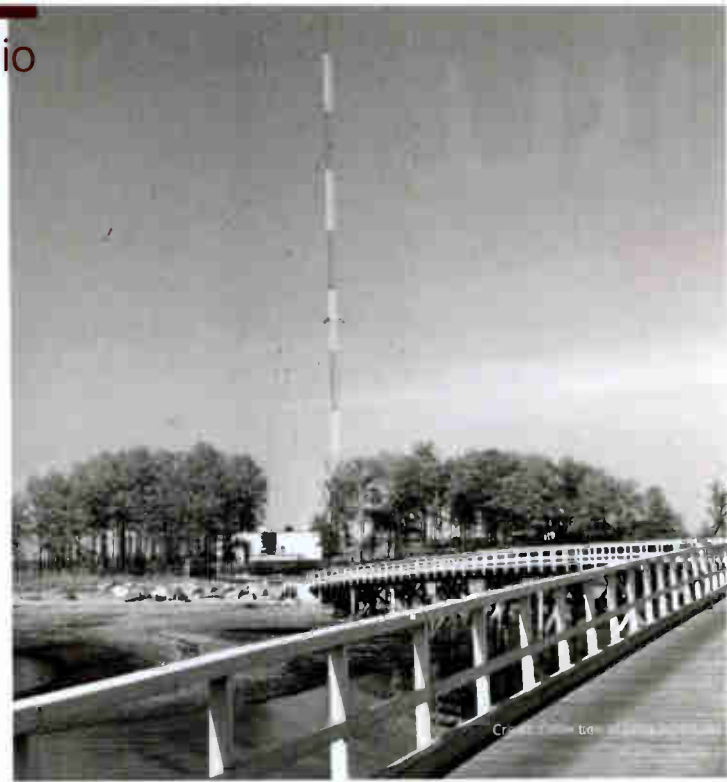
Meanwhile, according to news accounts, Columbia Island was purchased by a show-business couple who aired a breakfast conversation show from their home there; then it went through multiple hands including the College of New Rochelle.

Actor Al Sutton eventually acquired it and built a "green" home on the site; you can find online stories about its construction, which is interesting in itself. As of December, Zillow listed it for sale at \$13 million. You can take a video



## More Info

If interested, we'll visit some other islands in the stream in future columns. Please let us know your favorite or most engaging island station. Email [radioworld@futurenet.com](mailto:radioworld@futurenet.com).



tour (<https://tinyurl.com/rw-columbia> or Google "Columbia Island for sale").

But regrettably the 20-foot-square, 410-foot-high tower is long gone — regrettable, because for any resident the radio reception using that stick would have been extraordinary.

Broadcasting has often found some advantage or necessity to locate transmitter sites on islands. These islands vary from the isolated home of KUHB on frigid St. Paul Island in the Bearing Sea to the defunct directional AM of WRIZ built on an island of pilings in Biscayne Bay in Florida. 📻

## Right

The station transmitter site was later moved to nearby High Island, shown.

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# BUYERSGUIDE

Audio Processing

## About Buyer's Guide

We publish User Report testimonials for various equipment categories throughout the year to help potential buyers understand why colleagues chose the equipment they did. Do you have a story to tell? Write to [brett.moss@futurenet.com](mailto:brett.moss@futurenet.com).

## Telos keeps it all in the family

One Omnia.9 replaces seven processors and adds digital composite

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**TRELLEBORG, Sweden** — The last bit of the sound chain has sometimes been the most awkward. Long distances, humming copper wires, external interference, heavy rain, lightning and hard-to-reach towers can be challenging. Not to mention the expensive sound processors that have to be placed at the transmitter out in the woods or up on the mountain!

Now, with the technology that transmits a complete MPX signal from the studio-side audio processor to the transmitter, it has become so much easier.

In a recent project for a customer, we replaced seven AoIP codecs, seven sound processors and seven RDS encoders with a single Omnia.9 processor and seven Omnia MPX Nodes.

Having the Omnia.9 in-studio also means that the customer's Livewire production environment now delivers a completely unbroken digital audio chain from playout server to transmitter, and each transmitter gets fed the same great Omnia.9 sound.

### Quick thinking

The connections from the studio to the seven sites are of different classes. Point-to-point fiber, radio link and internet via ADSL. Since the MPX Node only requires a 320 kbps data stream, there are no problems with buffering. In an emergency, 4G mobile data also works well, but there can be problems with that, for example, longer latency.

It came as an unpleasant surprise to another client when their old internet-connected AoIP equipment was hacked



and destroyed, with dead air as a result. Luckily they already had an Omnia.9 in the studio.

When they called me for help, I quickly ordered an Omnia Audio  $\mu$ MPX FM composite license for their Omnia.9 (basically turning it into an STL), and took my spare MPX Node to their transmitter. Only a short while later, they were on air again, and now they no longer have to worry about data intrusion because the MPX node has a built-in secure firewall.

There are several methods of implementation. In some cases, the customer already has an audio processor but it does not support  $\mu$ MPX. The Omnia MPX Node is also available as an encoder providing an easy end-to-end connection by simply adding two to the workflow. The MPX node encoder can even send redundant streams to multiple MPX Node decoders for multiple transmitter sites.

The easiest implementation is if the sound processor is an Omnia.9, which has the secure  $\mu$ MPX function built in. It can send up to 16 simultaneous streams (or more on a private network that permits multicast), so if it is a large station with 16 transmitters, it can save a lot of money as the air chain no longer needs expensive sound processors at each transmitter. One Omnia.9 in the studio and 16 MPX Nodes is enough. This reduction in technology investment means there will be more money left over for content and staff. 🎧

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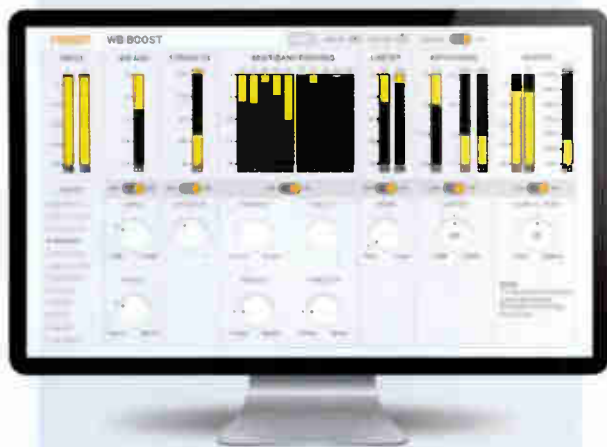
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World Radio History

## Tech Update

### Ecreso Five-Band Sound Processor

The new Ecreso five-band sound processor is a fully digital software solution integrated into the Ecreso FM transmitter range and for improving signal quality and reliability.

It is customizable, so radio broadcasters can craft their own sound to meet their specific needs and music content thanks to capabilities and a full set of presets for different formats and requirements.



Courtesy of the way the processing is integrated into the broadcasting chain, with the processor algorithms running inside the direct-to-channel digital modulator, the Ecreso five-band sound processor simplifies the traditional broadcasting chain.

Since it is available as a software license, it also reduces cap-ex and op-ex by eliminating the need for a separate audio processing rack hardware and those associated maintenance costs.

The company says that from audio input to RF output, the robust DSP/FPGA platform provides control of the signal and its purity while reducing hardware, consumption and maintenance costs, which is more than ever the challenge for radio operators.

For information, contact WorldCast Systems in Florida at 1-305-249-3110 or WorldCast Systems in France at +33-5-57-92-89-28 or visit [www.worldcastsystems.com](http://www.worldcastsystems.com).

## Tech Update

### Inovonics Has New Firmware for Novia 272 FM Processor

Inovonics refines its line of audio processors with firmware release Rev. 1.0.0.6 for the Novia 272 FM stereo processor.

The release addresses some issues for saving RDS settings and RDS messages rendering correctly.

The Novia 272 is a compact DSP-based digital audio processor with extra functions such as stereo generator, dynamic RDS encoder, along with streaming input/output. The company says it incorporates an intuitive, menu-driven setup, 10 factory presets and a dynamic IP/browser interface compatible with any desktop or mobile device.

Recalling Inovonics' roots in the recording industry, the Novia digital processor incorporates three bands of compression with parametric EQ, which the company says is unique to the radio broadcasting industry. It notes that parametric EQ is a mainstay of recording and live sound, providing continuous control over every parameter.

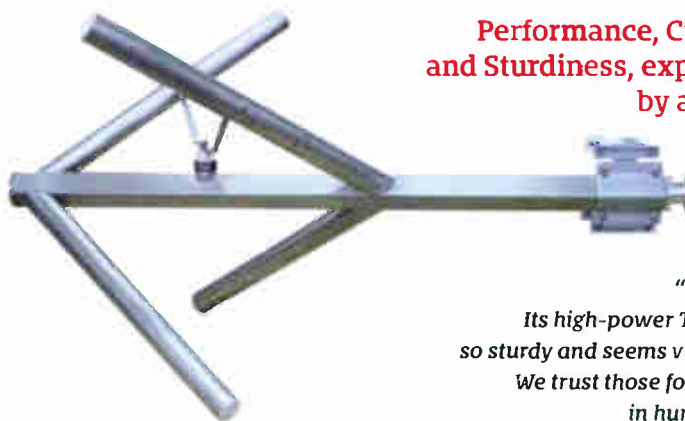
Inovonics recommends that users update their firmware if not running Rev. 1.0.0.6. The firmware file can be downloaded from the Inovonics web page — [www.inovonicsbroadcast.com/product/272#downloads](http://www.inovonicsbroadcast.com/product/272#downloads). It recommends reviewing the upgrade procedures in the firmware notes and the Novia 272 user manual, both accessible on the Novia 272 product page.



For information, contact Inovonics in California 1-831-458-0552 or visit [www.inovonicsbroadcast.com](http://www.inovonicsbroadcast.com).

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DAVID HOXENG, ADX Communications, Pensacola, Florida

**\* TFC2K arrays can be rated up to 75 kW power handling.**

**Writer**  
 Tony  
 Abfalter  
 director of  
 engineering,  
 Leighton  
 Broadcasting

# Wheatstone MP-532 opens eyes at Leighton

Compared to the flagship X5, a few less features and a lot less dollars



**More info**

Jay Tyler at  
 Wheatstone in  
 North Carolina  
 at 1-252-  
 638-7000 or  
 visit [www.wheatstone.com](http://www.wheatstone.com).

**ST. CLOUD, Minn.** — I'll be the first in line for new audio processing if I think it can give us an edge, but only if it's truly a step up and not just the same old tech in new packaging.

We serve a predominantly young population here in the college town of St. Cloud, Minn. With 70 other stations competing for those ears, our six stations will take every advantage we can get.

I'd heard about the Wheatstone MP-532 AM/FM/HD multipurpose processor before it was officially released. The inside scoop was that Wheatstone's Jeff Keith had designed into it a new five-band "windowed" AGC, which he called Windy.

As different program material comes in, it adapts to make sure that the multiband section and the five-band limiter later on are always fed consistent audio. This, I was told, was one of the reasons why the MP-532 could deliver those "airy" highs and deeper lows we're all hoping for in the business.

It was worth a listen.

I got one of the first MP-532s and put it on our classic rock station, KZPK, K277BS/ZRock (HD2) 103.3 MHz. The installation experience was typical Wheatstone. Super intuitive, with presets that immediately gave us a much-improved sound right out of the box.

**Friendly install**

I'll get to the sound in a minute, but first I'd like to pause for a moment and give you a busy engineer's perspective on audio processing.

Yes, most of us like to tweak processing. But we also have a huge appreciation for a smooth installation experience.




I need to get it on the air, make minor adjustments and move on in life. That's one very strong suit of this processor, its ease of installation.

To be fair, I know my way around Wheatstone processors, having owned X1s, AM-55s, FM-55s, X3s and X5s.

As easy as the setup was, this alone is not a good enough reason to invest in an audio processor. It has to sound good; that's the core mission for processing, and for radio.

So how did the MP-532 do? Impressive. Very impressive.

They weren't kidding when they said the highs would be airy and detailed and the lows would be deep. The MP-532 has the most articulation and clarity of any audio processor I've ever heard. It effectively kicked its predecessor, the FM-55, into the prehistoric dinosaur age and can hold its own next to Wheatstone's flagship processor, the X5 FM/HD processor, but with a few less features and a lot less dollars.

One nice bonus is that it is a multipurpose processor (that's what the MP is for), which means it would make an excellent backup for both my AM as well as FM stations. But, it's really too good to be a backup processor, so I have it running continuous programming on ZRock. 

**“ Yes, most of us like to tweak processing. But we also have a huge appreciation for a smooth installation experience. ”**

## Tech Update

### New Software Update for Orban's Flagship Audio Processor

Orban released a software update for its OptiMod 8700i audio processor. Version 1.3.5 provides several improvements for the 8700i's functionality as well as a few bug fixes.

The range of the Monitor Drive control is extended downwards to -12 dB, which provides more control over the amount of "FM limiter sound" in the monitor output. Furthermore, the company says, the MX limiter's ability to control distortion is improved when the 50 µS preemphasis is active.

With the new update, the Limit mode of the ratings encoder loop-through is modified so that the ratings watermark now appears on the left and right outputs in addition to the composite output. And RDS injection level is reduced by 0.8%.



Orban says the OptiMod 8700i

is its flagship product for FM and digital radio (DAB+, HD Radio, streaming). It distinguishes itself by features such as the Xponential Loudness algorithm, which Orban says brings hypercompressed music back to life. Dual redundant power supplies and safety bypass relays offer more peace of mind.

The free software update is available on the Orban website.

For information, contact Orban in New Jersey at 1-856-719-9900 or Orban Europe in Germany at +49-7141-2266-0 or visit [www.orban.com](http://www.orban.com).

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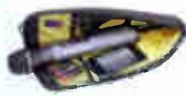
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**ZEPHYRHILLS, Fla.** — WZPH(LP) is a unique radio station in many ways. We hold the world record for 3 million songs in a row, nonstop oldies rock'n roll since March 24, 2005, commercial-free. We are locally owned and have been serving the community without the request of on-air donations.

Being close to the Tampa, Fla., market is challenging, we get crushed in the ratings, as well as coverage area.

For many years, our audio lacked the luster of the powerhouse stations, and it just didn't seem to shine on the radio dial. The content of our material was good in quality, but by the time the audio was heard on a table radio, it just didn't sound the same. Our audio

the simple operation and setup to our engineer.

Since he was local, and with the new introduction of the product, he was willing to deliver the SEPsoniX personally and assist our engineer with the installation and settings.

After Jim's arrival, the installation was rather quick. In the words of our engineer, "I have never had such a simple processor setup until now."

The processor contains all the necessary adjustments from the front panel, including sufficient LED indicators to let you know how the unit is operating at a glance. Once the input levels were set, the unit performed nicely, and the audio quality seemed to be less



chain consisted of an Aphex Compellor, followed by an Aphex Dominator passed into a stereo generator with peak limiter.

No matter what we did with hours of setting changes, the audio either sounded either squashed, or annoyingly raspy to the ear. We needed something different, but with the price tag of the processing of today, we weren't able to afford the big-ticket processors any time soon.

Our station engineer advised us that there was a product recently released on the market, the JT Communications SEPsoniX processor. It featured simple installation and an affordable cost (\$1,100). He said that it contained features such as split-band compressors (so that the low and high frequencies would be processed independently), AGC to maintain

gain along with a stereo generator with peak composite limiter (to protect overshoots).

Being located "down the road" from Zephyrhills in Ocala, we contacted Jim Trapani of JT Communications, and he was very accommodating, explaining

squashed yet loudly competitive.

Increasing the audio input did not increase the typical fatiguing audio sound we were experiencing with our earlier processing combo; rather it sounded open and cleaner. The high-frequency limiter that precedes the stereo generator did a good job on the high frequencies, and we did not hear the smearing and "spitting" of the highs that our previous processing failed to resolve.

The composite clipper could be adjusted, from mildly functional to aggressively loud.

The stereo generator produced good separation at multiple frequencies, but we decided to keep the signal mono, as the increased noise that occurs when operating stereo was not beneficial to our already FCC-limited signal.

We spent the next few hours jumping around the dial, listening and comparing our audio to our competitors. Although we did not "jump off" the dial as some stations do, we were quite competitive to the audio quality, and longtime listening did not sound fatiguing to our ears. We wrote a check to seal the deal.

WZPH is in a small metallic building, directly underneath



the antenna tower. Lightning is typical during the summer months, and we have added a good amount of grounding to our equipment to avoid casualties.

This past winter we took a hit. Although the transmitter survived, all audio wires that crossed paths were fused. Our engineer was able to replace the damage within a few hours and we were back on the air.

The SEPsoniX contains some lightning protection on the BNC output, and the only damage was the output IC (which is socketed). It is a common part which the engineer had some in his parts bin.

Overall, our investment into the SEPsoniX has resulted in a great-sounding, competitive station without the emptying of the pocketbook. For startup and small-budget stations, this is an excellent choice, and it appears that the SEPsoniX will provide years of great results. 🎧

## Tech Update

### Ross Video Teams With Orban for Radio/Streaming Processor



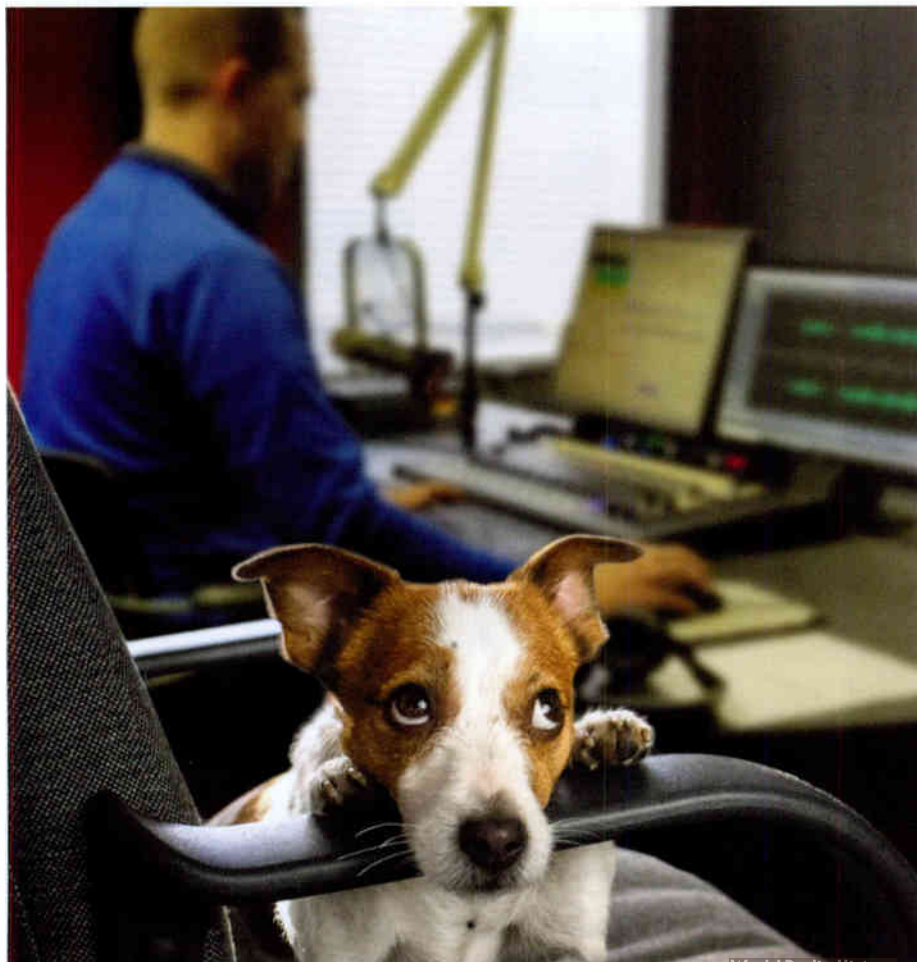
Many radio pros know the Ross Video name for, well, video. It's in the name.

But now Ross Video has teamed up with audio processing technology and equipment maker Orban to launch the Radio and Streaming Audio Processor for IP and AES67 digital audio networks. It includes HD Radio applications.

Built around Orban's OptiCloud along with Nielsen Watermarking, Dolby AC-3 Dolby Loudness Levelling technologies, the rackmounted hardware-based processor features two-band AGC, five-band compressor/limiter, a three-band parametric EQ, phase corrector, phase enhancer, bass EQ and limiter, downward expander, stereo synthesizer, Orban OPTIMOD loudness control, loudness control and 50 custom presets along with unlimited user presets.

Orban's Mike Pappas said, "The broadcast community, including radio, is moving steadily toward software-based solutions for the broadcast air chain. The new softGear platform from Ross, which incorporates next-generation Orban processing along with Nielsen audio watermark encoding and Dolby audio, brings powerful tools to radio broadcasters. It's available now — we have a launch customer who has ordered hundreds of channels — and the platform is backed by Ross' 24/7/365 worldwide support."

For information, contact Ross Video in Ontario at 1-613-652-4886 or visit [www.rossvideo.com](http://www.rossvideo.com).



World Radio History

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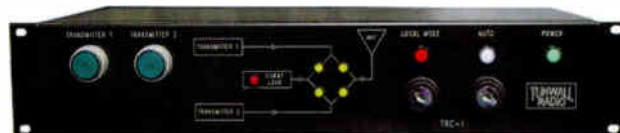
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# The end of the needless climb

Drones get the information to engineers quicker, safer, better

**D**rones, “they ain’t just for kids anymore!” Farmers are using them to measure crops, real estate developers are using them to survey land and medical professionals are even using them to deliver supplies to unreachable areas in disaster zones.

There’s no question about it, these unmanned aerial vehicles or UAVs make it easier to go where no human can or should go, and in the radio business that’s up a 400-foot or higher tower.

## The Needless Climb

One drone = Hundreds fewer climbs. Drones bring with them a technology that allows engineers to ascertain and validate different types of structures, pattern signals and various equipment, all without human intervention other than the pilot on the ground. Inspection by drone eliminates the “Needless Climb,” a phrase coined by QCommunications to describe an unnecessary and dangerous human journey up the side of an enormous tower to get a picture or investigate an irregularity.

## Safety first

Without putting a climber on a tower, it’s now possible to confirm that a signal is reaching everybody it needs to reach — or not. The drone can perform different types of inspection services efficiently, accurately, safely and faster than a human without presenting a hazard, not only to the pilot, but to the customer or any else in the area.

Three of the most common and important inspections are:

**Pattern verification** — confirm antenna functionality, installation, operation and coverage, and enable maintenance trouble shooting.

**Thermal line inspection** — identify hot spots, burn outs, potential burnouts, blocking in system, or connection joint security.

**Structural inspection** — directly related to the structure and all components surrounding it as part of the anchoring system. This inspection

provides “points of interest” of any potential structural issues and potential failure points so the station engineers can make the best decision to ensure the structure’s safety. This service can also be used for the installation of any new equipment, can validate locations of new equipment and can indicate if a structure is rated to carry a new load.

## Not only safe, but smart

Every drone flight reduces a tower climb, lessens risk to life and arms station engineers with information they



need to make better, faster, more intelligent, actionable decisions.

With numerous drone service options for tower owners, station engineers and sales and marketing teams to choose from, the need of climbers outside of installation and hands-on maintenance is a thing of the past. Perhaps the greatest benefit of using drones is “tower surveys,” video inspections of a structure prior to any climbers arriving onsite. Climbers can use the imagery to ensure the structure is safe, thus minimizing injury of death.

The reports are also used as interactive engineering tools to mitigate customer viewership issues.

Historically, data was just used to prove FCC minimum requirements were met. Now it’s so much more than that. Drones identify damage, exactly where it is, and make it easier to fix so the signal is back quicker.

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## ... and good with money

Advertising only works if it reaches its audience. On the FM side, advertising is dependent upon how far it can go. If a signal is compromised, not reaching its target, advertising is not being delivered and revenues are not being fully generated.

Salespeople, therefore, have become enormous drone fans. The drone captures the data to provide an actual picture and model of the coverage, not a hypothetical. Salespeople are able to use the reports as sales tools to give advertisers factual, visible data about demographics making success more attainable, sales are increased, and stations can charge more money for advertising.

## It's all about the base(line)

Have you ever asked yourself: Is my 50-year-old tower as sound structurally as it was 50 years ago? Am I getting all the signal strength I should from it, and do I even know what I should expect from it?

Well, the answer is probably not. There could be mistakes residing on the tower for 20, 30 or 40 years. There could be a bee's hive, or a bird's nest, or maybe someone painted over something that shouldn't have been painted over and signal strength is being compromised, or gradually degrading.

Chances are ... you don't know because no one has been up there in decades, maybe the last time was when a light bulb needed to be replaced.

Send the drone up and take a baseline for everything. Whether the tower is five decades old, or it's brand new, a baseline for your RF and structural effects will

allow you to move forward confidently and evaluate solutions for problems down the road. You can explore, compare and determine what it takes to fix, and what makes sense to invest capital in, and what doesn't.

In the past several years, numerous towers have fallen. A birds-eye inspection would have uncovered structural weaknesses that could have been repaired and a tower saved.

Once you've a baseline, how often should this be done? It depends on the initial find, the age of the equipment and if everything meets regulations.

In the beginning, we'd recommend every five years, but if something changes, or something happens such as a problem with your signal or you've been notified that you're radiating too much out of the line, then send in the drones, because perhaps a seal is broken and you can't see it, but a drone can and no one's safety is put in jeopardy.

## The bottom line

And here's the section everyone has been waiting for! First, reports of this magnitude that supported both engineering and sales didn't exist until now. Secondly,



**Above right**  
Warning signs are placed around the work area, entry points of long driveways and other critical locations.

**Below**  
An image from QForce uses Google Earth to build a safe flight path to optimize data collection. Each circle, line, icon and pin indicates a structure, tower or viability of an aerial path.



cost and delivery — about half price of a traditional minimal report by human engineers would cost approximately \$60,000 to \$75,000 following a week and a half of data collection that would result in about 40 photos.

QCommunications fees are approximately \$20,000 to \$45,000 and include an interactive HD 4K video and interactive visual and planning tools. QComm also encourages engineers to witness the drone data collection process in real time and see their structure preliminary pattern start to generate on their screens for immediate results. A comprehensive report is then delivered within 10 days.



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