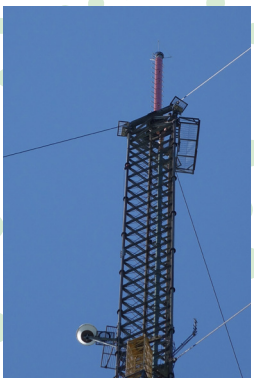
2018 WBA Broadcasters Clinic

October 16-18, 2018 • Madison Marriott West



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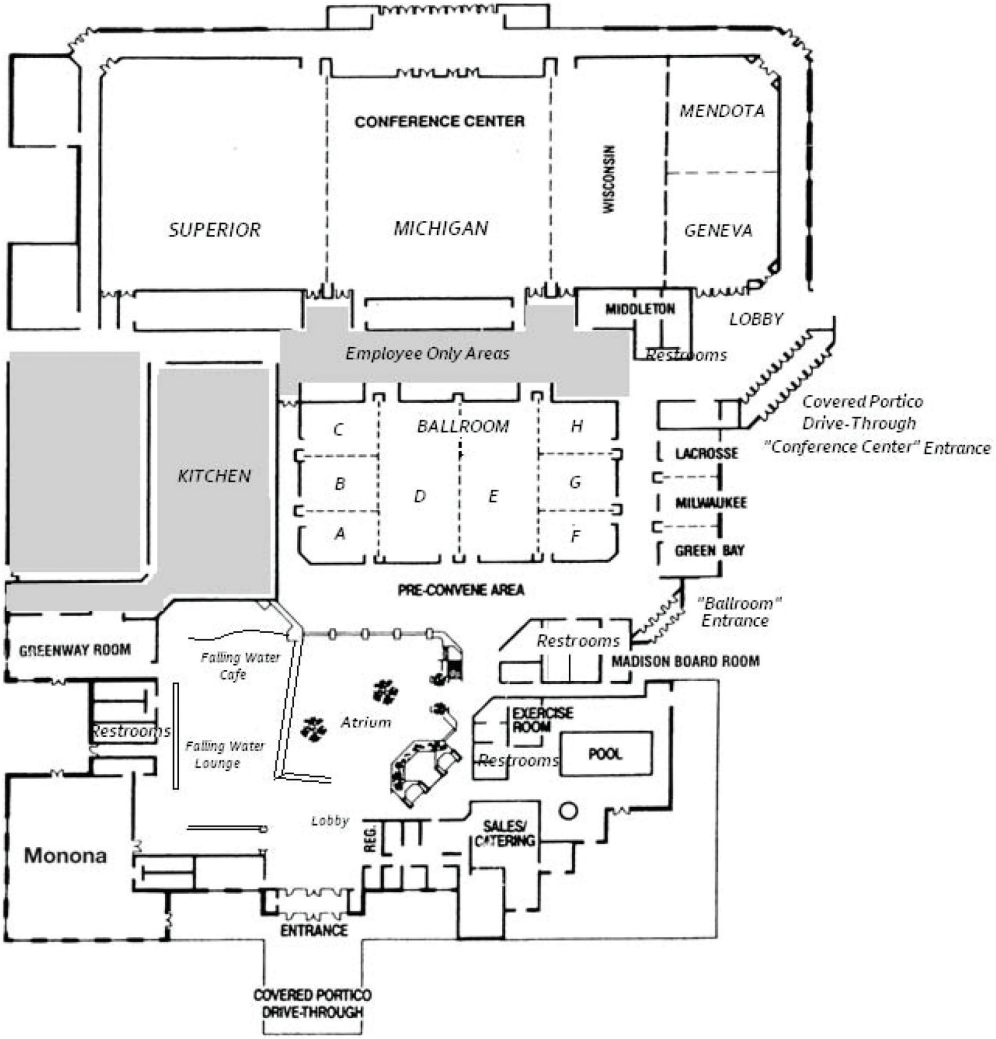

Tuesday, October 16

9 a.m. Broadcast Equipment Virtualization is Here Now

Alex Hartman and Kirk Harnack, Optimized Media Group LLC & The Telos Alliance

"Virtual Radio" is the buzz-phrase among forward-thinking radio broadcasters. The term implies new tools, new methods, and new workflows for producing compelling audio content. Now, everything a radio producer needs can easily fit on a multi-touch touch screen. Moreover, the back-end systems to which consoles - virtualized or not - connect are even more prime candidates for virtualization technology. The presenters will not just talk about theory. They we will show specific examples of virtualizing what has traditionally been purpose-built hardware. They'll provide practical guidance that attendees can "take home" and try for themselves. This presentation explores workflow improvements through equipment virtualization. It also examines several approaches in achieving similar outcomes aimed at producing more meaningful content with accuracy and convenience.

9:45 a.m. Analyzing Capacity Requirements for Transporting Audio Over IP STLs

Tony Gervasi, GatesAir Intraplex

How much bandwidth do I need on my IP connection? This is one of the most frequently asked questions. This presentation will analyze bandwidth requirement for transporting various formats of audio, such as: with popular compression algorithms like Opus and AAC, linear audio, and various configurations of FM MPX. The talk will provide details on the critical stream parameters for the various audio formats and their impact on the network load and the choice of the packet loss protection methods for reliability.

10:45 a.m. Reducing FM Combining Costs Using Efficient Configurations

Sean Edwards, Shively Labs

There are many situations where two or more stations may want to share antennas and when that happens there is a need to combine these stations with a configuration of RF filters that will provide sufficient isolation between the frequencies. Depending on the number of stations, the relative power levels, and the frequency separation between stations, the combiner may require one, two, three, or four cavity filters in order to achieve the desired level of input to input isolation. Since filter costs are directly related to the number of cavities per filter, it stands to reason that using the fewest number of cavities to achieve the maximum amount of port to port isolation is the most efficient approach. Topics will include: A review of bandpass and notch FM filters and their many different configurations and the advantages of tailoring the RF filter system to the site requirement over a "one size fits all" approach.

11:30 a.m. New FM Processing Technology Brings Studio Quality Audio to the Receiver

Jeff Keith, Wheatstone

Ever compared your station's analog FM air signal to the original program audio and wondered why the highs weren't as open and airy as the original? Pre-emphasis is one of the longest standing limitations of FM broadcast, and every FM processor, regard less of brand or model, creates its own unique fingerprint trying to manage it. Whatever magic the processor's clipper does (and they're all proprietary) it's where that fingerprint comes from. What if an FM clipper didn't have a fingerprint? What if it could put the original program's open and airy highs over the air amazingly loud and clean? Hear how a new and completely non-intuitive approach to FM peak control lets studio-like program details come through over the air.

continued on next page

Tuesday, October 16

1:15 p.m. HD Radio — Past, Present and Future

Jeff Welton, Nautel

We will discuss the evolution of HD Radio™ technology, talk about the challenges early adopters faced, how those challenges have been overcome through advances in the technology, and dispel some of the myths based on the shortcomings of the early days. Welton will also present the current state of the art, as well as delving into potential future possibilities, discussing field-proven potential uses for the technology that could benefit broadcasters, including multiplexed stations and Single Frequency Networking.

2 p.m. Wireless Last Mile for Remotes

Chris Tobin, Newark Public Radio

How to ensure better quality of service at an Outside Broadcast (remote) using off the shelf WiFi technology. Tobin will look at why using a dedicated link at your remote will ensure regular and reliable broadcasts which can be used to generate revenue for your station. We'll have a brief overview of the 5.8Ghz tech with a look to the future.

3 p.m. Preventing the Next Tower Disaster

Dave Davies, Hodge Structural Engineers

Over the past five years, our industry has witnessed a 100 percent increase in tower disasters due to anchor failure, often the result of galvanic corrosion to anchor steel. In some cases, insurance companies have denied loss claims due to lack of owner due diligence to detect underground corrosion-related damage. This presentation introduces new and inexpensive processes for investigating and managing corrosion risk while explaining how to conduct the more traditional methods of inspection. Topics to be discussed include, Analytical Investigation, Ultra Sound Inspection, Limited Excavation, and Dig to the Block. We'll talk about everything needed to formulate a corrosion management plan mandated by the newly revised TIA-222-H Standard.

3:45 p.m. Prepping for a Liquid Cooled Transmitter

Don Backus, Rohde & Schwarz

While liquid cooled transmitters have been available for television for a number of years, they are making new inroads in radio especially at higher power levels. What considerations need to be made when implementing liquid cooling? What site prep needs to be done? What are the functional differences between air cooled and liquid cooled transmitters? Finally, what are the real benefits to broadcasters for using a liquid cooling infrastructure?

4:15 p.m. Exclusive Exhibit Time

7 p.m. Nuts and Bolts Session: Broadcast Bionics and IV Soft Comparisons

Patrick Berger and Greg Dahl, WBA Clinic Committee

Broadcast Bionics and IV Soft will demonstrate products along with live interfacing with the audience and remote talent. These units are lower cost versions of using a Tricaster for streaming to Facebook Live or any radio or TV stream on their web page. Beer and brats will be served.

Wednesday, October 17

8:30 a.m. Radio Technology Update

David Layer, NAB

All over the world, radio is changing as are the ways that consumers obtain audio services. Hybrid radio (over-the-air plus mobile broadband) implementations are proliferating, digital radio listening is on the rise, and data on radio listening and attribution are becoming increasingly important to the business of radio. The National Association of Broadcasters (NAB) is exploring these many facets of radio technology and working with broadcasters, automakers, digital distribution providers, and others to keep radio on the cutting edge. In this presentation, David Layer, VP, Advanced Engineering with NAB's Technology department will explore these topics and more.

9:15 a.m. Personal Safety in Today's Broadcasting Environment

Panel Discussion moderated by Juli Buehler, WLUK-TV News Director and including panelists Dan Shelley, RTDNA Executive Director, Tom Allen, Quincy Media Regional Vice President, Dave Devereaux-Weber, WORT-FM Board President, David Oxenford, Wilkinson Barker Knauer, LLP, and Mike Koval, Madison Police Chief

10 a.m. Exclusive Exhibit Time

1:30 p.m. Trade Secrets of a Guy with a Network Analyzer

Jeremy Ruck, Jeremy Ruck and Associates

Nearly all broadcast engineers will be exposed to a network analyzer at some point in their career due to preventative maintenance, the occasional system failure, and the on-going television repack. In this presentation we will look at the theory, construction, and use of the network analyzer, including case studies, to demystify this RF system workhorse. Learn some of the trade secrets of the guy with a network analyzer.

2:15 p.m. DC Legal Issues for Engineers

David Oxenford, Wilkinson Barker Knauer, LLP

Broadcast engineers operate in a regulated environment – with the FCC and other government agencies watching what your station does. What hot issues at the FCC should the broadcast engineer be watching? Experienced Washington DC attorney David Oxenford will give you an update on the Washington DC policy and regulatory issues to which you should be paying attention.

3:15 p.m. EAS Update: Equipment, Relationships, and Alexa

Gary Timm, Chair, EAS Committee

Get the latest on new FCC actions affecting your Emergency Alert System (EAS) equipment, the upcoming National EAS Test, and updates on IPAWS, WEA, CAP, and our relationships with state and county officials. Plus a discussion: With the advent of people "listening to the radio" on smart speakers, does your streaming feed contain EAS alert audio?

continued on next page

Wednesday, October 17

4 p.m. **How Changes in the New TIA222-H Standard for Antenna Support Structures Will Affect Wisconsin Broadcasters**

Dave Davies, Hodge Structural Engineers

Effective January 1, 2018, the newest revision of the tower design standard will affect broadcasters. This presentation will summarize the differences in the tower design and maintenance standard most likely to affect Wisconsin tower owners and provide suggestions for how to navigate the changes. Topics to be discussed include: new design wind speed and ice loads, the tower owners' ability to designate risk categories affecting tower loading, new anchor shaft corrosion control requirements, and new tower modification requirements including the TIA-322 Rigging Plan Review stipulations and ANSI-ASSE A10.48 Safe Practices Review.

4:45 p.m. **Wireless Microphone Interference**

Katie Miller, T-Mobile

6 p.m. **SBE Meeting: Air Cooled v. Water Cooled**

Jeff Welton, Nautel and Don Backus, Rohde & Schwarz

Thursday, October 18

8:30 a.m. **AWARN (ATSC 3.0)**

Fiona A. James, AWARN Alliance

The Advanced Warning and Response Network (AWARN) Alliance is developing the world's most advanced emergency alerting system. The AWARN Alliance is a cross-industry, international coalition of broadcasters, consumer electronics makers, and tech companies. AWARN is based on the Next Generation Television transmission standard (ATSC 3.0). When fully deployed, AWARN can deliver geo-targeted, rich media alerts to an unlimited number of enabled TVs, connected cars, and handheld devices. Fiona James will outline use-cases for AWARN alerts and how the future of emergency alerting might unfold. James will also discuss current and planned outreach on the social science of alerting and how this is shaping our UXUI.

9:15 a.m. **ATSC 3.0 Phoenix model market**

Ray Thurber and Kent Aschenbrenner, E.W. Scripps

Cooperation is key in this very different regulatory approach. The "lighthouse" structure is an example of this cooperation. Ten Phoenix TV stations offer an open ATSC 3.0 test bed to encourage partner ecosystems and develop industry consensus. The consortium goals include: addressable advertising, mobility, and an elegant consumer user interface. Top consumer and broadcast equipment providers are active participants in this effort. Pearl is managing the Phoenix model market.

11 a.m. **Cleveland ASTC 3.0 test**

Kelly Williams, NAB

This session will discuss NAB's experimental ATSC 3.0 test station in Cleveland, Ohio. Williams will outline the system design and present data from various test programs conducted at the facility. The session will conclude with lessons learned and insights on transitioning to ATSC 3.0.

1 p.m. **Repack Field Installations: What We Learned from the First Installations**

Martyn Horspool, GatesAir

TV Repack is now well underway and moving forward at a fast pace. This presentation will take a close look at some repack installations performed by GatesAir showing the planning, equipment delivery, and execution from start to finish. It will highlight various challenges and obstacles that were faced along the way and will conclude with some practical recommendations on how your station can get through repack as effortlessly and as painlessly as possible.

1:45 p.m. **Tower and RF Projects: Planning and Execution**

Shawn Knotts, ERI

This presentation will focus on proper implementation of current industry consensus standards governing construction on telecommunication towers with emphasis on broadcast structures. The presentation will also cover roles and responsibilities of the primary construction stakeholders along with an overview of construction classifications per the current ANSI/ASSE A10.48 and ANSI/TIA-322 standards, gin poles, and general construction considerations.

2:30 p.m. **Everything Fred Baumgartner Knows About ATSC 3.0 and the Dallas Project**

Fred Baumgartner, OneMedia

Next Gen Broadcasting is both TV as we know it and a major departure. There are many equally authentic understandings. Next Gen is seemingly everything – mobile, OTT-OTA, Ultra High Definition, digital ad insertion, even radio and someday, maybe, virtual reality. Most important is that Next Gen is “extensible.” It’s so flexible that all but a tiny piece can be reinvented and repurposed at will. From under the hood to the top-level business plans and opportunities that are beginning to redefine broadcasting, this presentation looks at how the pieces fit together, and specifically how ONEMedia and a consortium of broadcasters are reimagining and, in fact, building out the next generation of broadcast.

Tom Allen

Tom Allen is a Regional Vice President for Quincy Media, Inc. and is based at WKOW-TV in Madison. Tom oversees television stations in six of Quincy's 12 markets, which are located primarily in the Midwest. Prior to joining Quincy, Allen was Senior VP of Broadcasting for Capitol Broadcasting Company in Raleigh, North Carolina, responsible for television and radio stations in Raleigh, Charlotte, and Wilmington, NC. Allen has also held management positions at stations in Cleveland, Tulsa, and Nashville.

Kent Aschenbrenner

Kent Aschenbrenner has been a TV and radio broadcast professional for 41 years. Based at WTMJ in his hometown of Milwaukee, he currently oversees Scripps spectrum repack at 17 stations and nine LP displaced stations. His responsibility for 34 radio stations is winding down due to the sale of Scripps radio assets. Aschenbrenner earned his A.A.S. in Electronic Communications from Milwaukee Area Technical College, and a B.S. in Business and Management Systems from the Milwaukee School of Engineering. He serves on the NAB TV Technology Committee.

Don Backus

Don Backus is Account Manager, Radio Transmitters for global communication technology leader and innovator Rohde & Schwarz, handling Canada and the United States. Prior to joining Rohde & Schwarz in 2017, Backus was Eastern US Sales Manager for Broadcast Electronics for five years. Backus was previously VP of Sales and Marketing at ENCO Systems for 13 years and prior to that has held a number of positions in radio as an on-air personality, production director, general manager, and chief engineer.

Fred Baumgartner

Fred Baumgartner, CPBE, is a fellow of the Society of Broadcast Engineers, a past trustee of the Ennes Foundation, and Fellow of the Radio Club of America. Currently, he is the Director of Next Generation Broadcast Implementation for Sinclair Broadcasting. Previously, he was Director of Broadcast Engineering for Qualcomm's MediaFLO project and directed Leitch/Harris' Systems Engineering group.

Juli Buehler

Juli Buehler is News Director at WLUK-TV FOX 11 in Green Bay. She's been news director for 23 years and previously worked as an executive producer and producer at stations in New Haven, Connecticut, Eau Claire, Wisconsin, and Rochester, Minnesota. She is a member of the WBA Board of Directors.

Dave Davies

David K. Davies is the Director of Engineering for Hodge Structural Engineers, an engineering consulting firm specializing in the broadcast tower industry. Davies holds degrees in both civil and mining engineering and is a 35-year veteran of the tower industry. He authored the Electrical Grounding and Corrosion sections of the ANSI-222 G Standard. Davies is a member of the SBE, National Association of Corrosion Engineers, and the TIA/EIA committee responsible for the composition of standards governing tower design, fabrication, and modification.

David Devereaux-Weber

David Devereaux-Weber has more than 40 years of experience in cable television, radio, and television. He was Director of Engineering at Complete Channel TV in the 1970s and Director of Engineering at TDS Cable in the 1980s and on the cable TV and IT technical staff at the University of Wisconsin-Madison from the 1990s through 2016. Devereaux-Weber is one of the founders of WORT-FM in Madison and is currently the President of the WORT Board.

Sean Edwards

Sean Edwards is an RF Designer and Project Manager for Shively Labs. Sean's 21 years of experience includes test technician, field representative, international support, design, and product improvement. He served six years in the U.S. Navy as an electronics technician working with the fire control systems aboard ships specializing in the N.A.T.O. Sea-sparrow Surface Missile System. He is currently concentrating on product development where he lends his experience using EM Simulation and RF circuit design software in the modernization of existing designs.

Tony Gervasi

Tony Gervasi's background includes more than 30 years of experience in the broadcast industry, including 20 years as Sr. VP of Engineering and Technology for Nassau Broadcasting, where he bought his first Intraplex STL Plus system in 1996. During his tenure at Nassau he continued to rely on Intraplex products to provide the audio and data transport for Nassau stations in markets such as Portland, Boston, Cape Cod, Allentown, Pennsylvania, Trenton/Philadelphia, Annapolis and Frederick, Maryland.

Kirk Harnack

Kirk Harnack brings over 35 years of hands-on experience in broadcast engineering and education to his position at Telos. His expertise in putting technology to work in broadcast facilities has driven notable expansion in IP-Audio, VoIP for broadcast, and leading-edge virtualization strategies. Harnack maintains an active, hands-on role in broadcast engineering through his positions as a partner and VP-Engineering of South Seas Broadcasting, Inc., Delta Radio, LLC, and Kaua'i Broadcast Partners, totaling 14 AM and FM radio stations.

Alex Hartman

Alex Hartman is the owner and partner of Optimized Media Group in St. Cloud, Minnesota. He is a 19 year broadcast engineer, and 25 year IT guy. Hartman specializes in the eccentric and bleeding edge, learning all things new and adapting non-traditional items into a broadcast facility.

Martyn Horspool

Martyn Horspool is currently Product Manager for Television Transmission at GatesAir, in Mason, Ohio. Horspool has been employed in the broadcast industry for 44 years, starting with the Independent Broadcasting Authority in the United Kingdom in 1974 as a transmitter maintenance engineer. His move to Harris Broadcast Division in 1980 was the start of a long career that has paved the way to his current role, including numerous positions in service, engineering, sales support, and product management.

Fiona James

Deputy Director of the Advanced Warning and Response Network (AWARN) Alliance, Fiona James has helped build a coalition of leading broadcasting and technology companies. Using Next Gen Broadcasting, these companies are together creating the world's most advanced emergency alerting system. James has been instrumental in building the inter-industry and governmental relationships required for establishing this revolutionary system, including recruiting the AWARN Advisory Committee of the nation's largest alert originators.

Jeff Keith

Jeff Keith, Senior Algorithm and Product Development Engineer for Wheatstone Audio Processing, has worked in the broadcast industry for nearly 50 years. An SBE Certified Professional Broadcast Engineer since 1991 and iNARTE certified Master RF Engineer since 1986, he is a long standing member of the Audio Engineering Society and IEEE, and holds senior memberships in the Society of Broadcast Engineers and International Association of Radio and Telecommunications Engineers.

Shawn Knotts

Shawn Knotts is the Western Region Account Manager for Television Broadcast Systems at Electronics Research, Inc. He has been with ERI for 13 years and has been directly involved with some of the largest broadcast tower and antenna projects in North America. In the past he served as the Project Engineering Manager and Account Manager for FM Broadcast and TowerSales. He graduated from the University of Southern Indiana with a Bachelors of Science in Electrical Engineering.

Jim Leifer

Jim Leifer is the current Society of Broadcast Engineers President. He has been active in the broadcast industry for more than 30 years. Leifer has extensive experience working with both radio and television. He is the Senior manager of Broadcast Operations for American Tower in Boston, Massachusetts. Leifer is also a member of the AFCCE – SMPTE and a Senior member of the IEEE.

Mike Koval

Michael C. Koval began his career with the Madison Police Department in 1983. His educational background includes being a proud graduate of Madison West High School (which he still proclaims to be the best high school in Madison), a graduate of UW-Madison with a Journalism degree and obtaining his law degree from William Mitchell College of Law. Before becoming the Chief of Police in 2014 he was a Special Agent for the FBI and subsequently returned to MPD and served in Patrol Services.

David Layer

David Layer is Vice President, Advanced Engineering in NAB's Technology department. David has been with NAB since 1995 and has been active in the radio technology and standards setting area. Layer's current principal responsibilities include serving as a project manager for technology projects being conducted by PILOT (formerly NAB Labs), and as principal administrator of the NAB Radio Technology Committee, a group of technical executives from NAB member companies that advises NAB on technology development and technical regulatory matters.

Katie Miller

Katie Miller is the site development manger, national outreach - spectrum management for T-Mobile. Miller is currently assigned to T-Mobile's National Development strategic program team as the manager of National Outreach on the Spectrum Management team. Her professional expertise is focused on spectrum clearing and repacking and broadcaster outreach. This broadcaster-focused work is now in high gear and the team has cleared tens of markets earlier than planned for by the FCC.

David Oxenford

David Oxenford is a partner at the law firm of Wilkinson Barker Knauer LLP in Washington, DC. He has represented broadcasters in Washington for more than 35 years on a wide range of matters ranging from FCC regulatory issues to the purchase and sale of broadcast properties and the negotiation of programming agreements to digital media copyright issues. In addition to representing broadcasters and digital media companies, he represents many others involved in the industry, including a number of state broadcast associations and the National Association of Media Brokers.

Jeremy Ruck

Jeremy Ruck is Principal Engineer with Jeremy Ruck & Associates in Canton, Illinois. He has worked in broadcasting for nearly 30 years, with the last 25 in RF consulting. He is a graduate of Bradley University with a Bachelor of Science in Electrical Engineering degree, and is a licensed professional engineer in the State of Illinois. He holds membership in the Association of Federal Communications Consulting Engineers (AFCCE), the Institute of Electrical and Electronics Engineers (IEEE), the Society of Broadcast Engineers (SBE), and the Society of Motion Picture and Television Engineers (SMPTE).

Dan Shelley

Dan Shelley is the executive director of the Washington, D.C.-based Radio Television Digital News Association, the world's largest professional organization devoted exclusively to advocating on behalf of broadcast and digital journalists. Prior to becoming RTDNA's executive director in 2017, Shelley served for nearly 20 years on its board of directors and served as its chairman of the board in 2005. He is a veteran broadcast and digital journalist who has worked at WTMJ Radio in Milwaukee, CBS Television Stations, and as a senior corporate executive at iHeart Media.

Ray Thurber

Ray Thurber has worked for Scripps since 1987 and currently serves as VP of Engineering. His passion has always been working closely with news departments, which fits very nicely with the Scripps mission of journalism. He says Scripps is looking to the future of broadcasting across various platforms, so the engineering effort is to be supportive on all platforms consumers use today. He says innovation at Scripps is a requirement and ATSC 3.0 is viewed as an opportunity. Participation with the Pearl organization has allowed Thurber and Scripps to be on the forefront as this new standard comes to life.

Gary Timm

Gary Timm started his broadcast engineering career at AM daytimer WYLO in Jackson, Wisconsin, followed by 37 years at Milwaukee's WTMJ/WKTI. Active with the Emergency Alert System (EAS) nearly the entire time, he leveraged that experience as a consultant to the Department of Homeland Security for four years following his broadcast career. Continuing in retirement as the Wisconsin EAS Committee's Broadcast Chair, he spends ever more time devoted to furthering our Wisconsin EAS relationships and infrastructure. Timm was inducted in June into the WBA Hall of Fame for his EAS work.

Chris Tobin

Chris Tobin is Chief Engineer at Newark Public Radio in New Jersey and Co-host of TWIRT ("This Week in Radio Tech") on GFQ Network. He manages studio and transmitter operations and evaluates technologies for live and recoreded performances. Previously, he served as President of Musicam USA and Chief Engineer at CBS Radio in New York.

Jeff Welton

Jeff Welton took his training in the Radio College of Canada (RCC) Electronics Engineering Technologist program, finishing in 1984. Welton has performed component level repair, field installation and service, technical support, and quality assurance roles with various companies and has been with Nautel for almost 28 years, the first 17 of which were spent in field service and technical support positions, as well as assisting Engineering with design review of new products and improvement of existing systems.

Kelly Williams

Kelly Williams is the Senior Director, Engineering and Technology Policy in NAB's Technology Department. Williams joined NAB in 1989. During his tenure he has worked on technology innovation and has managed a diverse portfolio of technical, regulatory, and legislative issues. Most recently he's focused on video accessibility, Next Gen television, cyber security policy, as well as the Emergency Alert System and public alerting. Prior to joining NAB, Kelly held various engineering positions at WHMM-TV (now WHUT) in Washington D.C. He is a member of IEEE, SBE, and SMPTE.

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Tuesday Breakfast and Breaks

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Wednesday Breakfast and Exhibitor Coffee Break

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The Broadcasters Clinic Committee and the Wisconsin Broadcasters Association extend their gratitude to the Broadcast Clinic exhibitors and prize donors.

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Exhibitor list is current as of Aug. 24, 2018. The most up-to-date list is in the attendee packet.

REGISTRATION INFORMATION

Registration fee covers: program materials, continental breakfasts and luncheons as indicated, refreshment breaks and an evening reception with beer, wine, and hot hors d'oeuvres (cash bar available for other drinks) and beer and brats at the Nuts and Bolts session.

CONTACT

For further conference or exhibit information, contact:
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608-729-1480

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for the 2019 Broadcasters Clinic

Oct. 15-17 at the Madison Marriott West

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