AWARN
Advanced Warning and Response Network

Will Make Emergency Communications a Cornerstone of Broadcasting — Again

John M. Lawson

Ever since young David Sarnoff worked 72 hours straight in 1912 at a Marconi wireless station relaying names of the survivors of the *Titanic* from the rescue ship *Carpathia,* emergency communications have been a cornerstone service of American broadcasting. The role reached national strategic significance when the Soviet Union exploded its first atomic bomb in 1949. Civil Defense authorities and broadcasters worked together to create the AM radio-based CONELRAD (Control of Electromagnetic Radiation) to alert the public to impending nuclear attack and allow the president to address the whole nation on short notice.

What became the Emergency Broadcast System (EBS) in 1963 was at one time central to the identify of broadcasters in the hearts and minds of the American public. The Cuban Missile Crisis of 1962 brought home just how close we were to nuclear destruction. EBS was even its own character in perhaps the best political thriller of the 1960's, Seven Days in May. A cabal of treasonous generals planned a coup d'état by kidnapping the president and taking over television and radio by hijacking the EBS. Of course, democracy prevails.

As the Cold War ended and the nuclear threat receded, the broadcasters' role in emergency alerting began to fade from consciousness among the public and even within the broadcasting industry. What became the Emergency Alert System (EAS) in 1997 has been used countless times for state and local alerts on a voluntary basis by individual TV and radio stations. But alerting in general began to be taken for granted during a period of post-Soviet complacency.

Search for a 21st Century Alerting Capability

Things changed after the 9/11 attacks in 2001 and, especially, the Katrina flooding disaster in 2005. Serious attention on improving disaster communications became focused at the federal level, and President Bush signed an executive order in 2006 to create the Integrated Public Alert and Warning System (IPAWS). Congressional action that same year led a reluctant cellular industry to deploy a system for what are now called Wireless Emergency Alerts (WEAs), which are 90-character text messages. This system was fully deployed by 2012.

In the past year, the pace has quickened. Congress passed legislation to modernize IPAWS, and the Federal Communications Commission began a rulemaking to that could require the still-reluctant carriers to expand WEA messages. In March, it released a more sweeping Notice of Proposed Rulemaking to significantly upgrade both EAS and WEAs. On the West Coast, a sensor network for earthquake early warnings is being deployed, and Congress has directed the FCC to produce a plan by September to ensure delivery of these alerts to the public in under three seconds.

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A Service Only Broadcasters Can Deliver

Television broadcasting can deliver an alerting capability that no other medium or network can provide.

Uniquely, AWARN will be able to distribute rich media alerts simultaneously to an unlimited number of enabled fixed, mobile, and hand-held devices, indoors or outdoors across an entire television broadcast coverage area.

AWARN also can transmit rich-media emergency information that is created and/or aggregated by alert originators, then transmitted over the broadcast signal and downloaded in the background to user devices.

These capabilities will far exceed warning and disaster recovery communications available to the American public today.

Saving Lives, Renewing Support for Broadcasting

With the continued focused on better alerting solutions, broadcasters have a new opportunity to build on their role as "first informers" and again become the cornerstone of an all-hazards alerting system for a 21st Century America. Re-establishing their historic role in alerting will not only save many lives, it will renew broadcasting's vital "service to America" role and strengthen its policy support. Advanced alerting also will help ensure that broadcast signals can be received on the widest possible range of consumer devices, including PC's, tablets, and smart phones.

The opportunity comes from technical innovation and good business sense. The Advanced Warning and Response Network (AWARN), based on the Next Generation Television standard, also known as ATSC 3.0, will provide a powerful new tool for significantly improving the content, accessibility, pervasiveness, and reliability of America's emergency alerting systems. AWARN is a next-generation, dual-use, disaster communications system for a mobile, 21st Century America. AWARN will utilize the nation's existing terrestrial television broadcasting spectrum and infrastructure and leverage advanced capabilities that are designed into the IP-based Next Gen TV standard.

AWARN rich-media content could include video, radar images, storm tracks and evacuation maps, text, photographs, pictorial instructions, wildfire danger zones and flood inundation maps, and plume models for chemical or radiological releases.

After the disaster, when wireless networks and the electric grid are down, television stations operating on reserve power, can continue to utilize AWARN for providing vital information, such as shelter locations, treatment protocols, and other recovery information, to battery-operated consumer devices. AWARN is also ideal for transmitting multilingual alerts and content that is accessible to people with disabilities.

Responsibility for aggregating rich-media content will remain with alerting authorities. However, stations that produce their own news and weather programming would have the option of inserting their own clips as additional rich-media elements into the alert. People in harm's way would have this and other rich-media alert and response information sent via AWARN literally at their fingertips. They would only need to open a menu on their device and select the files most relevant to them.

Alliance Forms to Deploy AWARN

To support the rapid deployment of advanced alerting, the broadcasting, consumer electronics, and allied industries have come together to form the AWARN Alliance. Alliance members Capitol Broadcasting Company, Pearl TV, and Sinclair Broadcast Group reach over 85 percent of U.S. television households. Pearl TV members own and operate more than 200 network-affiliated TV stations.

Sinclair owns or operates 171 TV stations and, through its affiliate, ONE Media, also has been a major contributor to the development of Next Generation Television. The National Association of Broadcasters (NAB) represents the television broadcast networks and local stations nationwide. Another member, the Public Broadcasting Service, serves 350 member stations.

Alliance members LG Electronics and Zenith, its U.S. R&D subsidiary, are long-time supporters of mobile alerting and key developers of technologies in the "physical layer" transmission system at the heart of the ATSC 3.0 standard.

Other members include GatesAir, a leading television transmitter manufacturer, Monroe Electronics and its Digital Alert Systems subsidiary, whose EAS encoder/decoder equipment is in the majority of U.S. broadcast television stations, and Triveni Digital, whose systems enable television broadcasters to deploy enhanced programs and services to their viewers. Another member is Airwavz TV, which recently unveiled a new mobile phone accessory that will make it easier to view digital television on-the-go. The AWARN Alliance has begun recruiting new members among broadcast groups and allied technology companies.

The Alliance also is expanding its outreach to Congress, the FCC and other federal agencies, and to key public safety groups. SBG and ONE Media are creating a "living room" demonstration of Next Generation Television at WJLA, Sinclair's ABC affiliate based in Roslyn, Virginia. AWARN Alerts will be featured prominently in the Next Gen demonstration.

AMBER, Tornado, and Chemical Spill Alerts

At the NAB Show 2016, Alliance members LG and Sinclair conducted the first over-the-air broadcast of advanced emergency alerting using the ATSC 3.0 standard. Rich-media emergency alerts – including video and public safety information from Capitol Broadcasting's WRAL related to a severe weather emergency – were transmitted by Sinclair from Las Vegas' Black Mountain on Channel 45, under an experimental FCC license obtained by ONE Media. Next-generation broadcast equipment was provided by GatesAir and Triveni Digital, with support from Monroe Electronics.

For its next AWARN "use case," the Alliance is working with the National Center for Missing and Exploited Children (NCMEC) to a create a rich-media AMBER Alert. Rather than the 90-character text message in a WEA, the AWARN AMBER Alert will include (composite) photos of the missing child and suspected abductor, plus images of the make, model, and color of the suspect's automobile, the license plate, highway maps, and contact information. The station's news clips will also be in the background content, all of which users can access at their option through a menu that is accessible from the on-screen banner message.

A creative team at WJLA and engineers at LG and Zenith in the U.S. and South Korea are working with Alliance staff and NCMEC to create the AMBER Alert simulations. Next, the Alliance will create simulated tornado and chemical spill alerts, with active shooter and other use cases to follow. In each simulation, we are actively working with public safety agencies and organizations to make the simulations as realistic and effective as possible.

AWARN Linked with the Future of Television

As an indicator of the key role that AWARN plays in the plans of broadcasters, the AWARN Alliance was one of four signatories to the April 13 Joint Petition for Rulemaking of America's Public Television Stations, The AWARN Alliance, The Consumer Technology Association, and The Na-

tional Association of Broadcasters Seeking to Authorize Permissive Use of the "Next Generation TV" Broadcast Television Standard. In a positive sign of the regulatory prospects for ATSC 3.0 and AWARN, the Commission released, less than two weeks after the Joint Petition was filed, a Public Notice soliciting comments for a possible Notice of Proposed Rulemaking on ATSC 3.0 voluntary adoption.

The FCC Spectrum Incentive Auction will soon conclude and the $1.75 billion repacking of the TV band will get underway. Leading broadcasters who plan to remain in the broadcasting business are actively planning to "harmonize" their repacking activity with ATSC 3.0 deployment. They also are increasingly committed to adopting AWARN as part of their Next Generation Television service offerings.

With AWARN, they not only will save lives, but also cement their central role in public safety for new generations of Americans.

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