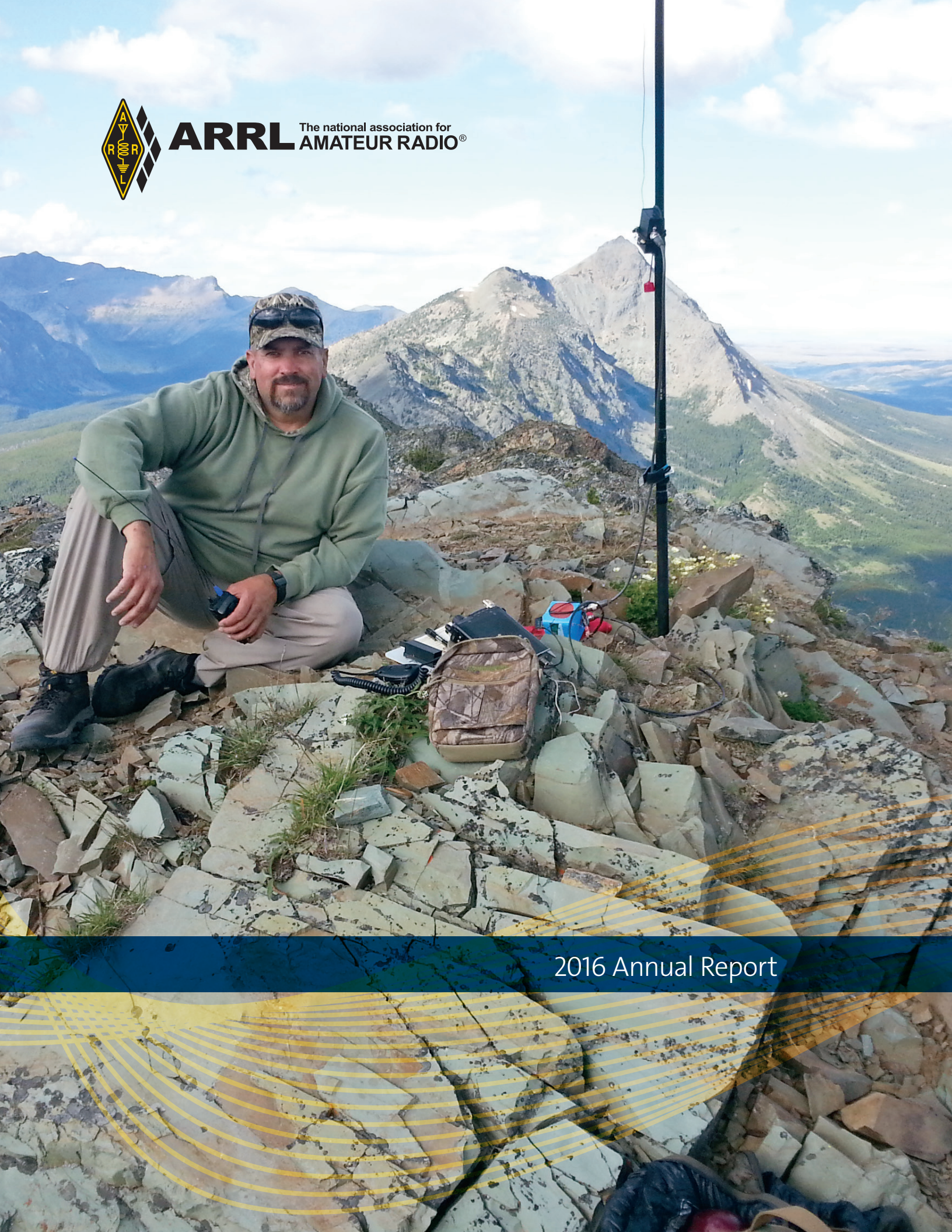
ARRL The national association for AMATEUR RADIO®



2016 Annual Report

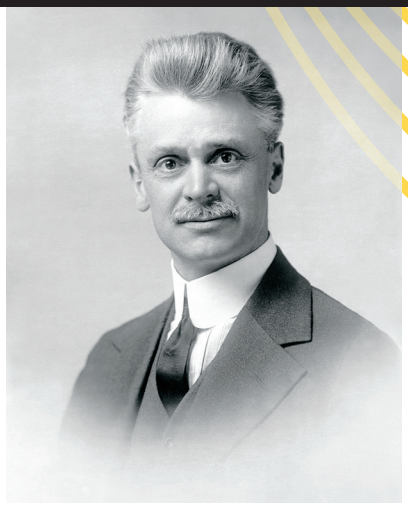
What is Amateur Radio?

Amateur Radio, familiarly known as "ham radio," is a popular service and hobby with more than 740,000 practitioners in the US alone, and 1.75 million worldwide. The numerous activities that are possible on the Amateur Radio frequencies range from public service, to scientific experimentation, to sheer fun. There are federally licensed "hams" everywhere—in your neighborhood, in your workplace, in your schools.

The Amateur Radio Service is a core element of neighborhoods and municipalities across the United States. In times of disaster, Amateur Radio has repeatedly been the only means of communication into or out of an affected area, providing critical information to authorities at the time when it's most needed. Amateur Radio operators serve their communities proudly, voluntarily, and without compensation.

Although radio amateurs get involved with radio for many reasons, they all share a basic knowledge of radio technology and operating principles, and pass an examination from the Federal Communications Commission (FCC) in order to earn a license that enables them to operate on the Amateur Radio "bands." These radio frequencies begin just above the AM broadcast band, and extend into extremely high microwave frequencies.

Our mission is to advance the art, science, and enjoyment of Amateur Radio through the



ARRL Co-Founder Hiram Percy Maxim.

The Maxim Memorial Station, W1AW, provides a welcome and pleasant operating experience for visiting Amateur Radio operators. Always looking forward, W1AW seeks to maintain its on-the-air presence through the gracious support of both operators and manufacturers.

Contents

Cover: Todd Remington, KH2TJ, hits the heights at Glacier National Park in Montana, as part of ARRL's 2016 National Parks on the Air program.

This page: Ham radio means adventure. Hike a trail, climb a mountain, paddle a river, and take your radio with you.

five pillars of public service, advocacy, education, technology and membership.

When people think of Amateur Radio public service, they often think of hams providing communications services as part of a disaster or emergency response. That's only part of the picture, however. Ham radio operators' services also extend to community events such as road races and parades, and practical applications such as weather spotting.

Above: Amateur Radio provides the most powerful wireless communications capability available to private citizens.

Left: Amateur Radio operators need to have a basic knowledge of the principles of electricity, in order to operate effectively and safely. This knowledge has practical, everyday applications that make great teaching tools for STEM (science, technology, engineering, and math) topics.

A Message from the President

My service as President of ARRL comes at an exciting time. The organization has made it through its centennial, and we have officially entered our Second Century with a bold new strategic plan and new CEO. My first year as ARRL President has been full of activity in the Amateur Radio world. The stories you'll read in this report detail what was achieved throughout the year.

Although this is the annual report of ARRL, describing the achievements of the organization, let's remember that we are a membership organization, and it's the ARRL members who make ARRL successful. The Amateur Radio operators who apply their knowledge, skills, and time out of sheer enjoyment of this wonderful hobby to help it grow make us successful. Throughout this report, you'll meet members of the ARRL Headquarters staff, the Board of Directors, the Field Organization, and also some of those ARRL members who made a difference in 2016. These are some of the movers and shakers of Amateur Radio. Their efforts keep ham radio moving forward, and keep it vibrant.

We all need to be thinking about that forward motion, and at no time is that more apparent than when talking to young people about Amateur Radio. Last year, I had the opportunity to speak to a high school group. I prepared my usual talk about some interesting ham radio stories over my 50 years as a ham, how we can talk all over the world, and I brought some QSL cards from rare places to show the group. I have given that talk many times, and it usually impresses people — but not this time. I was surprised to see flat, uninterested faces.

I realized that I had to change my approach to the presentation if I was going to keep the attention of these young people. After all, what could ham radio offer people who grew up in homes that had computers hooked up to the internet? Today's young people are used to riding down the interstate at 70 MPH as a passenger while watching high-definition videos on their iPhones. I quickly shifted the focus to discuss how ham radio has changed, the new technologies, the computerization of ham radio, and Raspberry Pi. I explained the newer digital modes, and talked about ham radio experimentation. The group lit up. I found the topics where ham radio touches that world — their world — and told them what was possible. They responded. That was a wake-up call for me.

What we're hearing from what I call the "new-generation ham," is that they don't view ham radio as being about talking around the world, contesting, or traditional aspects of our hobby. This next generation of ham radio operators view ham radio as a communications medium. Ham radio has value as the means to accomplish an act — the value is not in the act itself. So the question is, how do we extend the appeal of Amateur Radio to recruit people who view it as a means to an end?

Many hams are traditionalists. I count myself among them. Change generally doesn't come easy to us. But when I looked out at that group of young faces and saw their disinterest in traditional ham pursuits, I realized that I had to change. We have to change. It won't come easy, but it's essential that we get to work on it now.

The initiatives you will read about in this report show hams bringing people into Amateur Radio in new ways, and from points of entry that maybe you hadn't thought of: college clubs, citizen science, and Maker Faires. Hams just like you are making these things happen. Let these stories inspire you to reach out to someone who doesn't know about ham radio, and remember, it may not be what you yourself are interested in. How great we can be, for the next generation of hams, if we approach them offering the knowledge they truly want, rather than the knowledge we think they should want!

As you look back on 2016 in the pages of this report, think about ways you can build on what the ham radio community accomplished last year. It's going to take all of us to attract and retain a younger generation of Amateur Radio operators. Never underestimate the influence we have on others; the group of students that presented blank faces to my trusty presentation that had worked so well for many years sure had an influence on me.

73,

Rick Roderick, K5UR
President

Annual Report of the Chief Executive Officer

To the Board of Directors and the Members of
The American Radio Relay League, Incorporated

The most persuasive statements of purpose are succinct. The US Marine Corps — "First to Fight." Médecins Sans Frontières/ Doctors Without Borders — "Go Where Others Don't." ARRL's mission statement consists of nine words: *advance the art, science, and enjoyment of Amateur Radio.* When the Board passed the mantle to me in 2016, along with that charge came the board's strategic plan. Several years in the making, bearing the fingerprints of dozens of talented individuals, it comprises more than 100 pages of goals, objectives, and detailed action steps required to achieve each. Yet every feature of the plan is governed by, and measured against, those nine words. In my view, it is a sound plan summarized by a compelling mission statement.

The 2016 annual report of ARRL represents the first mile post in the long-term execution of the Board's plan. We set out to achieve five major goals from the plan for 2016: stabilize finances; initiate and grow individual, corporate, and foundation support; expand outreach; update our legacy systems; and improve business processes and decision making. These goals are core to the League's carefully crafted strategic plan. Accordingly, we reduced the annual operating deficit from about $400,000 in 2015 to a more reasonable, but hardly acceptable, operating deficit of $230,000 in 2016. Preserving ARRL's endowment for future generations requires that we resist diminishing our endowment with annual operating losses.

To achieve the goals of a second-century League of expanding support, we must look beyond our own limited resources and seek help from those who share a common vision. The successful Collegiate Amateur Radio Initiative (CARI), begun in 2016, continues to garner support with the help of an initial family foundation grant. In outreach efforts, today, ARRL is not only creating its first middle school teaching curriculum, but also ARRL staffers and volunteer youth instructors are teaching in schools, refining that process and building institutional knowledge of the skills required to identify, attract, engage, and retain those whose membership will sustain our organization in the future. With large-scale programs like the Teachers Institute. Or smaller pilot programs like Grace Academy in Hartford.

We go where others don't.

We are expanding new technology and media offerings that take us places we've never been before.

After years of limited reinvestment in our core infrastructure and systems, we are investing heavily in several internal and member-facing IT systems: this year we will invest more than $200,000 in updating and modernizing DXCC, while continuing to design improved customer service systems that maintain our membership records, and sell and deliver our publications and other products reliably in the future. Within the next 2 years, our website is slated for a major overhaul. These efforts are part of our overall goal to bring heightened discipline to all our business processes: how we make decisions on new publications or member services; designing new get-on-the-air events; designing new learning programs for new hams; how we hold ourselves accountable to these endeavors and to the larger strategic plan.

And then there's the pure enjoyment part. National Parks on the Air (NPOTA) proved enormously successful with more than 1 million contacts logged. Not only the biggest QSO party since the Centennial in 2014, it combined portable operating practice with a satisfying exposure to the beauty and the history of America's National Park System. From the trails of Lewis & Clark to Florida's Dry Tortugas, in blazing sun, torrential downpours and snowdrifts, members turned out in large numbers to activate hundreds of NPOTA sites around the country. Crafting the next NPOTA-style event will challenge us in every way in the future. We shall be equal to the challenge.

There were several other notables in 2016, including a recreation of the first transatlantic shortwave reception, achieved in 1921 by Edwin Armstrong and Minton Cronkhite, 1BCG, in Greenwich, Connecticut and Paul Godley, 2ZE, in Ardrossan, Scotland. The Greenwich end of our event was attended by Godley's grandchildren. The Scottish end was manned by GB2ZE.

While log submissions and awards applications are lower, owing to the solar cycle, Logbook of The World QSOs continue to climb to nearly three-quarters of a billion confirmations from more than 93,000 users.

All these things are made possible by the people of ARRL: the Board, the staff, the membership, the various volunteers arrayed across the country, by our patrons and donors, by our served agencies, and by the Amateur Radio community, writ large. These are the people of ARRL, and here are their stories. This annual report celebrates their contribution and tells the stories of how each of them labors mightily, every day, to advance the art, the science, and the enjoyment of Amateur Radio. We are better for the sharing of these stories; they enrich all whom they touch.

It is my distinct pleasure to hear them, to watch them unfold, sometimes to participate; as it is my great good fortune to serve you.

73,

Tom Gallagher, NY2RF
Chief Executive Officer

In 2016, ARRL sponsored National Parks on the Air (NPOTA), a year-long on-the-air event to help promote the Centennial of the National Park Service (NPS). Created by ARRL's Media and Public Relations Manager Sean Kutzko, KX9X, and spearheaded by Kutzko and Radiosport Department Manager Norm Fusaro, W3IZ, NPOTA was one of Amateur Radio's most popular events of all time. Hams made more than 1.1 million contacts from 460 of the 489 NPS sites that qualified for the event, which included National Parks, Monuments, Battlefields, Historic Sites, and others.

National Parks on the Air

Women in NPOTA

Though Amateur Radio tends to be a pursuit largely practiced by men, women Amateur Radio operators were active participants in NPOTA throughout the event. Emily Saldana, KB3VVE, used NPOTA to learn Morse code, and was handling pileups from numerous sites with her newly acquired Elecraft KX3 by the end of the year-long event. Saldana also became famous for her "cookie contests," which helped unite the NPOTA community on Facebook and increase NPOTA activity at critical junctures. Seventeen-year-old Ruth Willet, KM4LAO, and her mom Sharon, KM4TVU, also used NPOTA to increase their skills. Ruth became an excellent Morse code operator as well. "On every single one of my activations, I either activated with, or borrowed gear from, another ham," Ruth said. "As a result, I learned so much about different mobile and portable stations and I have a better idea about what I want for my own setup." Ingrid Geissler, W7ISG, was NPOTA's third-best Activator,

NPOTA had two modes of participation: Activators and Chasers. Activators got on the air from approved NPOTA units. Chasers focused on contacting stations that were transmitting from an NPOTA unit. Participants could pursue the Chaser and Activator tracks at the same time.

NPOTA's Winning Format

ARRL knew from member feedback about the 2014 Centennial QSO Party that large portions of ARRL's membership enjoyed on-air activities that span longer periods. Today's radio amateurs want programs and on-air activities that fit into their demanding schedules. The Centennial QSO Party lasted for the entire year, which afforded radio amateurs a chance to participate when it was convenient for them; the NPOTA event followed suit. National Parks on the Air marked the first time ARRL worked with a non-amateur organization on a large scale to create an Amateur Radio event.

In addition, most NPOTA operations were relatively modest portable setups; 50 watts and a simple dipole or vertical antenna on the roof of the operator's car was a common configuration, but plenty of activations were done even more simply. A big part of NPOTA's allure was that you didn't need a big station to participate.

Curt Laumann, K7ZOO, on the air from Grand Canyon National Park in Arizona.

making 332 activations from 123 different NPOTA units as she and her husband Reinhard, K7RGG, crisscrossed the country in their mobile home. Margie Spangenberg, KK4AGN, made 73 activations as she and her husband Gary, KF4GGK, also did extensive travelling in their RV. Laura Steinberger, WZ8C, could often be found on the North Country Trail with her dog, Shelby. Sisters Janice and Janet Robidoux, KØJA and KØJE, known as the "Minnesota Twins," were the top Chasers in the state of Minnesota. Both of them worked 452 units, which tied for 17th among all Chasers nationwide. Numerous women were active in NPOTA, including Andrea Slack, K2EZ; Mary Joseph, NØTRK; Mary Margaret Nugent, W9MAP; Susan Frank, W6SKT; Patty Winter, N6BIS, and so many others.

Left: Emily Saldana, KB3VVE, achieved her goal of becoming proficient in Morse code, thanks to NPOTA.

NPS Involvement

National Park Service staff were, almost without exception, very welcoming to the Amateur Radio community once they understood the minimal impact that NPOTA radio activations would have on their National Park Service property. Many NPS staff members saw the benefits of the extra publicity immediately.

Melinda Repko, a Park Ranger at Hopewell Culture National Historical Park in Ohio, loved NPOTA. "It was a wonderful way to celebrate the centennial and connect new users to the NPS and Hopewell Culture NHP," she said. "Operators were very respectful of the park and our staff. We enjoyed hosting them!" Hopewell Culture even purchased NPOTA pins to hand out to visiting Activators, as well as an NPOTA banner Activators could borrow while on the air.

"Amateur Radio operators helped spread the awareness of our new historic site, which joined the NPS in 2011," said Christian Davis, Chief of Interpretation at President William Jefferson Clinton Birthplace Home National Historic Site in Arkansas. "We appreciate the collaboration and hope that each interaction sparked a further interest in our site and the NPS as a whole."

From "star parties" at Chaco Culture National Historical Park in New Mexico, to community events at Homestead National Monument of America in Nebraska, the National Park Service welcomed and encouraged hams to be a part of their centennial celebration, especially during the week of the actual NPS Centennial on August 25.

Melinda Repko (left) and Nissa Salvan (right), National Park Service employees at Hopewell Culture National Historical Park in Ohio, display the NPOTA banner that they purchased to loan to visiting Amateur Radio operators.

Facebook Group Sparked Friendships

A key component of NPOTA's success was the decision to extensively use social media to promote the event. The @ARRL_NPOTA Twitter feed created a lot of buzz all year long, and a number of NPS units followed the feed. However, the biggest social media success came with the creation of an NPOTA community on Facebook. The group was created to serve as a gathering place for activity announcements, updates to the program, and general information. It quickly became much more than that, with over 5,000 hams joining the group.

"The Facebook group was very effective in fostering team spirit," said Activator Steve Masticola, WX2S. Jess Guaderrama, W6LEN, called NPOTA, "The most fun activity in my 60 years of being licensed. This was due in large part to the camaraderie, friendships, and exchanges on the NPOTA Facebook page."

NPOTA creators Sean Kutzko, KX9X, and Norm Fusaro, W3IZ, with the certificates awarded to Chasers, Activators, and members of the NPOTA Honor Roll, which was awarded to operators who confirmed contacts with 75% of the 59 National Parks that had accredited operations during the event.

Top NPOTA Activator Stuart Thomas, KB1HQS

Stuart Thomas, KB1HQS, has been a licensed Amateur Radio operator since about 2001, and estimates that he's had a home station set up for a total of 2 months in all those years. "It's always been portable," Stuart says of his operating style, which leaves little wonder that he was the top Activator in the National Parks on the Air (NPOTA) event, achieving 503 total activations of 68 unique NPOTA units.

Stuart kicked off the event by making a contact with the HacDC Amateur Radio Club, W3HAC, which activated the Washington Monument on the first day. By the end of that day, Stuart had completed a QRP (low-power) activation at George Washington Memorial Parkway, the first of many trips that sent the DC-area resident as far afield as Maine and Texas.

When asked about highlights, Stuart mentioned visiting Manassas National Battlefield Park in Virginia, and Gettysburg National Military Park in Pennsylvania. "I took in a lot of history," he said. "A lot of places, I went back to more than once, to get more information."

A little-known park in Maryland, Thomas Stone National Historic Site, dedicated to one of the signers of the Declaration of Independence, became a favorite spot for Stuart because of the welcoming park rangers. One of the rangers, Yusuf Abubakar, was interested enough to assist with activations, learning to set up the antenna and the radio.

"Stuart's enthusiasm was infectious, which has sparked an interest in me to become a ham radio operator," Abubakar said.

As you might imagine, Stuart and top NPOTA Chaser, Larry Burke, K5RK, crossed paths more than once, but one contact stood out from the rest. Though Stuart first became a ham because his father has been a ham "forever," they had never made a contact. As it turned out, Larry and Stuart's father live about an hour away from each other in Texas. With the help of Larry's "super awesome station," they made their first-ever on-air contact with each other.

Final NPOTA Statistics

Total Contacts Made: 1,108,960

Total Activations of National Park Service Properties: 21,344

Total Activators: 1,492

Total Chasers: 17,027

Most Activations: Stuart Thomas, KB1HQS (503)

Most Units Worked by a Chaser: Larry Burke, K5RK (460)

Most Unique NPOTA Units Activated: Bob Voss, N4CD (262)

Ingrid Geissler, W7ISG, was the third-best NPOTA Activator, with 332 activations from 123 unique NPOTA units.

Top NPOTA Chaser Larry Burke, K5RK

It's not surprising that Larry Burke, K5RK, came out on the top of the NPOTA Chaser leader board, with confirmed contacts from 460 of the 489 NPOTA units. Larry's been a passionate DXer for years, making ham radio contacts with ARRL DX Century Club (DXCC) entities. The 460 National Park Service units that were eligible for the NPOTA program mirrored that familiar challenge for Larry.

Within the first 10 days of the event, the Texas resident had worked 100 parks — a feat that prompted ARRL Media and Public Relations Manager Sean Kutzko, KX9X, to send him a selection of NPOTA swag in congratulations. "I got a bumper sticker, a coffee mug, and other odds and ends," Larry recalled.

He was far from finished, racking up another 100 parks by January 26. He acknowledges that, like DXing, the more he participated, the harder it got. After logging all the common, easy ones, you have to be dedicated to snagging the rare ones.

"That's when the fun really started," Larry said. "Trying to pull the really rare ones out of the noise."

Larry succeeded in contacting every NPS unit that was activated for the event, mainly on phone and CW. He used some new-to-him digital modes during the course of the year as well, dabbling in PSK31 and JT65, but what meant more to him than the new modes he tried, were the new friends he made.

"That was one of the beauties of the event, that you made a lot of friends that you probably wouldn't have made otherwise," Larry said. Larry cites the NPOTA Facebook group that ARRL set up as a big help, saying, "It enabled Chasers to help Activators, and Activators to help Chasers, and Chasers to help one another. Long-standing friendships have come out of the whole process."

Why NPOTA Worked

NPOTA was successful for several reasons:

1) Accessibility

Amateur Radio operators are used to "collecting" various geographical units, competing with other amateurs and themselves to make contact with as many different countries, states, counties, islands, lighthouses, castles, and other designated "targets." A great many radio amateurs make a point of amassing a collection of contacts in this way. With the addition of National Park Service units as a new geographical unit, the National Parks on the Air event offered radio amateurs the chance to collect a new kind of target, making the premise of this friendly competition instantly familiar to a large segment of radio amateurs.

Another part of the success of NPOTA lay in the desire to operate from different locations. Sam Barricklow, K5KJ, said, "Many operators got to experience the feeling of being on the Activator side of pileups — probably the closest to being [the] rare, sought-after [station] that many hams will ever experience."

2) Skills learned

Across the board, participants said NPOTA improved their skills, both as Activators and Chasers.

"NPOTA has expanded my hands-on experience setting up equipment in remote locations with minimal support available," said ARRL Tennessee Public Information Coordinator Cathy Goodrich, W4CMG. "This has made me feel better prepared to support emergency operations because of the repetitive, hands-on experience that I was able to have during the activations. To me, it was the ultimate 'Field Day' that took place several times throughout the year: remote, emergency power, field conditions."

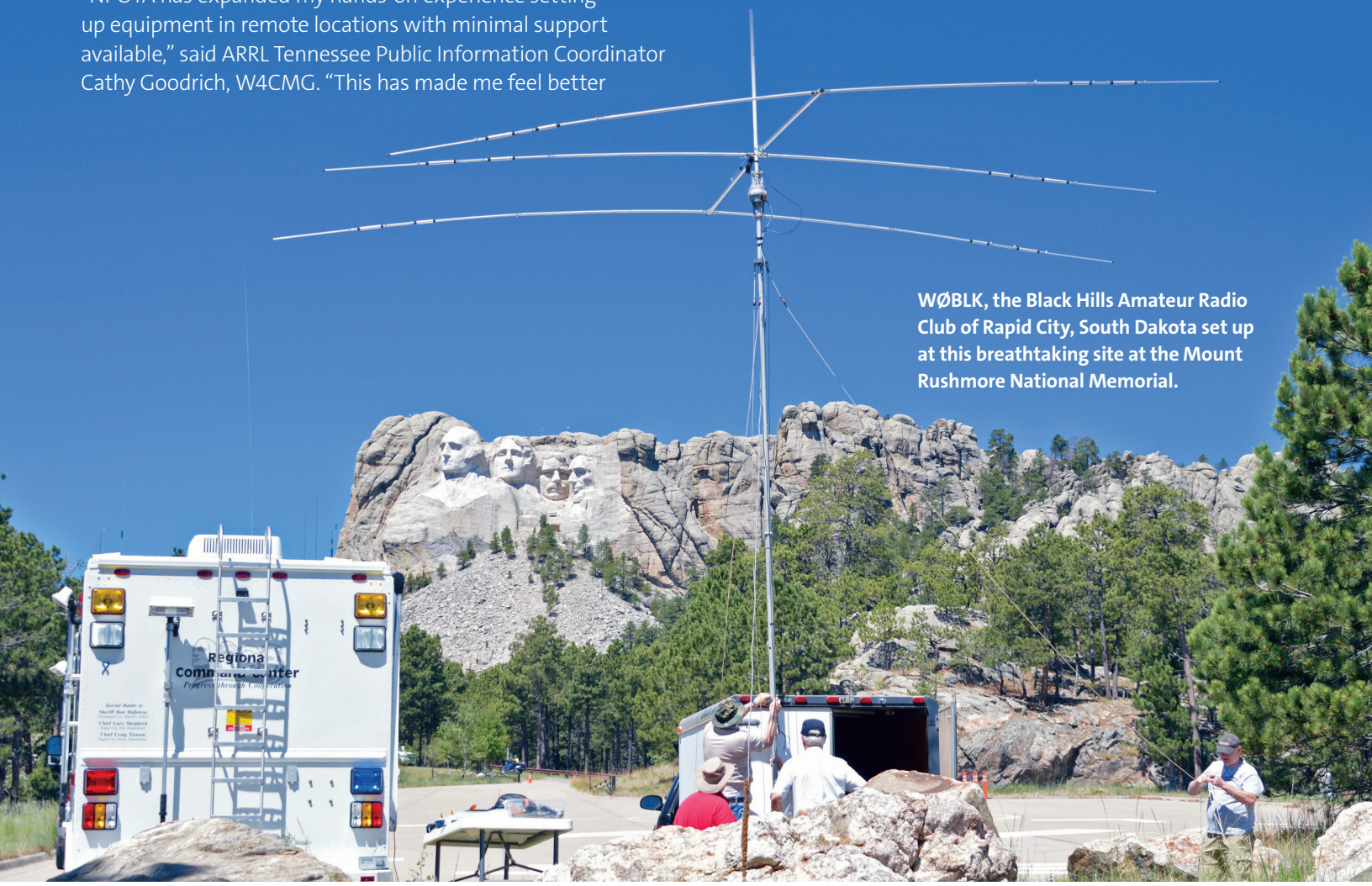
3) Learning about the National Park Service

NPOTA opened the doors of the National Park Service to many radio operators. Common comments from many amateurs throughout the year-long event included, "I had no idea how big the National Park Service was," or "I didn't realize I lived so close to an NPS unit."

Rick Parent, WØZAP, said, "The NPS is an incredible resource we have available to us as residents of this country, and discovering the many and varied units that are out there for us to enjoy was truly a major highlight for me.... Because of this event, my support of our National Park Service will be a lifelong endeavor."

Conclusion

National Parks on the Air opened the door to better relations between the National Park Service and ARRL. ARRL members have been asking for more NPOTA-style events. ARRL has ideas in development that are sure to please the ham radio community.



WØBLK, the Black Hills Amateur Radio Club of Rapid City, South Dakota set up at this breathtaking site at the Mount Rushmore National Memorial.

ARRL's Efforts in Support of the Amateur Radio Parity Act

The Year in Review

Mike Perry, W8DNZ, collects signatures for the Parity Act bill at Hamvention.

Beginning in early 2015, when the Amateur Radio Parity Act — H.R. 1301 — was introduced in the US House of Representatives, ARRL supported the bill on various fronts, going "all out" to make sure the members of the 114th Congress knew Amateur Radio was "alive and well, and flourishing in the 21st century," as ARRL Hudson Division Director Mike Lisenco, N2YBB, explained.

The measure, which would direct the FCC to extend its rules relating to reasonable accommodation of Amateur Service communications to private land-use restrictions, was originally introduced by US Rep. Adam Kinzinger (R-IL) and cosponsored by Rep. Joe Courtney (D-CT). By the beginning of 2016, there were nearly 120 cosponsors of H.R. 1301 from both parties of the US House of Representatives.

Knowing that keeping the momentum going would not be an easy task, ARRL urged members to write letters and e-mails and make phone calls to members of Congress to support the bill. ARRL also dedicated resources to spending time in Washington, DC, making in-person presentations to teach legislators about ham radio, who we are, what we want the legislation to do, and explain the need for it. ARRL representatives brought letters of recommendation from non-governmental agencies, a copy of a *QST* magazine editorial, a copy of the ARRL Report to America, and a copy of a "Dear Colleague" letter sent by the sponsor and cosponsor of the bill which, in addition to an explanation of the bill, also spoke of the bipartisan nature of the legislation.

On September 12, 2016, Amateur Radio history was made when the US House of Representatives approved the Amateur Radio Parity Act, H.R. 1301, on a voice vote under a suspension of the rules. The House victory culminated many years of effort on ARRL's part to gain legislation that would enable radio amateurs living in deed-restricted communities to erect antennas that support Amateur Radio communication.

"This has been a multiyear effort that is finally seeing some light," said Lisenco. "The passage of the bill in the House [was] a major accomplishment, due to the hard work of so many — from the rank-and-file member to the officers and directors."

Though the journey of the Amateur Radio Parity Act, H.R. 1301, stalled in the Senate on December 9, 2016, its success in the House was a big win for ARRL, its members, and for Amateur Radio in general.

ARRL vowed to continue the pursuit of the bill in the 115th Congress in 2017, contacting the sponsors of the bill to allow for an early introduction of the new, but identical, measure — H.R. 555 — which calls on the FCC to establish rules prohibiting the application of deed restrictions that preclude Amateur Radio communications on their face or as applied. Deed restrictions would have to impose the minimum practicable restriction on Amateur Radio communications to accomplish the lawful purposes of homeowners associations seeking to enforce the restriction.

ARRL will continue to need the support of the membership as we go forward through the next year. "The grassroots effort of Amateur Radio operators across this nation in support of the Amateur Radio Parity Act has been remarkable, nothing like we have ever seen before," ARRL President Rick Roderick, K5UR, said. "To all hams, keep going! Now is the time to charge forward with that same momentum to the Senate. We can do it!"

"We're very encouraged by the speed with which this bill made it through the House. It's amazing that this happened," said Lisenco, who has been at the forefront of the legislative initiative. "With the help of ARRL members, we believe we can get this done. We came within a hair's breadth last time, with 110,000 e-mails to members of both houses of Congress, as well as letters and telephone calls. Member participation in this final push is critical."

ARRL's major objective is to continue to advance the art, science, and enjoyment of Amateur Radio through the heightened campaign of congressional advocacy on issues important to this beloved technology. With the support of the Amateur Radio community, ARRL will continue to safeguard the rights of licensees and will not give up until this important bill becomes a reality.

Another major way that members can get involved is to donate to ARRL's Legislative Issues Advocacy Fund, which was developed with the express purpose of educating Congressional representatives, and their respective staffs

regarding issues that affect the Amateur Radio Service and ARRL's advocacy goals. Members' support of the fund provided critical resources that allowed ARRL key volunteers and senior staff to establish relationships with political representatives in Washington. 2017 provides new opportunities to work with members of the House and Senate — making it more crucial that we maintain our presence in Congress.

Emergency Preparedness

Amateur Radio Was at the Ready for "Cascadia Rising"

Amateur Radio played a major role in the largest Federal Emergency Management Agency (FEMA) exercise of 2016, "Cascadia Rising," which ran from June 7 to June 10. According to FEMA, a 9.0 magnitude earthquake along the Cascadia Subduction Zone (CSZ) and the resulting tsunami would be the most complex disaster scenario that emergency managers and public safety officials in the Pacific Northwest could face. The Cascadia Rising exercise was designed to address that disaster.

"Conducting successful life-saving and life-sustaining response operations in the aftermath of a Cascadia Subduction Zone disaster will hinge on the effective coordination and integration of governments at all levels — cities, counties, state agencies, federal officials, the military, tribal nations — as well as non-government organizations and the private sector," FEMA said. "One of the primary goals of Cascadia Rising is to train and test this whole community approach to complex disaster operations together as a joint team."

In the exercise scenario, the 9.0 earthquake and consequent tsunami struck the Pacific Northwest, causing a blackout of all conventional means of communication — a natural opening for Amateur Radio involvement.

According to FEMA, emergency operations centers (EOCs) and emergency coordination centers (ECCs) at all levels of government and the private sector conducted simulated field response operations within their jurisdictions and with neighboring communities, state EOCs, FEMA, and major military commands. Both Washington and Oregon's military departments activated for the drill.

Amateur Radio Emergency Service (ARES) and Radio Amateur Civil Emergency Service (RACES) organizations in Oregon and Washington were heavily involved, and W1AW, the Hiram Percy Maxim Memorial Station at ARRL Headquarters, was active and monitoring, in the event that it was called upon to pass traffic.

US Rep. Adam Kinzinger Granted the 2016 Barry Goldwater, K7UGA, Achievement Award

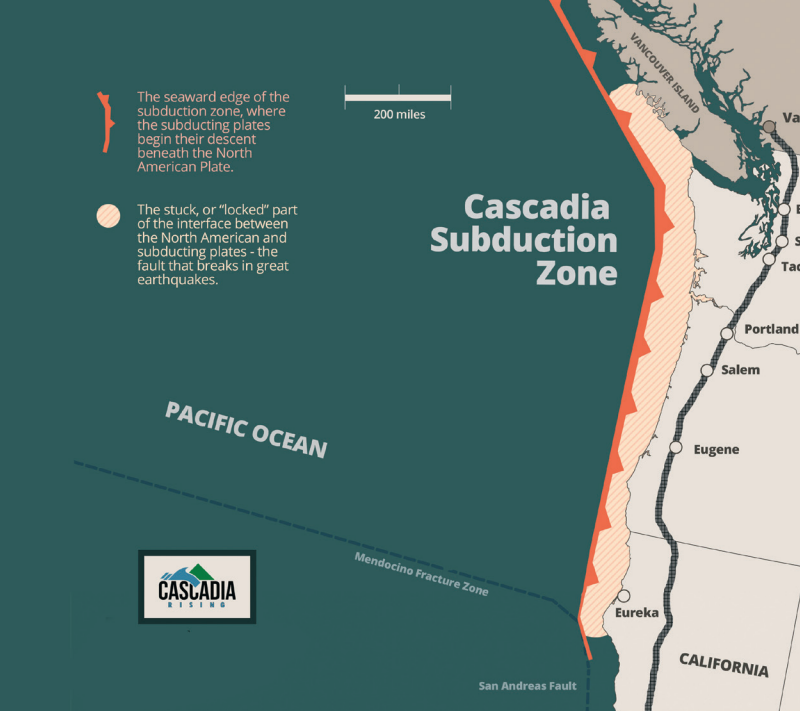
In recognition of his outstanding support of Amateur Radio as an elected official and his tireless support of the Amateur Radio Parity Act, the Board voted for US Rep. Adam Kinzinger (R-IL) to be recipient of the 2016 Barry Goldwater, K7UGA, Achievement Award.

"Rep. Kinzinger has again stepped forward to introduce this important legislation," said ARRL CEO Tom Gallagher, NY2RF. "His commitment stems from exposure to what the Amateur Radio community brings to the service of all communities. ARRL and radio amateurs nationwide owe Rep. Kinzinger a resounding 'Thank You!' for his efforts on their behalf."

Kinzinger, who was first elected into Congress in 2010, is a member of the House Committee on Energy and Commerce and serves on the House Committee on Foreign Affairs. He has sponsored the Amateur Radio Parity Act legislation in the 113th, 114th, and 115th Congresses, often speaking openly about his support and working to find a common ground with various opposing groups in order to push the legislation forward. For example, in early 2016, Kinzinger made an impassioned speech, pushing the bill from the US House Subcommittee on Communications and Technology to the full House Energy and Commerce Committee with a favorable report for further consideration.

"Rep. Kinzinger has often spoken publicly in favor of our legislation and of the benefits of Amateur Radio to the public, and he has been a steadfast advocate for this important and beneficial legislation, leading the effort resulting in unanimous passage of H.R. 1301 in the House last term and the very early introduction of H.R. 555 in the current Congressional term," the Board resolution said.

Calling Kinzinger "a great friend to Amateur Radio over the past 4 years and a patriotic American," the Board said his understanding of the value of Amateur Radio to the public interest and the pursuit of scientific and technical knowledge has led him to act in the spirit of the award's namesake, Sen. Barry Goldwater, K7UGA, whose exemplary support for Amateur Radio in Washington inspired the award.



The area likely to be affected by a Cascadia Subduction Zone disaster.

ARRL Emergency Preparedness Manager Mike Corey, KI1U, said that ARRL Headquarters took part via *Winlink* and HF voice, adding that the exercise offered the ARRL Headquarters Emergency Response Team some practice. The team is called up to support the ARRL Field Organization during a major disaster.

FEMA announced it would activate the five discrete Amateur Radio channels on the 60-meter band for communication with federal entities during the interoperability exercise. The Amateur Radio Service has secondary status on the band, which is a good alternative for short-distance work (300-500 miles) on the HF bands. The after-action report compiled by Mike Corey, ARRL Oregon Section Manager John Core, KX7YT; ARRL Western Washington Section Manager Monte Simpson, AF7PQ, and ARRL Idaho Section Manager Ed Stuckey, AI7H, brought to light the fact that there was very little Amateur Radio use of the 60-meter band during the Cascadia Rising exercise. Reasons for this included equipment limitations (older transceivers that lacked a special modification to allow them to be used on 60 meters, lack of space to erect a resonant antenna for the band), prompting the group to recommend a program for incentivizing emergency management agencies to update their equipment.

The channelization of the 60-meter band also proved to be a limitation during the exercise, with the after-action report stating that the band's five channels "are insufficient to meet the needs of state/local governments and NGOs that need to communicate with each other during a large disaster." The group observed that "a non-channelized allocation was authorized by World Radio Conference 2015, and the US is in the early stages of implementing that authorization."

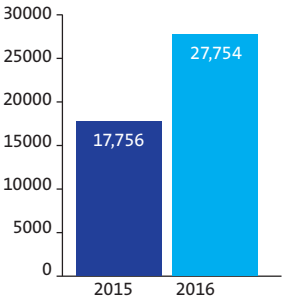
ARRL is proud of Amateur Radio's contributions to the Cascadia Rising exercise, from the boots-on-the-ground activations to the lessons learned in the after-action report.

Report to America

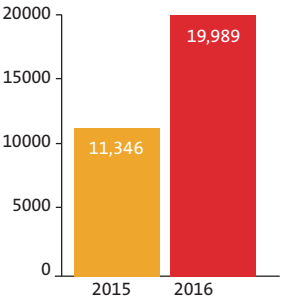
ARES Reporting Increased in 2016

ARRL Emergency Preparedness staff is proud to say that Amateur Radio Emergency Service (ARES) reporting from the sections was at 76% in 2016, compared to 48% in 2015. The increase in reporting is a direct result of ARRL's efforts to encourage reporting by providing Section Emergency Coordinators with training and reminders regarding reports. 2016 has had the highest reporting percentage since we began tracking these numbers. In 2017, there will be a monthly report to see how many sections reported in.

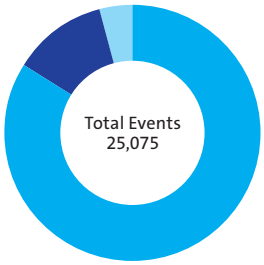
The increased reporting gives a clearer picture of the amount of training ARES members engage in, the amount and type of service ARES provides, and the approximate dollar value of those services — which are provided at no cost to the organizations that ARES serves.



Total ARES Members

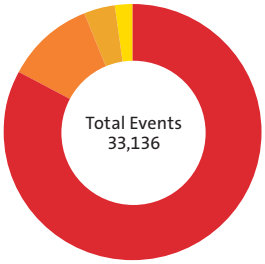


Total ARES Nets



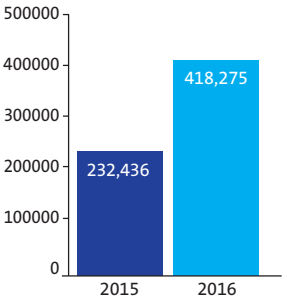
2015 ARES Events

- Drills, Training, Test Events
- Public Service Events
- Emergency Operations Events

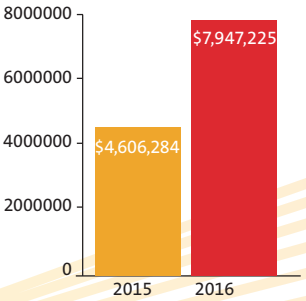


2016 ARES Events

- Drills, Training, Test Events
- Public Service Events
- Emergency Operations Events
- Other Events



Total Volunteer Hours



Volunteer Value
($19 x Total Volunteer Hours)

Hams Serve Victims of Historic Missouri Flooding

January 2016 brought historic flooding to the greater St. Louis, Missouri area. More than 26 radio amateurs from St. Louis Metro ARES, St. Charles County ARES, Illinois Section ARES, and St. Louis and suburban radio clubs worked with the American Red Cross in serving more than 19,400 meals and coordinating more than 640 overnight stays across four counties. According to Bill Grimsbo, NØPNP, District C Emergency Coordinator, Amateur Radio volunteers contributed more than 170 hours of service during the emergency.

St. Louis Metro ARES Emergency Coordinator Steve Wooten, KCØQMU, confirmed the value of his volunteers, saying, "The Amateur Radio operators in the greater St. Louis area have knowledge and equipment to connect any agency to another when in times of need. We can set up and be connected within an hour of responding to the call for assistance."

More than 20 people died in the historic flooding, and hundreds were displaced from their homes. Wastewater treatment facilities were overwhelmed, and some drinking water treatment facilities were shut down. President Obama issued a Federal Disaster Declaration, and the Federal Highway Administration pledged $1 million for emergency highway repairs.

New ARRL/Red Cross MoU Signed

ARRL and the American Red Cross signed a new Memorandum of Understanding (MoU) in January 2016. The document succeeds one agreed to in 2010, and will remain in place for the next 5 years.

Generally, the MoU sets the parameters of the partnership between ARRL and the Red Cross to provide assistance to communities affected by disasters. It calls upon both organizations to encourage and maintain open lines of communication at the state and local levels, sharing current data regarding disasters, situational and operational reports, changes in policy or personnel, and any information pertaining to disaster preparedness, response, and recovery.

"Whenever there is a disaster requiring the use of Amateur Radio communications resources and/or facilities, the local Red Cross region or chapter may request the assistance of the local ARES organization responsible for the jurisdiction of the scene of the disaster," the MoU provides. Such assistance would include mobilization of ARES personnel in accordance with a prearranged plan, and the establishment of communication as necessary during a disaster or emergency.

Colorado Exercise Focuses on Digital Messaging

On January 9, 2016, the El Paso County Office of Emergency Management (OEM) held exercise DEEP FREEZE '16 in conjunction with the Colorado National Guard, American Red Cross, Salvation Army, and other agencies to practice a response to a devastating blizzard of the type Colorado experienced in October 1997.

At the invitation of the Red Cross, operators from Region 2, District 2 (Pikes Peak ARES) of the Colorado Section Amateur Radio Emergency Service set up alternate communications between the Red Cross shelter and the county Emergency Operation Center (EOC). Two Pikes Peak ARES members were dual hatted as county Special Communication Unit personnel, and manned the radios in the EOC, while another ARES member worked at the shelter.

Using VHF/FM radios, these operators established simplex voice and data communication and demonstrated to the shelter manager, Red Cross EOC liaison, and the OEM, the ability to digitally pass Incident Command System forms such as the ICS-213.

"The digital messaging capability is a tremendous tool, and using it in the exercise helped me learn how best to work it in with our liaison training," said Jimmy Jenkins, the Red Cross EOC liaison for the exercise.

Maryland-DC ARES Activates for Statewide Search for Missing Person

On February 28, 2016, ARRL Maryland-DC Section Manager Marty Pittinger, KB3MXM, and Section Emergency Coordinator Jim Montgomery, WB3KAS, received an e-mail from Joe Cotton, W3TTT, explaining a serious situation.

Two days prior, an autistic man had gone missing. He was wearing a radio beacon leg bracelet that had been issued to him by Project Lifesaver, an organization that works with trained public safety entities to provide timely response for adults and children who wander due to Alzheimer's, autism, and other conditions or disorders.

Pittinger, Montgomery, and Cotton, along with the CEO of Project Lifesaver, worked together to define search criteria and share technical information. Contact was also made with local law enforcement agencies handling the case, in order to set a protocol/format for Amateur Radio operators reporting to the police departments.

ARRL Atlantic Division Director Tom Abernethy, W3TOM, was consulted. Section officials contacted local Amateur Radio clubs to secure phase Doppler radio direction-finding equipment. The beacon bracelet's frequency, radio range, and tone signatures were acquired.

Once permission to activate was secured, Pittinger issued an "Activation Announcement" to Montgomery, who activated

all ARES members in the Maryland-DC Section. Pittinger then informed Project Lifesaver coordinators and police that the statewide Amateur Radio Direction Finding (ARDF) search was under way.

The Maryland Port Authority identified the missing man at Baltimore Washington International Airport, and Maryland-DC ARES was told to stand down.

Pittinger concluded, "We were grateful to learn that the missing man was located, and that we were given the opportunity to assist in a massive safety of life search. Our knowledge, experience, agility, and huge presence across Maryland and the District of Columbia show our ability to serve multiple agencies and organizations jointly, seamlessly, and rapidly as an organized team."

Ohio ARES Serves NAACP Annual Convention and Republican National Convention

The NAACP convention drew more than 5,000 people and ran from July 16 – 20 in Cincinnati. Ham volunteers from Hamilton County ARES were stationed adjacent to the lobby of the Regional Operations Center (ROC) and maintained contact with the Ohio State Emergency Operation Center-Joint Dispatch Facility (EOC-JDF). The Republican National Convention, held in Cleveland July 18 – 21, was the first National Special Security Event (NSSE) ever conducted in Ohio. Members of Cuyahoga County ARES took additional FEMA courses in order to serve at the event, which involved the Cuyahoga County EOC being active 24 hours a day.

Amateur Radio Volunteers Assist the Red Cross Response to Louisiana Flooding

In August 2016, Louisiana and Mississippi declared states of emergency as an unnamed storm brought three times the amount of rain that fell during Hurricane Katrina in 2005. Catastrophic flooding resulted, and the federal government declared Louisiana a major disaster area. Thousands of residents in the affected areas were displaced, with as many as 10,000 people in shelters. Most conventional modes of communication remained operational.

The American Red Cross requested the activation of Louisiana ARES for assistance with approximately 40 shelters in the Livingston Parish and Baton Rouge areas. The need for shelter volunteers was so overwhelming, that a call was put out in Louisiana and Mississippi for "any and *all* Amateur Radio operators."

Amateur Radio volunteers from Alabama, Arkansas, and Mississippi served at multiple Red Cross chapters and shelters throughout the affected area. With local and parish resources stretched to the limit, ham radio volunteers served as the communication link between Red Cross shelters and command centers, relaying information on the needs at each shelter back to Red Cross offices.

Louisiana Assistant Section Manager Matt Anderson, KD5KNZ, who served as the Incident Point of Contact in Baton Rouge, said, "We greatly appreciate all the assistance from ARRL HQ and the many Sections who provided support to the operation."

Amateur Radio Response to Hurricane Matthew

Hurricane Matthew caused more than 600 fatalities and over $15 billion in damage in the Western Atlantic in late September and early October 2016, triggering the longest activation of the Hurricane Watch Net (HWN) in its more than 50-year history. HWN Manager Bobby Graves, KB5HAV, reported that the net was in continuous operation for 6 days, 7 hours, gathering real-time ground-truth weather data as the storm passed through the Caribbean and up along the US eastern seaboard. The HWN passed the data along to WX4NHC at the National Hurricane Center (NHC). Various Amateur Radio Emergency Service (ARES) nets also activated along the east coast. The first major hurricane of the 2016 Atlantic hurricane season and, at one point, a Category 5 storm, Matthew was downgraded to a post-tropical cyclone as it headed out into the Atlantic.

The VoIP SKYWARN/Hurricane Net (VoIPWX) attracted a number of visitors, according to net Public Affairs Officer Lloyd Colston, KC5FM. According to Chief of Operations Dennis Dura, K2DCD, the net established a link up the east coast into North Carolina and continued to monitor for damage assessment in areas the hurricane had already passed. The net supported the NHC on the WX-Talk Conference, Node #7203 on *EchoLink*.

The Salvation Army Team Emergency Network (SATERN) on 14.265 MHz also was active for Matthew, handling outbound emergency, priority, or health-and-welfare traffic from hurricane-affected areas.

The entire State of Florida was under an Amateur Radio Emergency Service (ARES) Level 1 — or full — activation as of October 6, as Hurricane Matthew headed for landfall in the US, having already caused 16 deaths as it moved northward through the Caribbean. Northern Florida Section Emergency Coordinator Strait Hollis, KT4YA, oversaw the ARES activation for the entire state. The Northern Florida ARES Net, under HF Net Manager Don Duckett, N9MN, was called up and remained operational for the passing of life safety communications for the duration of the threat.

ARRL Northern Florida Section Manager Steve Szabo, WB4OMM, called on operators outside of the Northern Florida or Southern Florida sections having "good solid access to HF" to contact Duckett with their availability to serve as net control stations and to check into the net.

The Statewide Amateur Radio Network (SARnet) was activated for statewide use for life safety communications. SARnet is a network of linked UHF repeaters serving Florida.

Among activities in Georgia, ARES District Emergency Coordinator and MARS member Tom Holcomb, K5AES, reported that WX4GMA, the Georgia Emergency Management Agency (GEMA) ARES team station, was activated on October 7, running 12-hour shifts. Operation was on HF, as well as on D-STAR and *EchoLink*.

HF message traffic included shelter updates from coastal counties and periodic NHC weather updates via WX4NHC, which were passed along to the GEMA director. *WinLink* was used to pass periodic status updates from the Georgia State Defense Force, a volunteer component of the Georgia Department of Defense. On October 6, ARES and Army MARS personnel were called on to provide technical assistance to, and an operator for, a FEMA SHARES station in Atlanta.

The storm made landfall in South Carolina as a Category 1 hurricane on October 8. According to FEMA on October 13, power remained out for thousands of Florida, Georgia, South Carolina, and North Carolina residents. Cell service also was affected. Mainstream river flooding threatened the Carolinas, and some dams were breached. Several hospitals remained closed. More than 40 died in the US.

The Hurricane Watch Net activated again for several hours on October 13 for Hurricane Nicole, after a hurricane warning went into effect for Bermuda. The VoIP Hurricane Net also activated to monitor online weather stations and storm bloggers from the Caribbean Hurricane Network (stormCARIB), as well as social media.

Strengthening STEM: School Outreach at Grace Academy

It is ARRL's mission to advance the art, science, and enjoyment of Amateur Radio, and one of the biggest ways we strive to further this goal is through education and outreach. In 2016, ARRL's Emergency Preparedness program began developing an experimental program to bring electronics and Amateur Radio to middle schoolers as an enrichment experience, rather than as a formal academic program. The first school to participate in this program was Hartford's Grace Academy, a middle school for gifted girls from disadvantaged families, and often from minority groups.

The curriculum combined lectures with hands-on experience (build a code practice oscillator) and fun activities (HF operating and foxhunts). "It was amazing to see the fascination they had with things like demonstrating conductance and electromagnetic force, and anything that was hands-on," said ARRL Emergency Preparedness Manager Mike Corey, KI1U, who oversaw the program.

The curriculum also employed the theory that peer-to-peer learning — where instructor and student are close in age — proves far more effective than when a large age disparity exists, so ARRL recruited two local high schoolers, Matt Shea, AA1CT, and Austin Mongillo, N1UIS, as youth instructors under Corey's supervision. "Matt has really taken off in the operating side of Amateur Radio," said Corey, "and Austin is the technical mind. He can explain circuits, components, and electromagnetism in a way that is easily grasped by the students."

Corey emphasized that the program proved to be beneficial to everyone involved, including Shea and Mongillo.

"It takes a lot of planning and discipline to be able to teach students of the same age or close to the same age [as you]," said Matt Shea, explaining how the experience helped him further develop his presentation skills. "Only by gaining exposure can you become better [at] teaching."

The original lesson plans included more information about licensing, but Corey said it became more important to focus on material beyond the basic electronics, in hopes that it would spark the students' interest in becoming licensed. ARRL's CEO Tom Gallagher, NY2RF, agreed, adding, "Sometimes it's advised not to push the issue — let the natural curiosity of motivated young people direct them."

Allowing the students to actively participate in the class certainly paid off, and after 14 weeks, the sessions culminated

Shui Se Phoe, Grace Academy's First Ham

It came as no surprise to the instructors at Grace Academy that Shui Se Phoe was the first student to earn an Amateur Radio license as a result of ARRL's outreach program at the school. For 2 weeks prior to the license exam, instructors noted that Shui Se had "her nose buried in the licensing manual."

The eighth grader is an exceptional student, scoring in the 98th percentile in the Secondary School Admission Test (SSAT) Prep test. Her favorite subject is math. In addition to excelling academically, Shui Se finds time for volleyball, guitar, and Grace Academy's cooking and Scrabble clubs. Amateur Radio is her newest pursuit, now that she has a Technician-class license and the FCC-assigned call sign KC1HCK.

ARRL staff members contributed funds to buy the new Technician a handheld radio and accessories, which were presented to her in a ceremony at school.

Shui Se Phoe, KC1HCK, is recognized by ARRL Emergency Preparedness Manager Mike Corey, KI1U, and ARRL CEO Tom Gallagher, NY2RF.

in administering the Technician-class exam to five of the students, with one of them earning her Technician-class Amateur Radio license. Eighth-grader Shui Se Phoe, now KC1HCK, received her license on March 1, 2017.

The program also left resources for the school that will last longer than those 14 weeks. Shea explained, "We have created an atmosphere for the students that allow for them to always have Amateur Radio around them. By incorporating new ham radio manuals in their library, along with all the educational experiences they had, they will never forget about Amateur Radio."

Everyone involved agreed that the program will provide a framework for future endeavors, which Mongillo felt was very important. He explained he'd been inspired to get involved as a way to "promote more youth-oriented ham radio activities and bring us closer to changing our youth's stereotypical view of Amateur Radio" — a goal shared by the many volunteers and ARRL staffers who were invested in making this program a success.

ARRL is aware of the relationship between the knowledge base of the Amateur Radio avocation and the concepts in science, math, geography, and other subjects that are taught in schools. For this reason, ARRL will continue to actively reach out to and educate the next generation of STEM professionals and potential ham radio operators.

"I hope that we can propagate the lessons of Grace Academy's pilot, curriculum, supportive schools, peer instruction, and positive reinforcement," said Gallagher. "It involves a great deal of work, and no small amount of luck, but it represents solid investment in the next generation."

Emergency Preparedness Webinars

In 2016, the Emergency Preparedness Department facilitated nine webinars, which have successfully created an interactive, engaging discourse between a small number of presenters and a large, remote audience.

ARRL has been hosting webinars for about 5 years, beginning with the annual presentation on hurricane season, which gives a meteorological overview of the upcoming season. ARRL Emergency Preparedness Manager Mike Corey, KI1U, said that this year's webinar was focused on the role of Amateur Radio during the 2016 hurricane season and was particularly helpful because the Atlantic Basin and the Pacific Basin were equally active, which Corey explained was "almost unheard of."

The audience clearly shares Corey's interest, because each year the number one response to the hurricane webinar has been, "Please do more of these." Corey explained that the volume of positive feedback led to the decision to collaborate with other ARRL departments, guest speakers, and contract writers to do more webinars.

In 2016, the presentations included "ARES Reporting," "Use of 60 Meters," "Understanding Local Memorandums of Understanding," "2016 Hurricane Season," "Contesting as Training with NØAX," FEMA's "Developing a Family Emergency Communications Plan," "CHIRP Radio Programming," "Introduction to Army and Air Force MARS," and "SKYWARN Recognition Day."

The Emergency Preparedness Department tried to choose topics that would appeal to a variety of audiences. For example, many hams expressed an interest in learning more information about the history of the Military Auxiliary Radio System (MARS) program and the connection to Amateur Radio. This led to the "Introduction to Army and Air Force MARS" webinar,

CARI Gives Collegiate Amateur Radio Clubs a Place to Convene

When ARRL asked the organizers of the ARRL New England Division Convention to arrange a convention forum about collegiate Amateur Radio, we had no idea that the response would be so overwhelming. There ended up being two collegiate forums at the September 2016 event, held in Boxborough, Massachusetts — one of which was hosted by the Amateur Radio clubs at Harvard (W1AF) and Yale (W1YU). Both forums drew standing-room-only crowds of representatives from New England schools, and generated a wave of follow-up calls and e-mails.

To keep the momentum going, ARRL created the Collegiate Amateur Radio Initiative (CARI), which is headquartered at a Facebook group located at www.facebook.com/groups/ARRLCARI. The lively group is currently approaching 500 members, and includes students, recent graduates, instructors, and administrators, as well as Amateur Radio operators who are interested in the cause.

Members post photos and videos of their radio operations, clue each other in to useful resources, and discuss issues particular to college Amateur Radio clubs. For example, activity level at campus club stations can vary wildly from one year to the next, as students graduate and newcomers arrive, and college club stations may find themselves at the mercy of administrations in terms of space for a station and antennas.

The detailing of difficulties and sharing of ideas has spurred communication among the group's ever-widening network. One suggestion has been to harness the competitive nature of colleges to organize operating events — perhaps with "conferences" resembling those for sports — to keep interest alive.

The Collegiate Amateur Radio Initiative is grateful for seed money from the W1YSM Snyder Family Collegiate Amateur Radio Endowment Fund. All collegiate radio amateurs, clubs, and alumni are invited to participate in the initiative.

which was the most popular presentation, with nearly 500 live participants. Army MARS Program Manager Paul English, WD8DBY, felt the webinar got excellent visibility, saying, "We received a lot of great feedback...I know the visibility we received...significantly improved our interoperability with the Amateur Radio community."

Corey said hams are also enthusiastic about programming, as was borne out by the response to the "CHIRP Radio Programming" presentation. After being well received by the 276 live participants, the presentation reached 3,357 views on YouTube, and there were many requests to feature a similar topic next year. Overall, Corey said the webinars "were extremely well attended," averaging from anywhere between 100 to 300 live participants, and after the presentations were posted on YouTube, these numbers were often tripled.

The "ARES Reporting" seminar...was the second most popular topic...there may be a correlation between this webinar's discussion of the future of ARES reporting and the significant increase of ARES reports seen in 2016.

Corey also explained that the various messages seemed to resonate with the audiences. For example, the "ARES Reporting" seminar, which was the second most popular topic (360 live participants and 1,478 YouTube views), included a discussion on where the information from ARES after-action reports goes, how the information is used, and why good reporting is critical. It is interesting to note that there may be a correlation between this webinar's discussion of the future of ARES reporting and the significant increase of ARES reports seen in 2016.

It was also clear that the webinars were well-received in the level of participation seen in the more interactive seminars. For instance, for his "Contesting as Training with NØAX" presentation, Ward Silver had sought out anecdotes from radio amateurs who have activated an emergency operations center (EOC) for a contest, and he was able to incorporate several of them into his presentation.

The webinars' usefulness and popularity was boosted by the ability to watch them on YouTube once the live presentation was over. "Many amateur operators enjoy the material and like the fact that when the webinars are recorded, they can go back to reference the material or watch it when their schedule allows," said Eastern Massachusetts ARES Assistant Section Emergency Coordinator Rob Macedo, KD1CY, who has presented in several ARRL webinars on hurricanes and SKYWARN.

With 2,165 total live participants and 8,921 total YouTube views, Corey feels the webinars were a success, and hopes to offer even more of them in 2017.

Ham Aid for the Ecuador Quake

Ham Aid

The Amateur Radio response to the April 16, 2016 earthquake in Ecuador included 24-hour monitoring on the 40-meter band from the Ecuadorian ham radio group, Cadena HC. The Amateur Radio community was asked to keep 7.060 MHz clear for emergency traffic.

The 7.8 magnitude earthquake resulted in more than 670 deaths and caused injuries to more than 16,600 people. Most of the damage occurred in the Guayaquil and Portoviejo/Manta areas of Ecuador, with many roads rendered impassable due to rubble, and victims reported to have been buried in collapsed buildings and homes. Electrical power and commercial telecommunication systems in the affected areas were destroyed or temporary disabled. Local hams involved in search-and-rescue activities resorted to the use of mobile stations or battery power.

In early May, some 400 pounds of Ham Aid Amateur Radio equipment valued at more than $7,500 was shipped from ARRL Headquarters to Ecuador to support relief and recovery efforts. ARRL's Ham Aid program was created in 2005, in response to the need for equipment and resources to support the Amateur Radio response to Hurricanes Katrina, Rita, and Wilma. Ham Aid gear has been deployed to support the response to events such as Hurricane Gustav in 2008, the earthquake in Haiti in 2010, and the tornadoes in Alabama in 2011. Ham Aid equipment is available on loan to Amateur Radio organizations during disaster response when communications equipment is unavailable.

In October 2016, the Guayaquil Radio Club (GRC) recognized ARRL Emergency Preparedness Manager Mike Corey, KI1U, for coordinating the work of ARRL and of several other radio amateurs to provide Ham Aid equipment to Ecuador.

"It was quite a surprise and honor," said Corey, who was quick to share the credit. "The recognition really goes to the team that made it all happen — here at ARRL Headquarters, Ken Bailey, K1FUG; Sean Kutzko, KX9X, and Tom Gallagher, NY2RF. In South Florida, Jeff Beals, WA4AW, and Kenny Hollenbeck, KD4ZFW — and most of all, Gunter Chanange, HC2CG, and the

members of the Guayaquil Radio Club, who did the real work."

GRC President Lorenzo Lertora, HC2BP, presented the award during the IARU Region 2 General Assembly in Chile. Lertora, who is also Ecuador's deputy defense minister, said the equipment provided through Ham Aid allowed Ecuadorian Amateur Radio volunteers to help a Venezuelan Air Force plane carrying search-and-rescue personnel and equipment to land safely at an airport that had lost all power and communication. GRC also recognized ARRL Southwest Division Director Dick Norton, N6AA; ARRL Southwest Division Vice Director Marty Woll, N6VI; and Oliver Sweningsen, W6NV.

The Guayaquil Radio Club (GRC) recognized ARRL Emergency Preparedness Manager and IARU Area B Emergency Coordinator Mike Corey, KI1U, for coordinating the effort to provide Ham Aid equipment to Ecuador. From left to right are ARRL President Rick Roderick, K5UR; GRC President Lorenzo Lertora, HC2BP; Mike Corey, KI1U; GRC Treasurer Victor Perez, HC2DR; Mario Proaño HC2TMP, and ARRL Second Vice President Brian Mileshosky, N5ZGT.

The Technical Aspects of Public Service

In September 2016, Los Angeles musician Burt Levine contacted ARRL Southwestern Division (Los Angeles) Section Manager Diana Feinberg, AI6DF, asking for help identifying a source of interference that was compromising his livelihood. This inquiry launched a 6-month investigation in which ARRL volunteer technicians worked with Levine to uncover the cause.

Levine has operated a private music studio for more than 30 years, and became concerned when his recording equipment began picking up a staccato sound. Wondering if what he was hearing was Morse code, Levine sought out local Amateur Radio associations and found Feinberg.

Feinberg conducted a search of all hams in Levine's zip code, but couldn't find a likely culprit. It wasn't until she asked Levine for a recording of the noise, that she recognized it wasn't Morse code after all.

Section Technical Coordinator Gary Lopes, WA6MEM, then took the lead. Lopes, who was first licensed in 1967, and who has enjoyed a successful engineering and managerial career, made multiple visits to Levine's home to pursue the source of interference.

First, Lopes inspected Levine's studio to eliminate an internal source, but nothing he tried eradicated the signal. The two then canvassed the neighborhood with an AM broadcast radio and an Amateur Radio handheld to cover UHF and the 220 and 144 MHz bands. Tracking the strength of the sound, they finally narrowed it down to a nearby apartment complex. Due to the digital nature of the sound's pulsing, Lopes suspected the cable television system. But when Levine called the company, their crew was unable to find any problems with their equipment.

ARRL's Ken Bailey, K1FUG, Volunteers with Boy Scouts to Mentor the Next Generation of Hams

ARRL's ongoing relationship with the Boy Scouts of America (BSA) is further strengthened by the work of ARRL's Emergency Preparedness Assistant Ken Bailey, K1FUG, who is one of five people in Connecticut who have registered as Radio Merit Badge counselors, mentoring Boy Scouts and working to expand their interest in Amateur Radio.

With 50 years of Amateur Radio operating experience and an Amateur Extra class license, Ken assists in managing the Amateur Radio Emergency Service (ARES), is involved with national and international emergency communications organizations for Amateur Radio operators, and works with the American Red Cross, the Salvation Army, and many other volunteer agencies to assist with radio communications during times of disaster.

Having been involved with the BSA since his childhood, and later becoming Assistant Scoutmaster and Radio Merit Badge counselor when his sons joined, the BSA has always been a large part of Ken's life. Upon becoming employed at ARRL in 2011, he assisted in leading the Radio Merit Badge course at ARRL Headquarters.

"I enjoy helping Scouts learn new and exciting subjects, and working with them is one way I can continue to serve," Ken said.

Ken dedicates his energy to ARRL's Radio Scouting initiative to help Scouts receive their Radio Merit Badge because it benefits the BSA, Amateur Radio, and the next generation of hams. Ken has helped more than 30 Scouts receive their Radio Merit Badge, and he even served as volunteer examiner (VE) for at least one Scout who received his Technician license because of the Radio Merit Badge.

On another visit to Levine's home, Lopes found strong signals also emanating from the power line system, the next potential culprit. The Los Angeles Department of Water and Power conducted a neighborhood search and came back to the same building Lopes previously identified.

In the meantime, Lopes had been putting together a team of technical specialists in the region, including one recruit who was exceptionally knowledgeable in radio frequency interference (RFI). Chris Parker, AF6PX, has been tracking down RFI since 2009, even developing his own directional finding equipment in the process.

He elaborated, "Hams are the eyes and ears for the local electric utilities, helping them with proactive maintenance and repairs before minor defects escalate into outages or equipment failures."

ARRL Lab Manager Ed Hare, W1RFI, agrees that hams are valuable in these situations, saying that the actions Lopes and Parker took, "show the value of the local technical volunteers. They had it under good control."

With Parker's expertise and specialized equipment, the men were able to localize the sound to the power supply for one specific condominium. They had noticed a pattern to the build and decline of the sound that alluded to some sort of thermostat. The condo tenants allowed Levine to do a walk-through of their home with his handheld audio amplifier. When he arrived in their kitchen, the sound got louder. They began unplugging appliances to see which might eliminate the signal when, finally, it stopped. In Levine's hand was the cord to the coffee maker.

The machine contained a heating plate; to maintain the coffee's temperature, the thermostat would turn on slowly, reach the desired temperature, then slowly turn off, consistent with the pattern of the signal coming through Levine's amplifiers. The owners kindly agreed to leave the coffee maker off when not in use.

Throughout this encounter, volunteers Lopes and Parker were able to use their understanding of interference and signal propagation to hunt down the problem. But most importantly, they persevered when all other avenues failed, in an example of what Ed Hare calls, "the technical aspects of public service." Levine was grateful for that service, saying, "The signals made it impossible to conduct business or create music...With the help of Gary, Chris, and the League, I was able to find a solution to a vexing problem that no other source could solve."

September 2016 brought a group of new ARRL Section Managers to Headquarters for orientation. The group included: (standing, left to right) Joe Speroni, AHØA (Pacific Section); Patrick Moretti, KA1RB (Wisconsin); Ray Hollenbeck, KL1IL (Alaska); Ron Harden, KB5HGM (West Texas); Joe Shupienis, W3BC (Western Pennsylvania); Oscar Resto, KP4RF (Puerto Rico); Tom Walsh, K1TW (Eastern Massachusetts); Diana Feinberg, AI6DF (Los Angeles); Brent Walls, N9BA, (Indiana); JVann Martin, W4JVM (Alabama); John Core, KX7YT (Oregon); (kneeling, left to right) Dave Kaltenborn, N8KBC (San Diego); Chuck Motes, K1DFS (Connecticut); John Bigley, N7UR (Nevada).

Betsey Doane, K1EIC: A Commitment to Leadership

Longtime ARRL Connecticut Section Manager (SM) Betsey Doane, K1EIC, retired in 2016 after a quarter century of continuous leadership. At the New England Division Convention's ARRL Forum in September, New England Division Director Tom Frenaye, K1KI, presented Betsey with a plaque commemorating her "25 years of dedicated and honorable service," inscribed in both print and braille.

Betsey and her twin sister Barb, K1EIR, first became licensed in 1958. While still in high school, the sisters began running classes for the Amateur Radio Club K1QCK at Oak Hill School for the Blind, even arranging visits from the FCC. Speaking on the sense of community she found, Betsey said, "We were blind hams, and they could've treated us different, but they didn't."

Betsey and Barb moved up in the ranks of the League through the traffic system. In 1982, Betsey began serving as Connecticut Section Traffic Manager until becoming elected Connecticut SM in 1991.

During her multiple terms, Betsey tackled countless critical events with delight and determination. With every winter storm, Betsey was on the air, sharing weather news from across the state. After the September 11 attacks in 2001, she helped recruit Connecticut radio operators to support emergency management agencies in the New York City area. In 2014, she was the Section Manager Host for the ARRL Centennial, greeting those arriving from across the nation. And among all these events, she never missed a monthly section news report.

Although she decided not to seek a further SM term this past September, Betsey has remained active. She is a manager for the First Region Net of the National Traffic System, President of the Valley Amateur Radio Association, a member of the American Council of Blind Radio Amateurs, and serves as Assistant Section Manager under current Connecticut SM Chuck Motes, K1DFS.

After all her years working with ARRL, Betsey says, "I'm thankful for the opportunities I've been given by ARRL. I've always felt part of the family."

Amateur Radio Advocacy on the International Stage

ARRL is Amateur Radio's proactive advocate and representative voice in achieving regulatory and legislative success. Through our efforts in Washington and on the international stage under the auspices of the International Amateur Radio Union (IARU), ARRL works to ensure that access to the Amateur Radio spectrum remains available and free from interference as well as from acquisition by commercial interests.

Advocacy

ARRL Senior Technical Relations Specialist Jon Siverling, WB3ERA, presents at the Amateur Radio Administration Course in Mexico City.

The most important mission of the IARU is to serve as the voice of Amateur Radio at the International Telecommunication Union (ITU — the United Nations agency responsible for managing the radio spectrum and establishing telecommunications standards) and regional telecommunications organizations. The IARU and its member societies ably defend Amateur Radio through careful planning and coordination. All hams, whether or not they are members of their respective national Amateur Radio societies, benefit from this advocacy.

The ARRL Technical Relations Office (TRO) in Fairfax, Virginia protects the Amateur Radio bands at the federal level in Washington and internationally. The TRO is staffed by ARRL Senior Technical Relations Specialist Jon Siverling, WB3ERA. ARRL is well known to government agency spectrum managers and their counterparts in industry, due to the organization's placement in ITU-Radiocommunication groups on such topics as management of the radio sector, spectrum management and monitoring, spectrum engineering, spectrum administration, terrestrial services, broadcasting, terrestrial emissions, radio astronomy, satellites, and others.

Preparation for WRC-19

In 2016, the TRO largely focused on preparations for the next ITU World Telecommunication Conference (WRC) to be held in Geneva, Switzerland in 2019. The IARU team for WRC-19 includes Siverling, IARU President Tim Ellam, VE6SH; IARU Vice President Ole Garpestad, LA2RR, and radio amateurs from Canada, Venezuela, Brazil, the United Kingdom, the Netherlands, Germany, Kuwait, Japan, Australia, and New Zealand.

Issues that may impact Amateur Radio to be discussed at WRC-19 include frequency bands for the future development of International Mobile Telecommunications (IMT), radio local area networks (RLANs), land-mobile and fixed service applications 275 – 450 GHz, Intelligent Transport Systems (ITS), railway radiocommunication systems between train and trackside, space-operation service (non-GSO satellites), and the 50 – 54 MHz issue for Region 1.

The WRC is held approximately every 4 years to discuss changes to the allocation of frequencies in the RF spectrum. Broadcasters, government agencies, satellite users, and emerging technology information providers all want a piece of this finite property. ARRL officials and volunteers actively participate in many of these meetings in defense of Amateur Radio interests. Each issue is projected over years of domestic preparatory meetings and international meetings.

The World Telecommunications Development Conference 2017 (WTDC-17)

Throughout 2016, ARRL worked with the US Department of State and other federal agencies to prepare for WTDC-17, which will be held in October 2017 in Buenos Aires, Argentina.

WTDCs consider topics, projects, and programs relevant to telecommunication development. WTDCs set the strategies and objectives for the development of telecommunication/ICT, providing future direction and guidance to the ITU Telecommunication Development Sector (ITU-D). The theme of WTDC-17 is "ICT for Sustainable Development Goals" — ICT④SDG.

ARRL's Important Position in the Regional Organization

In the Americas region, the regional telecommunications organization is the Inter-American Telecommunication Commission (known by its Spanish acronym, CITEL), an agency of the Organization of American States (OAS). CITEL has an assembly every 4 years, a permanent executive committee (COM/CITEL) meeting annually, and a variable number of meetings of its Permanent Consultative Committees (PCCs) I: (Telecommunications/information and communication technologies), and II: (Radiocommunications including broadcasting).

PCC.I acts as a technical advisory body within CITEL with respect to standards coordination, planning, financing, construction, operations, maintenance, technical assistance, equipment certification processes, rate principles, and other matters related to the use, implementation, and operation of public telecommunications services in the Member States. The Rapporteurship on disaster prevention, response and mitigation, Chaired by the United States (Chairman: Jon Siverling/ARRL) is a part of the Working Group on Development (WGD) of PCC.I. The Rapporteurship provides a unique opportunity to promote Amateur Radio throughout the Americas; and to ensure continued support by administrations for Amateur Radio. The Rapporteurship supports disaster preparedness and serves as a means for Member States to channel their telecommunication needs regarding natural disaster early warning, mitigation, and relief

PCC.II is the CITEL technical advisory body for standards coordination, planning, and full and efficient use of the radio spectrum and satellite orbits, as well as matters pertaining to the operation of radiocommunication services in the Member States. It is within PCC.II where Inter-American Proposals (IAPs) are developed for the WRC-19.

CITEL Recommendation 53 — Promoting Amateur Radio for the Americas

In December 2016, the XXVIII meeting of CITEL's Permanent Consultative Committee II: Radiocommunications, approved a Recommendation on the "Simplification of administrative process for amateur and amateur satellite service." This Recommendation recommends that OAS Member States "...take measures to keep, update, or implement simplified legal, technical, and administrative treatments to amateur and amateur-satellite services with reduced costs and reasonable requirements, congruent with its voluntary and non-pecuniary nature, taking into account the definitions and characteristics of the service, ITU regulations, and respective recommendations;" as well as to "...take measures to consider international conventions, treaties, agreements and recommendations on mutual recognition of amateur service licenses and facilitate the temporarily operation within their respective countries of foreign amateurs duly licensed in their countries of origin, particularly in the case of disasters and/or natural catastrophes."

ARAC Mexico — ARRL, FMRE & IARU Region 2

ARRL also works with government regulators and engineers to promote and regulate Amateur Radio. For example, in February 2016, ARRL, along with the Mexican Federation of Radio Amateurs (Spanish: *Federación Mexicana de Radio Experimentadores* or FMRE) and the IARU Union Region 2, conducted the Amateur Radio Administration Course (ARAC) for regulators in Mexico City. Government regulators from both Mexico's Federal Institute of Telecommunications (IFT) and the Public Utilities Commission of Belize attended the course. The objective of the course is for regulators to be able to help create, administer, and foster an Amateur Radio Service among the citizens of one's country. The focus of this course is designed for those who regulate and manage Amateur Radio, and it was taught in both English and Spanish. Topics included: Organization of ITU and IARU; Nature of Amateur Radio Services; ITU Radio Regulations; Amateur Radio Activities and allocations; How society can benefit from Amateur Radio; National Licensing and regulations; Amateur radio examinations; Emergency Communications; and Electro Magnetic Compatibility, among others.

Broad changes in Mexico's radiocommunication regulatory environment 2 years ago still do not provide reciprocal permission for non-Mexican radio amateurs to operate in Mexico. Mexico's IARU member society, the Federation of Mexican Radio Amateurs (FMRE), has been working with the new regulator (IFT) to craft more Amateur Radio-friendly licensing procedures and regulations, and in this regard, a new recommendation from the regional telecommunications organization, CITEL, may prove helpful.

ARISS's 1,000th School Contact

On March 10, 2016, the Amateur Radio on the International Space Station (ARISS) program made its 1,000th student contact, organized by the North Dakota Space Grant Consortium (NDSGC), from the University of North Dakota in Grand Forks. It was the first-ever ARISS student contact from North Dakota. Astronaut Tim Kopra, KE5UDN, on the International Space Station (ISS) did the honors, and some 500 students and visitors were on hand for the big event. ARISS International Chair Frank Bauer, KA3HDO, congratulated the ARISS team on what he called "this phenomenal accomplishment."

He went on to say, "Since our first contact in December 2000 to the contact in North Dakota, hundreds of thousands of students have participated in the hands-on STEM learning that ARISS affords."

ARISS is a cooperative venture of the Radio Amateur Satellite Corporation (AMSAT), ARRL, and NASA in the US, as well as other international space agencies and international Amateur Radio organizations. The primary purpose of ARISS is to organize scheduled Amateur Radio contacts between crew members aboard the International Space Station and classrooms or informal education venues.

ARISS provides an opportunity for students, teachers, and the public to learn about wireless technology and radio science; inspires an interest in science, technology, engineering, and math (STEM) subjects and careers; serves as an opportunity for Amateur Radio experimentation, and provides a contingency communications system for NASA and the ISS crew.

The NDSGC team made multiple visits to pupils in the second through fifth grades to prepare for the event. The team led the students in hands-on activities about aerospace, priming them for the interview with Kopra. The students built and launched rockets, crafted and tested parachutes, and designed and tested neutral buoyant objects. During the 10-minute contact, Kopra answered questions posed by students ranging from kindergarten to graduate school. The 1,000th ARISS student contact is a milestone for the program and a testament of great things to come.

Education

Top: A volunteer holds the microphone for a young girl as she talks to Astronaut Tim Kopra, KE5UDN, aboard the ISS via Amateur Radio, during the 1,000th ARISS contact.

Above: Each student who got to speak to Astronaut Tim Kopra, KE5UDN, aboard the ISS received this commemorative certificate.

The Impact of ARRL ETP Grants

Through the Education & Technology Program, ARRL offers grants for radio station equipment, related software equipment, and resources for classrooms in the US. All of these grants are funded through individual or club donations. Although no grants were awarded by ARRL in 2016, schools benefited in 2016 from grants given in the past.

ARRL member Devon Day, KF6KEE, serves as a public school volunteer and co-advisor for two schools' Amateur Radio clubs in the Long Beach, California, area — Sato Academy of Mathematics and Science and McBride High School, a magnet school for engineering, medicine, forensic science, and civil service. Her schools have received multiple grants from ARRL over the years. She credits the grants as allowing for hands-on interaction with Amateur Radio while the students are buzzing with interest.

Sato Academy founded their Amateur Radio club in the fall of 2016, using the call sign W6SHS. There are currently eight members. Richard Sherwood, N6RU, is the former president

A Sato Academy student works with ARALB club President Endaf Buckley, KG6FIY, at the QSO Party in Pan American Park.

of the Associated Radio Amateurs of Long Beach (ARALB) and agreed to serve as an instructor/adviser for the club.

The students are frequent visitors to the Queen Mary Wireless Room, W6RO. The Queen Mary — formerly a luxury ocean liner and a World War II troopship — is currently a hotel, attraction, and event space permanently docked in Long Beach. The wireless room has supported members of radio clubs in the Long Beach area since 2006. "Over 50 licensed radio club members have come out of the clubs in Long Beach," Day said.

The McBride High School Amateur Radio Club, K6MHS, is now 4 years old and is an ARRL affiliated club. The club has 13 members, five of which earned their licenses in 2016. McBride student and radio club president Wyatt Law, AI6V, helps teach the student radio clubs at McBride, Sato Academy, and the Long Beach Sea Base Boy Scouts. Law said, "This outreach is a big part of my belief in helping others and spreading my enthusiasm for ham radio."

In 2016, the McBride club participated in events like ARRL Rookie Roundup, School Club Roundup, ARRL Field Day, and a QSO party. The students also visited the USS *Iowa* and made a contact in the radio room. The club ran their first emergency drills with the school in 2016. They built a mobile station for emergency use should the school be evacuated, worked with the Long Beach American Red Cross to install smoke alarms, and coordinated with the Red Cross Control Operator. They were also invited to participate in the Red Cross radio class for free.

In 2016, Devon Day was recognized as an Outstanding Volunteer by the Long Beach Unified School District. She was also nominated to the ARALB Board as a Director. She said, "Without the help of ARRL, the students would not be working HF radio on a regular basis."

The 2016 Teachers Institute Adds a Colorado TI-1 Session

As part of ARRL's educational outreach to schools through the Education & Technology Program (ETP), ARRL offers multiple sessions of the Teachers Institute on Wireless Technology — an expenses-paid professional development seminar that takes place every summer in various locations. The Teachers Institute (TI) sessions provide educators with the tools and strategies to introduce basic electronics, the science of radio, space technology, satellite communications, weather science, introduction to microcontrollers, and basic robotics into their classrooms.

The first ARRL Teachers Institute of 2016 took place in a new location — Highlands Ranch, Colorado. The bonus, donor-sponsored introductory (TI-1) session was hosted by the Douglas County STEM School and Academy for teachers along the Denver Front Range.

Colorado TI instructor Larry Kendall, K6NDL, said participants discussed classroom implementation, made demonstrations of classroom activities, and absorbed the concepts covered during the week. He also said that at the start of the class, only one teacher had an Amateur Radio license. "Though not a key focus of the Institute, by the end over half expressed their intent to pursue licensing," he said.

Lance Newman, a high school teacher from Illinois, is one such teacher. Newman has since earned his General class license and holds the call sign KD9GOY. He has brought ham radio into his classrooms, and started an Amateur Radio club for the students, who are in the process of setting up a classroom station and applying for a club call sign.

The Colorado TI-1 curriculum covered fundamental principles of electronics, Ohm's Law, electronic components, simple circuits, and a "Soldering 101" tutorial. Participants explored concepts such as oscillators, amplifiers, filters, mixers, and rectifiers, gaining experience with an oscilloscope in the process. The course also introduced digital signals and processing, microcontrollers, and programming

Fifth-grade teacher Chris Laster, KM4KPJ, of Georgia, said the TI-1 session was the best one he'd ever attended. "I left with tons of ideas to implement and a much deeper understanding of radio science and electronics that will make me both a better ham and a better teacher," he said. "It was an incredibly productive week!"

TI-1 attendees learned to program Boe-Bot robots so they could be operated remotely.

ARRL's First Podcast — "The Doctor is In"

In April 2016, ARRL launched its first-ever podcast — "The Doctor is In," sponsored by DX Engineering. This audio version of the popular *QST* column of the same name is co-hosted by *QST* Editor-in-Chief Steve Ford, WB8IMY, and *QST* Contributing Editor Joel Hallas, W1ZR, who has long been known as "the Doctor."

ARRL's excursion into the realm of podcasting was even more successful than predicted. On average, 9,000 people download each episode of "The Doctor is In." Steve Ford said,

Production

"We anticipated about 5,000 downloads per episode, so I'm very pleasantly surprised at the response." Joel Hallas was also happily surprised by the input from listeners, saying, "I had no idea how many people would actually be interested."

When asked what sparked the idea to start the new podcast, Ford said, "Podcasts are becoming increasingly popular, especially among younger segments of the Amateur Radio community. It seemed like an excellent way to explore new media."

The podcast sounded like a win to its sponsor, DX Engineering, as well. DX Engineering CEO Tim Duffy, K3LR, said, "When ARRL presented us with this unique opportunity, it was an easy decision to make. DX Engineering is one of the most prominent businesses supporting the ham radio community, so it just makes sense to be part of the 'ARRL The Doctor is In' podcast."

After the podcast's launch last April, Hallas received such a surge in questions directed to "the Doctor" that he "had to initiate a kind of triage process — handing off some of the questions to others, such as the ARRL Lab staff."

ARRL releases new episodes of "The Doctor is In" every other Thursday. The podcast covers a broad range of technical topics of interest to all amateurs — everything from antennas to Zener diodes and beyond. Each 20-minute program is available from Apple iTunes and Stitcher — the two largest podcast distribution platforms — and for online listening on Blubrry. The episodes are archived on the ARRL website.

Listeners can tune in on their computers, tablets, or smartphones, whenever and wherever they like. They can even subscribe to the podcast free of charge through either iTunes or Stitcher so they never miss an episode.

In 2016, the ARRL Audio News also switched to a podcast format. Hosted by Sean Kutzko, KX9X, and Carla Pereira, KC1HSX, every Friday afternoon (except holidays), ARRL Audio

Joel Hallas, W1ZR, answers technical questions in a podcast version of his popular *QST* column, "The Doctor is In."

News condenses major Amateur Radio news highlights from that week's edition of *The ARRL Letter* into a 15-minute audio report. It is still broadcast over repeaters during listeners' weekly nets, as it has been for many years, in addition to it now being available on Blubrry. Kutzko said the switch to a podcast format came as a result of "better understanding of our audience," and has driven a huge increase in listeners. Kutzko explained, "At the end of 2016, ARRL Audio News was being downloaded around 3,000 times a week, including regular downloads in the United Kingdom, Australia, Japan, China, and many other countries."

QST's Transition to the PageSuite Digital Platform

As of the January 2017 issue of *QST*, released in December 2016, ARRL switched to the PageSuite digital platform for presenting the digital edition of the magazine. The new platform is available on any browser, has downloadable apps for Android and iOS devices, and is newly available to Kindle Fire. The switch to PageSuite allows ARRL to provide the digital edition of *QST* with smaller file sizes, meaning a faster download time and less memory usage for app users.

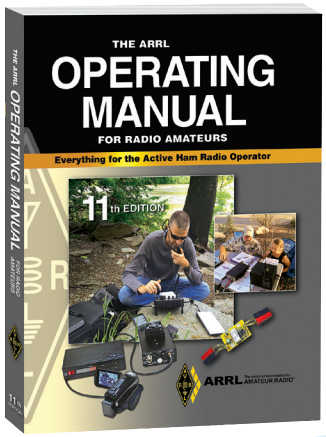
ARRL Digital Media Support Specialist Allison McLellan explained, "PageSuite transitions digital *QST* away from an outdated Adobe Flash Player platform that required updates and maintenance every month."

Features available while accessing digital *QST* from a browser include digital bookmarks that allow you to pick up where you left off, and a clipping tool to save or share important passages as JPEG files. Video files are hosted on YouTube in high resolution.

The switch to PageSuite has even led to an increase in digital users. The number of unique users reported in the first 30 days of the December 2016 edition — the last digital issue using the magazine's former digital provider — was 13,601 users. In the first month of the recent April 2017 issue, the digital edition had 18,506 unique users — an increase of 36%. In the first 30 days of the April 2016 digital edition of *QST* (using the old platform), there were 11,831 unique users, compared to the 18,601 users for the April 2017 edition, showing a 56% increase in digital users from a year before.

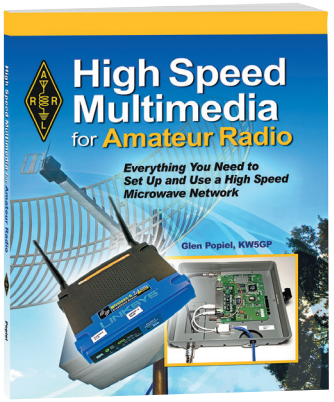
Book Production in 2016

In 2016, ARRL published 10 books. *The ARRL Operating Manual, 11th edition*, underwent a complete revision in 2016 to bring it fully up to date with modern practices, as part of ARRL's continuing efforts to bring new topics to members and encourage the exploration of everything Amateur Radio has to offer. As ARRL Production and Editorial Manager Steve Ford, WB8IMY, explained, "We're seeing a significant shift toward digital communication in Amateur Radio, and our book offerings in 2016 reflect that change of emphasis."



Steve Ford's *Work the World with JT65 and JT9* is the first book devoted to the increasingly popular JT65 and JT9 digital communication modes. This step-by-step guide for beginners explains how to assemble an effective digital communication station and configure the software for best performance.

Glen Popiel's, KW5GP, *High Speed Multimedia for Amateur Radio* is the first book to provide detailed information for radio amateurs who are interested in creating broadband wireless networks at microwave frequencies for public service applications. Virtually any service that works on the regular internet can be adapted to an Amateur Radio high-speed multimedia network, including video conferencing, instant messaging, voice over internet protocol (VoIP), network sensors and cameras, remote station control, and many other services.



Other books ARRL published in 2016 include *Antenna Physics: An Introduction* by Robert J. Zavrel, Jr., W7SX; *Small Antennas for Small Spaces*, 2nd edition, by Steve Ford, WB8IMY; *Storm Spotting and Amateur Radio*, 2nd edition, by Michael Corey, KI1U, and Victor Morris, AH6WX; *2016/2017 ARRL Repeater Directory*; *Extra Class License Manual*; *Extra Class Q&A*, and *The 2017 ARRL Handbook*.

ARRL's Social Media Boom

2016 saw great improvements in ARRL's social media efforts. The League created a social media intern position and an Instagram account, and started using social media management software that provides a single location for all social media message creation, demographics, and performance analysis. ARRL's Facebook and Twitter feeds increased their followers significantly, with the Facebook page growing from 61,000 "likes" to 72,236. ARRL began consolidating its Twitter accounts, reducing the number of active feeds from seven to five. Despite the deactivation of two accounts, the number of ARRL Twitter followers held steady, around 53,000.

Two major successes in ARRL social media were the creation of a Facebook group and Twitter feed for the National Parks on the Air (NPOTA) program. ARRL plans to use social media to enhance on-air events like NPOTA in the future, due to its proven ability to unite event participants.

Video output from ARRL showed modest gains in 2016. Hosting videos directly on the ARRL Facebook page proved helpful to followers. Plans for 2017 include greatly expanded social media and video capabilities.

The ARRL Laboratory: Service, Advocacy, and Leadership

When ARRL members think of the ARRL Lab, it's likely that they associate it with the product testing that is highlighted in the "Product Review" feature in every issue of *QST*. ARRL Assistant Laboratory Manager Bob Allison, WB1GCM, tests every transceiver and receiver that *QST* reviews, to determine whether the gear functions according to the manufacturer's published specifications. In the process, he often identifies problems and works with the manufacturer to resolve them — resulting in better products for the Amateur Radio community. ARRL Laboratory Manager Ed Hare, W1RFI, says that this is where the real value of Product Review testing lies.

Product testing is a key service ARRL performs for its members, as well as for the ham community in general. ARRL's Assistant Laboratory Manager Bob Allison, WB1GCM, evaluates products in the ARRL Lab's Faraday cage.

ARRL Laboratory

"The real work we do is with the manufacturers," he said. Indeed, Amateur Radio equipment manufacturers trust the ARRL Lab's Product Review to a degree where the testing, and the product improvements that sometimes result, could be called a public service to the Amateur Radio community.

A related public service that the Lab performs involves getting out into the field and working with the Amateur Radio public at conventions and hamfests to test handheld VHF transceivers. This popular service generates substantial lines, as radio amateurs wait to have their handhelds tested by Bob Allison; ARRL RFI Engineer Mike Gruber, W1MG, or the knowledgeable volunteers such as ARRL Central Division Director Kermit Carlson, W9XA, or ARRL Laboratory volunteer Matthias Zapatka, AJ4BB. Bob Allison, who spearheads the testing effort, says it has a major impact on all radio amateurs by providing solid data that has proved that many makes and models of handheld transceivers are non-compliant of FCC spectral requirements.

The resulting "splatter" of radio signals from non-compliant gear is not only a nuisance to other Amateur Radio operators, it can have technical, safety, and legal implications outside of the Amateur Radio bands. Awareness of these implications is the responsibility of the radio amateur operating the non-compliant equipment, which makes the Lab's testing service that much more important.

In 2016, another opportunity to educate the larger community came about via the ARRL Lab's participation at the Connecticut Broadcasters Association 2016 convention, held at Quinnipiac University in Hamden, Connecticut. Bob Allison saw this as an opportunity to educate the owners, salesmen, and engineers of local broadcast stations about the growing problem of radio frequency interference (RFI), a problem shared by both the broadcasting and Amateur Radio services. Lab staff offered a live demonstration that simulated failing hardware components on a utility pole, which made quite a bit of noise through an AM receiver.

Bob Allison expressed hope that broadcasters will become more involved in efforts to prevent RFI, acknowledging that the multi-million-dollar licensing fees that broadcasters pay to the FCC give them a great deal of clout.

Clout, on a national and even international scale, is not limited to large broadcasters, however. Some of it resides with ARRL Lab staff who occupy key positions on committees and working groups with standards and regulatory bodies such as the Institute of Electrical and Electronics Engineers (IEEE) and the American National Standards Institute (ANSI).

In November 2016, Ed Hare was elected Vice President of Standards of the IEEE's Electromagnetic Compatibility (EMC) Society, the world's largest organization dedicated to the development and distribution of information, tools, techniques, and standards for reducing electromagnetic interference. Hare also serves as Chair of Subcommittee 5 (EMC immunity) of the ANSI-accredited C63 EMC committee. C63 develops standards that are often adopted by the FCC as regulation. Subcommittee 5 develops test methods and sets limits for the immunity of consumer and industrial equipment to nearby noise and nearby transmitters. Hare and the Lab staff also work with representatives from companies such as Motorola and AT&T, dealing with radio frequency interference issues on a global scale.

Hare points out that ARRL's place at the table on these committees — in some cases at the head of the table — is a form of Amateur Radio public service. "It's service to industry," he commented. "We are helping industry to develop standards, while representing the interests of Amateur Radio."

Mike Gruber now serves as Chairman of IEEE working group p1897 to develop a recommended practice for the resolution of power line noise complaints. The group presently consists of 16 members from a wide range of stakeholders, which befits

the development of an international standard that would have widespread ramifications. While most of the members are from power companies, some have communications, FCC, and FEMA backgrounds. The goal of this working group is consensus with the utility industry, and the outlook is very positive.

The issues of power line noise, as well as the ability to locate interference, continue to be significant RFI problems for radio amateurs. Once the working group's recommended practice is approved, it will help to promote modern interference-locating practices and equipment — not just for Amateur Radio, but for global industry.

Amateur Radio has representation in several IEEE committees, subcommittees, and working groups thanks to the service of the former FCC Special Counsel for Enforcement Riley Hollingsworth, K4ZDH; ARRL EMC Committee member Brian Cramer, W9RFI, who serves as the p1897 working group's Vice Chair; and Jerry Ramie, KI6LGY, who serves as the p1897 working group's Secretary; as well as ARRL EMC Committee and p1897 Working Group members Jody Boucher, WA1ZBL, and Central Division Director Kermit Carlson, who is the ARRL EMC Committee Chairman.

ARRL Investigates Interference with Evanston Police

An interesting case of electromagnetic compatibility (EMC) arose in Evanston, Illinois last year as the result of an inquiry from Officer Henderson of the Evanston Police Department to ARRL RFI Engineer Mike Gruber, W1MG.

She said that wireless motor vehicle key fobs wouldn't allow owners to open their vehicles in Evanston's commercial downtown area, and in some cases with keyless starters, owners were unable to start their cars. It was further reported that the affected drivers were then unable to use their cell phones to call for help. Gruber, who has been involved with radio frequency interference for 15 years, commented that he felt the situation was "a matter of public safety."

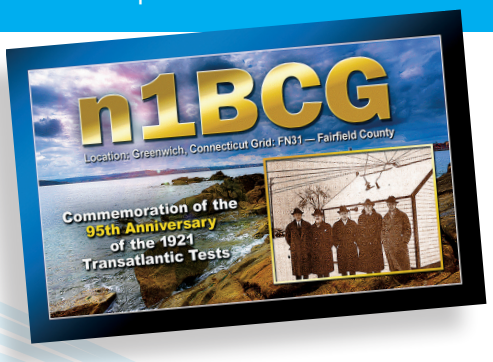

ARRL Central Division Director Kermit Carlson, W9XA, actively works to combat interference issues.

ARRL Electromagnetic Compatibility Committee Chair and Central Division Director Kermit Carlson, W9XA, lives in the Chicago area. Gruber supplied him with the necessary equipment for investigating the problem. In late June, Carlson met with two officers of the Evanston PD, an affected business proprietor, and the owner of the building nearest the problem area. During the visit, it was learned that the Evanston PD had requested help from the FCC. The Commission did not investigate, saying this was a car maker's problem.

Carlson used a Radar Engineers-240A Noise Signature Receiver and UHF Yagi antenna to survey the affected block. A particularly strong noise source was noted at either end of the block, and the directional antenna indicated the same central point.

The source was identified as a neon sign transformer replacement power supply that provided a significant radiated signal to the area of the on-street parking just across the sidewalk. The building owner and police officers were advised to have the business owner turn off the sign should this problem arise, and he was notified that his neon lighting device was causing a problem.

N1BCG Special Event Recreates the First Transatlantic Shortwave Reception



On December 11, 2016, amateurs in the US and in Scotland reenacted the first successful transatlantic reception of a shortwave Amateur Radio signal, which had occurred nearly a century earlier. Special event station N1BCG in Greenwich, Connecticut, and GB2ZE in Ardrossan, Scotland, completed contacts on SSB and on CW. ARRL, the Radio Society of Great Britain (RSGB), and the Radio Club of America (RCA) partnered to support the activity.

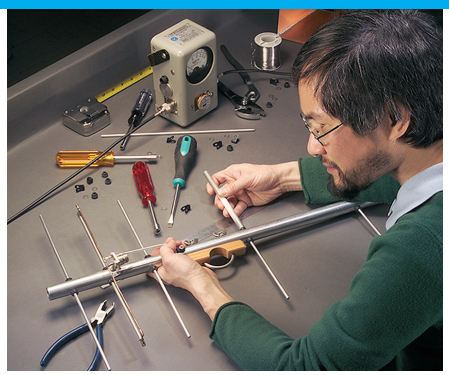
On December 11, 1921, in Ardrossan, Scotland, reception of a radio signal transmitted from an RCA test station — located in a small shack on the Greenwich, Connecticut, property of Minton Cronkhite, 1BCG — helped to usher in the age of global communication. In Scotland, American Paul Godley, 2ZE, clearly heard the signal using a receiver of his own design.

ARRL Assistant Lab Manager Bob Allison, WB1GCM, made the technical support arrangements for the event's three operating positions, describing them as a balance of new and old technologies: "ARRL represented the modern side of Amateur Radio technology with software-defined transceivers, digital transmissions, and single-sideband work, while Clark and his volunteers provided the vintage side, with vacuum tube equipment using AM."

The first message sent by Burgard repeated the original 1921 text: "252 AM No. 1 de 1BCG w-12, New York Date 11/12-21 [GMT] To Paul Godley, Ardrossan Scotland, Hearty congratulations Burghard Inman Grinan Armstrong Amy Cronkhite."

About a dozen operators participated in the event, which had been set up near the site of the 1921 1BCG transmitting station. The event drew the attention of news media, especially on the Scottish end of things, with BBC Scotland producing reports.

The Mind Behind the Technical Information Service



When ARRL's first podcast, "ARRL The Doctor is In," premiered in April 2016, it had a side effect nobody foresaw — an uptick in inquiries to the ARRL Technical Information Service (TIS). This exclusive service for ARRL members includes an online repository of technical articles and resources, access to local volunteers who can help with technical issues, and access to the renowned ARRL Lab staff for assistance with ham radio questions by mail, e-mail, or phone. In that last instance, most TIS inquiries are fielded by ARRL Laboratory Senior Engineer Zack Lau, W1VT.

"There was a big surge in TIS for a couple weeks after the Doctor and Steve Ford started their podcasts," Lau recalled. "I made sure that everyone got a prompt response."

Assistant Laboratory Manager Bob Allison, WB1GCM, put a finer point on it. "Zach has the unique ability to assist members by using the correct descriptions, in a manner that gets right to the point," he said. "I know of no other person so knowledgeable on such a wide variety of subjects."

ARRL Laboratory

As news of the Evanston case spread, a Chicago television news station asked Carlson to comment on another pattern of inoperable car key fobs and dropped cell phone calls that was plaguing an intersection on Sheffield Avenue in Chicago. Carlson conducted a preliminary noise survey of the area and found two significant sources of radio noise — both were recently installed lighting in area businesses. Carlson said, "Overall, the issue of incidental radiators continues to be a problem that we see growing."

Carlson and Gruber worked together again regarding a potential problem with the marketing of video transmitters for airborne drones. These installed devices operate on amateur and aeronautical radio-navigation radio frequencies, and carry the distinct possibility of causing harmful interference with the Federal Aviation Administration's ATC transponder radar system, a serious hazard for aircraft operations and public safety.

Mike Gruber and ARRL EMC Committee member Jerry Ramie, KI6LGY, wrote a report detailing the concerns, which was subsequently submitted to ARRL General Counsel Chris Imlay, W3KD, to facilitate an official FCC complaint.

Membership

ARRL Membership Dues Increased in 2016

After a thorough analysis in 2015, the ARRL Board of Directors made the difficult decision to raise ARRL dues for the first time in 14 years. The last time the basic dues rate was raised was in 2001. ARRL's 2001 operating expenses were just over $13 million. In 2014, expenses were $15.5 million, an increase of just 19% over 14 years — considerably less than the US rate of inflation from 2001 to 2014 (32%). As of January 1, 2016, ARRL raised membership dues by $10 per year. The cost to members works out to about 83 cents per month, or less than 3 cents per day.

Annual dues pay for the education, advocacy, and outreach ARRL provides to all members and to Amateur Radio as a whole, including things like sending ARRL representatives to Washington, DC, to educate lawmakers about the Amateur Radio Parity Act; partnership with disaster relief organizations; Logbook of The World — a digital logging program that makes confirming Amateur Radio contacts easier and more efficient than ever; the Education & Technology Program, and more.

Members also have access to numerous ARRL programs and benefits not available elsewhere, like our flagship publication, *QST* magazine; *The ARRL Letter* e-newsletter — which provides the latest Amateur Radio news every week to 101,000 subscribers (and growing all the time); emergency communications training courses — including webinars facilitated by the Emergency Preparedness Department, such as 2016's "ARES Reporting," "2016 Hurricane Season," FEMA's "Developing a Family Emergency Communications Plan," and more.

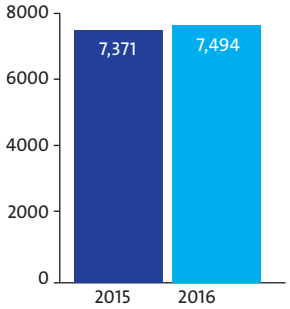
While ARRL has done a good job of keeping costs down internally while providing the best services for members, other factors are simply out of our control. Expenses have gone up globally in the last 14 years. For ARRL, these increased costs include utilities, insurance, postage, and many others. The dues increase allows ARRL to continue giving members the level of personal service they have come to expect and will ensure that high-quality programs and services will continue for all members as we provide a unified voice that protects and promotes all of Amateur Radio.

ARRL Volunteer Examiner Coordinator Program (VEC)

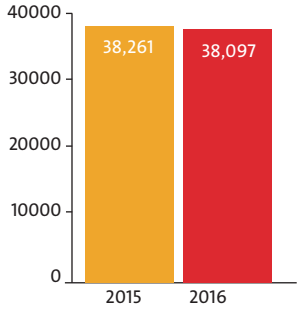
The ARRL Volunteer Examiner Coordinator (VEC) system is by far the largest of the 14 VEC groups in the US, coordinating approximately 75% of all Amateur Radio exams. For the third year in a row, we have conducted more than 7,000 Amateur Radio exam sessions in a year — an important milestone for the ARRL VEC.

VEC Department

A total of 7,494 ARRL-sponsored exam sessions were administered in 2016 — compared to 7,371 in 2015. 38,097 exam applicants were served in 2016 — a slight decrease from 38,261 in 2015. Exam elements administered increased slightly, from 49,971 in 2015 to 50,081 in 2016.



ARRL Sponsored VEC Exam Sessions



VEC Exam Applicants

ARRL VEC continues to participate as a member of the National Conference of VECs Question Pool Committee. The five-member committee prepared a revised Amateur Extra class question pool (Element 4) for examination use by the amateur community. The new pool became effective on July 1, 2016, and it will remain valid until June 30, 2020.

As one of three FCC-authorized Club Station Call Sign Administrators, ARRL VEC processed and transmitted 1,797 club licenses for the FCC this year — up from 1,322 in 2015. ARRL is also one of five FCC-authorized 1 × 1 Special Event Call Sign Coordinators and has processed nearly 90% of the 13,523 Special Events authorized and documented in the 1 × 1 database since the program's inception in September 1997.

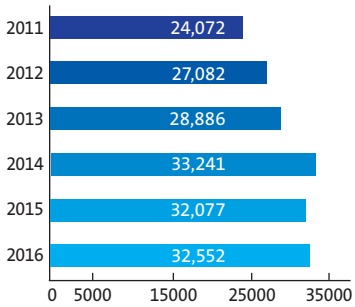
We have issued or renewed nearly 1,800 International Amateur Radio Permits (IARPs) since the program was established in June 1999. IARPs permit instant operating authority by US amateurs when they travel to participating Central and South American countries.

ARRL VEC also processed and transmitted electronically to the FCC 11,506 address changes and license renewals for ARRL Members in 2016. This service for ARRL members continues to be a strong draw.

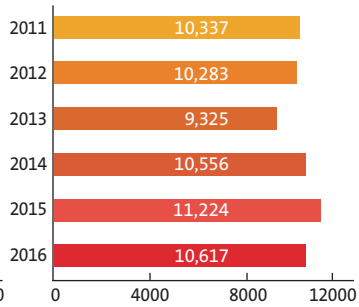
In 2016, 2,103 new Volunteer Examiners (VEs) were added to our program, bringing the total number of ARRL Accredited VEs to more than 35,000. We've seen an increase in the number of applications from General and Amateur Extra class radio amateurs who want to give back to their community by serving as ARRL examiners and instructors.

Amateur Radio Licenses: The Upward Trend Continues

The total number of US amateurs in the FCC database continues to grow each year since the FCC license class restructure in 2000. As of December 31, 2016, the number of licensees reached an all-time high of 742,787.



New FCC Licenses



Upgraded FCC Licenses

Radiosport

The Biggest QSLing Job Ever

On May 9, 2016, ARRL Field Services Manager Dave Patton, NN1N, and other ARRL HQ staffers moved 14 pallets of ARRL Centennial QSO Party QSL cards from their staging area in front of Patton's office to the front driveway of ARRL Headquarters. The pallets contained 840,000 QSL cards that would confirm contacts with the 108 W1AW portable operations that were on the air during ARRL's Centennial in 2014.

Michael Zeug, W1YM, and Lisa Zeug, K1UQT, hard at work sorting the cards.

That year, the iconic W1AW call sign was "loaned out" to on-air activations from each US state, as well as Puerto Rico; Washington, DC; Guam; Guantanamo Bay; American Samoa; the Northern Mariana Islands, and the US Virgin Islands. To distinguish itself from the W1AW portable operations, the real W1AW at ARRL Headquarters in Newington, Connecticut was granted the special call sign W1ØØAW for the year.

The Centennial QSO Party had been the largest on-air event in the history of Amateur Radio, so it stood to reason that this would be the largest QSLing project ever, as well. "When the bags of mail were delivered from the mailroom to W1AW," recalled W1AW Station Manager Joe Carcia, NJ1Q, "visitors were stunned at the volume of incoming QSLs from hams confirming their contacts. We knew the event was going to be popular, but this was beyond our wildest dreams."

Those bags of mail necessitated the creation of a unique QSL card for each W1AW portable operation. Each operation's card featured the names and call signs of the hams who staffed it, as well as the ARRL Centennial logo and an image of the official state quarter from the US Mint's State Quarter program.

Once the pallets containing the cards had been loaded onto trucks at ARRL Headquarters, they went off to be printed with the data from the contacts that had been made – a tremendous job that added to the long wait many hams endured in order to receive confirmation of their contacts. ARRL staff is grateful for the assistance of volunteers in QSL bureaus around the world in completing the task.

Above: Many hams created displays of the prized cards. Peter Rimmel, N8PR, hung up this display to commemorate earning ARRL's Triple Play award thanks to his W1AW portable contacts.

Left: ARRL Field Services Manager Dave Patton, NN1N, displays one of the prepress proofs for the W1AW portable QSL cards.

W1AW

The Flagship Station of Amateur Radio

A visit to W1AW is the highlight of the ARRL Headquarters tour, and licensed visitors are encouraged to operate the station. W1AW staff also assists other ARRL departments with various technical issues.

The staff's services extend to the larger Amateur Radio community as well. In 2016, W1AW staff assembled an Amateur Radio on the International Space Station (ARISS) "go-kit" containing all the equipment necessary for making contact with the ISS. The kit can be loaned to Amateur Radio clubs or schools that don't

W1AW staff and ARRL Lab staff join forces to outfit, maintain, and deploy the ARRL van. Here, Assistant Lab Manager Bob Allison, WB1GCM, readies the van for action at the December 2016 N1BCG special event commemorating the anniversary of the first transatlantic reception.

have the equipment to facilitate a scheduled contact with the ISS. In September 2016, the kit was sent to Astoria, Oregon for an ARISS contact with students who were visiting Lewis and Clark National Historical Park. The contact was part of a National Parks on the Air event sponsored in part by the Mouth of the Columbia Amateur Radio Club, KF7TCG.

In addition, W1AW Station Manager Joe Carcia, NJ1Q, designed and constructed a deployable 20-meter WSPR (Weak Signal Propagation Reporter) low-power beacon transmitter consisting of a Raspberry Pi 3. The whole package, complete with internal power, GPS module, and a dipole antenna and feed line for the 20-meter band, fits inside a small waterproof case. Carcia noted that the transmitter was modeled after a WSPR/Raspberry Pi system that FEMA Chief Technology Officer Ted Okada, K4HNL, had built. In the event that the transmitter is loaned out, Carcia would pre-program it with the borrower's call sign and grid square.

In 2016, W1AW got some new gear that enables the station to better serve the Amateur Radio community with Morse code practice and bulletins. An Alpha 8410 high-power HF amplifier donated by Joseph H. Fell, III, W3GMS, is used for W1AW 160-meter CW practice transmissions, as well as CW and phone bulletin transmissions. A new ACOM 2000A HF amplifier was installed in the transmitting racks, and is in use for the W1AW 17-meter CW practice, as well as digital, CW, and phone bulletin transmissions.

A used television news broadcast van previously donated to the ARRL Lab was partially outfitted by W1AW staff with antenna patch panels, 12 V dc power supplies, and other equipment, creating functionality that has begun to be used for Amateur Radio demonstrations, RF testing, and other radio activities out in the community. The van was used for National Parks on the Air activations that ARRL RFI Engineer Mike Gruber, W1MG, helped to organize at the Springfield (Massachusetts) Armory and at Race Point Lighthouse on Cape Cod. The van also made an appearance at the Connecticut Broadcasters Association's annual convention, held at Quinnipiac College in October, where ARRL Lab staff demonstrated RF noise to convention participants. On December 11, the van's 60-foot mast supported the antennas used for the N1BCG Transatlantic Reception Anniversary Special Event held in Greenwich, Connecticut.

Marketing

Train Derails, ARRL Customer Service Does Not

In March 2016, 1,086 copies of the April 2016 issue of *QST*, addressed and on the way to members in California (all of whom were in the Southwestern Division and Orange Section), were destroyed in a train derailment in Wyoming.

Local news reports cited a collision involving two Union Pacific trains late Monday, March 14 — one hauling coal and the other hauling commercial goods. These reports indicated there were no fatalities or serious injuries.

ARRL immediately began working toward an effective solution, reacting with our members' interest in mind. "We never take the delivery of *QST* to each member for granted," said ARRL Marketing Manager Bob Inderbitzen, NQ1R. "Following news of the train derailment, our staff made it a priority to quickly identify and inform members impacted by the delay."

QST's printer promptly supplied a list of members who were affected by the accident, and ARRL Circulation Manager Yvette Vinci, KC1AIM, determined the best course of action for replacing the magazines that were lost.

"The ARRL staff is committed to offering its members the highest level of service," said Vinci. "In order to follow through with our commitment, we had to quickly figure out a way to accommodate those members and locate remaining copies of the April 2016 issue of *QST* at our warehouse, using them to fulfill a quick replacement mailing to these members."

Within 24 hours, ARRL had determined which members had been affected, sent replacement copies of the issue via First Class mail, and proactively reached out to those members by e-mail, notifying them of the situation at hand.

"The quick action of our headquarters staff resulted in replacement copies being sent so quickly that I heard of no significant delays for members," said then-Southwestern Division Vice Director Marty Woll, N6VI.

ARRL CEO Tom Gallagher, NY2RF, added, "That's the kind of world-class service we want to perpetuate."

Development

Five New Scholarships

In 2016, the ARRL Development Department established five new scholarships, which will each be awarded annually.

Development Department Manager Lauren Clarke, KB1YDD, said, "So many hams feel that Amateur Radio is not just a great hobby, but it led them to a fulfilling career in electrical engineering or related fields, and they want to give back by providing a young ham with that same opportunity."

The CTRI/Chris Seeber, KA1GEU, Memorial Scholarship, established by the CTRI Contest Group, is a $500 scholarship given to a General class licensee or higher who resides in the ARRL New England Division and is pursuing a degree in a science, technology, engineering, or math (STEM) field.

The Lois Manley, K7LMZ, and Randall Pitchford, WW7ZZ, Scholarship Fund, established by Mr. Pitchford, is a scholarship of $1,000 minimum awarded to an active Amateur Radio operator of Technician class or higher, with preference

to applicants in the state of Oregon, or from the ARRL Northwestern Division, pursuing a degree in a STEM field.

The Helen Laughlin AM Mode Memorial Scholarship, established by the Laughlin-Beers Foundation, is a $1,000 award given to a woman holding a General class license or higher, performing at a high academic level. It is suggested that the applicant have made a contact in the AM mode, but that isn't required. Preference is given to applicants in the state of Texas, followed by Arkansas, then the ARRL West Gulf or Delta Divisions. If no women qualify for the award, it will be granted to a male applicant.

The W1FDR Scholarship of $1,000, established by Bob Ravenstein, W1FDR, will be awarded to a General class licensee or higher pursuing a degree in a STEM field. The Atlanta Radio Club Scholarship of $500 will be awarded annually to an Amateur Radio operator of Technician class or higher between the ages of 17 – 25, living in the state of Georgia.

In addition to these new scholarships, the sponsors of The Dan Huettl, WZ7U, Memorial Scholarship made revisions to the award's Terms of Reference in 2016, including a specification that preference will be given to the prior year's recipient and that applicants may receive this scholarship multiple years. The amount of the award was also increased from $1,000 to $2,000 annually. This scholarship is sponsored by Connie Mah, NR4CB, and Eugene Mah, AB4UG.

More than 80 scholarships ranging from $500 to $5,000 are awarded through the ARRL Foundation Scholarship program. Established in 1973 by ARRL as an independent and separate 501(c)(3) organization, the ARRL Foundation administers programs to support the Amateur Radio community. In the case of all ARRL Foundation-administered scholarships, the Foundation determines the recipients of the award to be academically superior and the best among the scholarship applicants.

A Shining Year for the ARRL Diamond Club

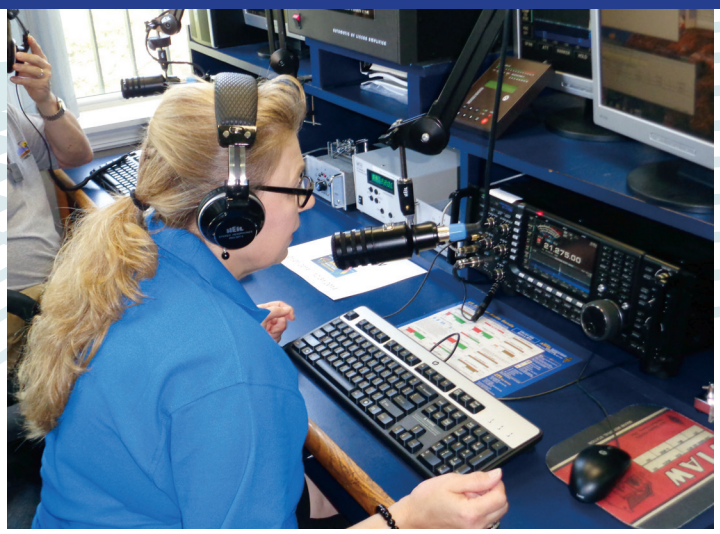
2016 was a very successful year for the ARRL Diamond Club, an annual giving program for ARRL's most committed members. Participation in the Diamond Club provides critical resources to support ARRL's programs and services for Amateur Radio, and special benefits are awarded to members at each level of giving. In 2016, many current Diamond Club members increased their membership and donations, and some special initiatives — such as an end-of-year mailing to ARRL Life Members — brought in new Diamond Club members. There was also a one-time $10,000 Diamond Club donation from a family placing a bench in front of ARRL Headquarters to honor a Silent Key in their family. ARRL Development Department Manager Lauren Clarke, KB1YDD, said, "2016 closed with $367,593 raised through the Diamond Club, from nearly 1,800 Life and Term Members." This is compared to $323,646 at the end of 2015.

ARRL Life Member Dave Sarault, N3XF, decided that it was time to join the Diamond Club after reading the end-of-year letter to Life Members from ARRL CEO Tom Gallagher, NY2RF. Sarault received the letter when he and his wife were reviewing their annual giving, and Gallagher's letter prompted some nostalgia. In a response to Gallagher, Sarault wrote, "I have been an ARRL member for over 40 years, and a Life Member for a significant portion of that time. Since my activity in Amateur Radio was limited over most of those years until recently, due to career and family demands, receiving *QST* each month allowed me to keep in touch with the hobby and kept my interest alive."

Funds from the ARRL Diamond Club are unrestricted income for ARRL, meaning they can be used wherever the need is greatest, keeping ARRL and the many services offered to members running smoothly, and helping to fund exciting programs like 2016's year-long National Parks on the Air event.

In addition to ARRL membership, which includes a subscription to *QST*, Diamond Club members receive many other special

Linda Bittner, K6GRL: Donating in Support of the Community



Bittner was first licensed as KG6WWZ in 2004, after a friend introduced her to ham radio earlier that year. She enjoys contesting, as well as frequenting hamfests, and finds it fascinating that hams come from all walks of life (she's a financial analyst), yet share a common passion for radio. "No matter how much we advance [in Amateur Radio], it seems that there are always others able and willing to teach us more," she said. When asked why she feels it's important to contribute to ARRL, this ARRL Diamond Club and Maxim Society member said her participation "helps enable ARRL to succeed in their support and defense of the Amateur Radio community. I like the idea of doing great good for, as some may say, the greatest hobby in the world."

benefits. There are different benefits for each level of giving in the Diamond Club, but some of the various perks include a Diamond Club pin, discounts on purchases made directly through ARRL, and Diamond Terrace recognition. The Diamond Terrace is composed of inscribed bricks placed at ARRL Headquarters, a permanent mark for donors, or in honor of a mentor, club, or Silent Key. Over 2,000 bricks have been placed so far.

"Amateur Radio has been a big part of my life," Diamond Club member Fred Regennitter, K4IU, said. "I donate to the Diamond Club because it helps to keep the ARRL an effective organization which clarifies purpose, gives direction, and helps preserve the hobby now and in the future."

The Temple Amateur Radio Club, W5LM — Defenders of the Amateur Radio Spectrum

The Temple (Texas) Amateur Radio Club (TARC), W5LM, is an ARRL affiliated club that donates $1,000 every year to ARRL's Spectrum Defense Fund. Club member and past club president John Hobson, WD5BFS, said, "When the motion was first made during a club meeting to donate to ARRL, the majority of members thought the Spectrum Defense Fund would have the greatest impact on issues we felt affected ham radio." Contributions to the Spectrum Defense Fund ensure that ARRL will have the resources to meet future challenges when they appear, and to protect amateurs' operating privileges.

In 1932, the Cen-Tex Amateur Radio Club was formed in Temple, Texas. The Temple Amateur Radio Club descended from that early club and now has about 35 members from around Bell County, including towns like Temple, Belton, Killeen, Harker Heights, and Fort Hood military base, as well as a few members outside the area. The club raises the funds for their annual Spectrum Defense Fund donation through their twice-yearly HamEXPO! swapfests, also called the "friendliest ham radio swapfest in the world." The event draws about 1,000 – 1,500 hams from all over Texas and surrounding states.

Members of the Temple Amateur Radio Club, W5LM, based in Temple, Texas.

The funds raised through the swapfest also go to covering operating expenses for the club, and toward an annual college scholarship awarded by the club — the Charles R. Schlieper Technical Scholarship, in memory of Charles Schlieper, N5TD. In addition to the swapfests, club members also participate in the Belton 4th of July Parade, the Temple Christmas Parade, ARRL Field Day, and they administer licensing exams as part of the local ARRL VE team. The club meets on the first Thursday of each month, and also hosts Monday night nets on 146.280 MHz. To learn more about TARC and their twice-annual HamEXPO! swapfests, visit their website at www.tarc.org.

On the Radar with Mike Valentine, W8MM

Mike Valentine, W8MM, is the founder of both Cincinnati Microwave and Valentine Research, Inc., two companies that make radar early warning devices for the public. When Valentine was in sixth grade, his dad gave him a Heathkit shortwave receiver kit, which sparked his interest in radios and propagation. He got licensed in his first year of high school, and his ham radio skills eventually led him to study electrical engineering at the University of Cincinnati. The university offered cooperative education, so Valentine was even able to gain experience at the R.L. Drake Company. He always liked VHF contesting, which the Drake radio club engaged in, and he still frequently operates on and above 50 MHz.

He said, "I remain fascinated by the vast array of technical wonders in Amateur Radio, from different propagation modes and modulation techniques to advances in hardware such as software-defined radio and lower-than-line-voltage LDMOS [laterally diffused MOSFET] kilowatt amplifiers." Valentine also enjoys playing basketball and following his alma maters' sports teams, collecting cars, and car track driving. He's been married for 43 years, and is the proud father to two grown daughters.

"I give to ARRL because I like the efforts they make to maintain the viability of Amateur Radio," he said. "Those efforts range from educating youngsters to defending amateur frequencies from reassignment to mitigating sources of interference. No other organization does all of these things."

2016 ARRL Leadership Donors

ARRL gratefully acknowledges the following individuals, clubs, and organizations for their generous support in 2016 with donations of $1,000 or more. Donors listed below contributed to the ARRL Diamond Club, the Second Century Campaign, the Spectrum Defense Fund, the Education & Technology Fund, the W1AW Endowment, and the Legislative Issues Advocacy Fund.

Dwayne Allen, WY7FD, and Katie Allen, WY7YL

Allen-Heath Memorial Foundation, K6ZIZ and K6OKO

George K1IG and Annette KB1LSH Allison

Bob Allphin, K4UEE

Arizona Repeater Association, W7ARA

Louis G. Arnold, K9ALP

C. Dwight Baker, W4IJY

Donn Baker, WA2VOI

Baker Family Foundation, W5IZ and W5JKB

Sherman Banks, W4ATL, and Mary Banks, K4MRY

John L. Barber, N5JB

Bob Barden, MDØCCE

Glen Barney, NY3E

Bill Barr, N4NX

John O. Baumgarten, NØIJ

John Beaston, K7TY

Bob Beaudet, W1YRC

Richard P. Beebe, K1PAD

Mark A. Behrens, W4GP

Alice (Sam) Bell, W6QLT

Paul Belton, W7VY

Ken Bills, W9KB

Linda Bittner, K6GRL

Andrew B. Bodony, K2LE

Gerry Boudreaux, W5IC

Ralph "Gator" Bowen, N5RZ

Karl F. Bowman, W4CHX

David Brandenburg, K5RQ

Barrie G. Britton, W6DX

Brian E. Broggie, W6FVI

Dave Bruse, W4DTR

Mark D. Bryan, KB4IR

Frank Butler, W4RH

Ken Byers, K4TEA

Byron P. Cahill, WØBM

Patrick C. Cain, KØPC

Kermit, W9XA, and Caron, W9QLT, Carlson

Steve W. Chaddick, WA4ZDD

Joseph G. Chaet, W1RGH, and Carla M. Chaet, N7OPU

J. Craig Clark, Jr., K1QX

Dr. Thomas A. Clark, K3IO

Thomas Clements, K1TC

Jay Close, KØGEO

Joseph Cloutier, KC9JAC

Adam E. Coffey, N8DDW

Thomas W. Comstock, N5TC

Chaz Cone, W4GKF

Stephen Cornell, K4AHA

Ralph E. Covington, W7SK

Kay Craigie, N3KN, and Carter Craigie, N3AO

Gerald E. Crawford, K7UPJ

Mark J. Croney, W4ZF

David A. Daley, AC2BA, and Rhonda J. Daley, AC2FX

Dallas Amateur Radio Club, W5FC

Jeffrey J. Davies, KB1UDA

Dayton Amateur Radio Association, W8BI

James Dicso, K2SZ

Richard G. Dittmer, Sr., KH6SAT

Frank Donovan, W3LPL

C. Bruce Driver, W8JNO

In Memory of Jake McClain Driver, KC5WXA

Joseph J. Dubeck, NA9A

Daniel J. DuBray, NS5G

Richard E. DuBroff, W9XW

Timothy J. Duffy, K3LR

Martin S. Ewing, AA6E

Alan J. Feldmeier, NØXP

Jack J. Ference, W3KX

Jim Fitzpatrick, WI9WI

Marjorie and Harry Flasher, AC8G

Andrew Forsyth, AF3I

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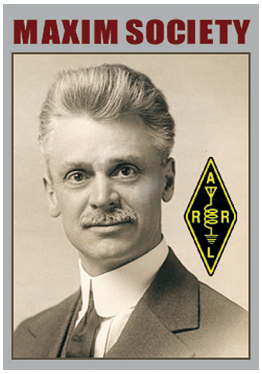

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The Maxim Society honors individuals, clubs, and organizations whose lifetime contributions to ARRL exceed $10,000. This distinctive program, named for ARRL founder Hiram Percy Maxim, was created in 2002.

Maxim Society members have supported ARRL through their contributions to the ARRL Diamond Club, the Second Century Campaign, the Spectrum Defense Fund, the Education & Technology Fund, the W1AW Endowment, and the Legislative Issues Advocacy Fund. Members' generosity allows ARRL to continue to offer outstanding programs and services, and to promote Amateur Radio across the country and around the world. As of December 31, 2016, ARRL proudly acknowledges 194 Maxim Society members.

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The ARRL Legacy Circle recognizes individuals who have provided for ARRL in their wills or other estate plans. Gifts received in this capacity – unless otherwise designated – provide unrestricted revenue to be used wherever resources are most needed, either through the ARRL Endowment or to assist in offsetting operational costs.

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Financial Summary

2016 proved to be a year of mixed financial results although, in the end, ARRL emerged stronger from a financial perspective. Overall, revenues and expenses remained roughly flat in comparison to the prior year, despite the positive impact of the first dues increase in 14 years and, as a result, the League produced a small loss from operations. However, continued support in the form of voluntary contributions, coupled with increases in the value of ARRL's investments portfolio, resulted in an overall increase in the organization's net assets for the year.

ARRL membership declined in 2016, although this was expected because of the dues increase, and followed the historical pattern seen after previous dues increases. Total membership at the end of the year stood at 164,070, which was a decrease of 3.8% from the end of 2015. Despite this drop in membership, dues revenues increased by 6.4% to almost $6.4 million, however, the full impact of the increase won't be seen until 2017 and beyond.

ARRL publications and products continue to be popular with our members and the public and, as a result, revenues from publication sales were up slightly in 2016, totaling $3.9 million, an increase of 4.3%. Continuing a trend of recent years, sales of advertising across all the various ARRL platforms were $2.2 million in 2016, a 10.2% decrease from the prior year. Revenues from examination activities were down by about 1.6% in 2016, which is not significant. On the other hand, program and service revenues were down 21% in 2016, as there was no operating event like the Centennial event to drive these revenues.

Voluntary contributions from thousands of ARRL members and others — including unrestricted, temporarily restricted, and permanently restricted contributions — were up again in 2016. The amount of voluntary contributions received in 2016 totaled almost $2.1 million. This was an increase of $288,000 from the prior year. This included a total of $718,000 in bequests from people who remembered ARRL in their wills and, as is Board policy, the funds were added to the endowment of the organization to produce income for various operations into the future.

Like revenues, total expenses were down in 2016, but only by 0.5% in comparison to the prior year. Total expenditures across the organization stood at $15.2 million, down from $15.3 million in 2015.

Total assets for the organization increased to $28.5 million at the end of 2016, from $26.7 million at the end of 2015. Of these totals, cash and investments totaled $25.1 million and $22.8 million, respectively. The investment portfolio supports the various restricted and temporarily restricted funds in addition to the long term, balance sheet liability represented by the Life Member program. Net assets increased to $16.5 million at December 31, 2016, from $14.8 million a year earlier. Much of this increase was driven by the impact of the investment markets on the value of ARRL's investment portfolio, coupled with the bequests noted above.

ARRL continues to have a strong financial foundation, and is in good financial condition. There are sufficient reserves to support existing programs going forward, but to expand the programs and services of the organization to meet the future demands of the membership, we will need to create new sources of funds to increase the value to our membership.

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Independent Auditor's Report

To the Board of Directors
The American Radio Relay League, Incorporated

We have audited the accompanying financial statements of The American Radio Relay League, Incorporated, which comprise the statements of financial position as of December 31, 2016 and 2015, and the related statements of activities and cash flows for the years then ended, and the related notes to the financial statements.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of The American Radio Relay League, Incorporated as of December 31, 2016 and 2015, and the changes in its net assets and its cash flows for the years then ended in accordance with accounting principles generally accepted in the United States of America.

Report on Supplementary Information

Our audits were conducted for the purpose of forming an opinion of the financial statements as a whole. The schedules of expenditures and temporarily restricted fund summary are presented for purposes of additional analysis and are not a required part of the financial statements. Such information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the financial statements. The information has been subjected to the auditing procedures applied in the audits of the financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the financial statements or to the financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the information is fairly stated in all material respects in relation to the financial statements as a whole.

Cohn Reznick LLP

Hartford, Connecticut
May 9, 2017

The American Radio Relay League, Incorporated

Statements of Financial Position
December 31, 2016 and 2015

Assets

	2016	2015
Current assets		
Cash	$ 1,375,211	$ 957,526
Accounts receivable, net of allowance for doubtful accounts of $38,120 and $62,756	258,592	355,616
Inventories, net	666,928	794,351
Pledges receivable, current	115,858	144,158
Other receivables	61,390	67,337
Prepaid expenses and other current assets	217,205	261,187
Total current assets	2,695,184	2,580,175
Other assets		
Investments	23,774,265	21,826,857
Long-term pledges receivable, net of discount and allowance of $259,553 and $288,592	576,718	666,773
Land, building and equipment, net	1,427,730	1,594,853
Total other assets	25,778,713	24,088,483
Total assets	$ 28,473,897	$ 26,668,658

Liabilities and Net Assets

Current liabilities		
Accounts payable	$ 266,696	$ 299,913
Accrued liabilities	342,472	354,785
Deferred revenue	27,439	30,862
Subtotal operational current liabilities	636,607	685,560
Deferred life membership dues, current	517,319	511,898
Deferred term membership dues, current	3,027,669	3,140,790
Total current liabilities	4,181,595	4,338,248
Long-term liabilities		
Deferred life membership dues, less current portion	6,778,795	6,721,379
Deferred term membership dues, less current portion	1,051,361	836,192
Total long-term liabilities	7,830,156	7,557,571
Total liabilities	12,011,751	11,895,819
Commitments		
Net assets		
Unrestricted		
Undesignated	2,303,613	2,258,335
Board designated	7,179,296	6,096,570
Total unrestricted	9,482,909	8,354,905
Temporarily restricted	2,439,604	2,039,014
Permanently restricted	4,539,633	4,378,920
Total net assets	16,462,146	14,772,839
Total liabilities and net assets	$ 28,473,897	$ 26,668,658

See Notes to Financial Statements.

The American Radio Relay League, Incorporated

Statement of Activities
Year Ended December 31, 2016

	Unrestricted	Temporarily restricted	Permanently restricted	Total
Revenues and contributions				
Membership dues	$ 6,380,112	$ -	$ -	$ 6,380,112
Net publication sales	3,933,425	-	-	3,933,425
Advertising	2,202,767	-	-	2,202,767
Investment income	211,558	125,131	-	336,689
Examination fees and other	475,356	-	-	475,356
Program and service fees	563,856	-	-	563,856
Contributions and support	661,067	553,278	25,917	1,240,262
Net assets released from restrictions	533,510	(533,510)	-	-
	14,961,651	144,899	25,917	15,132,467
Expenditures				
Programs and services	8,185,598	-	-	8,185,598
Publications	4,144,921	-	-	4,144,921
Administration	2,114,575	-	-	2,114,575
Fundraising	484,662	-	-	484,662
Governance	261,189	-	-	261,189
	15,190,945	-	-	15,190,945
Increase (decrease) in net assets before other income	(229,294)	144,899	25,917	(58,478)
Other income				
Bequests, Board designated functioning as an endowment	717,505	-	-	717,505
Second Century Campaign endowment contributions	-	-	134,796	134,796
Redesignations	(24,795)	24,795	-	-
Unrealized gain on investments	664,588	230,896	-	895,484
	1,357,298	255,691	134,796	1,747,785
Change in net assets	1,128,004	400,590	160,713	1,689,307
Net assets, beginning	8,354,905	2,039,014	4,378,920	14,772,839
Net assets, end	$ 9,482,909	$ 2,439,604	$ 4,539,633	$ 16,462,146

See Notes to Financial Statements.

The American Radio Relay League, Incorporated

Statement of Activities
Year Ended December 31, 2015

	Unrestricted	Temporarily restricted	Permanently restricted	Total
Revenues and contributions				
Membership dues	$ 5,996,104	$ -	$ -	$ 5,996,104
Net publication sales	3,769,991	-	-	3,769,991
Advertising	2,451,635	-	-	2,451,635
Investment income	216,810	118,324	-	335,134
Examination fees and other	483,136	-	-	483,136
Program and service fees	712,478	-	-	712,478
Contributions and support	625,736	540,017	228,598	1,394,351
Net assets released from restrictions	622,494	(622,494)	-	-
	14,878,384	35,847	228,598	15,142,829
Expenditures				
Programs and services	8,478,219	-	-	8,478,219
Publications	4,233,726	-	-	4,233,726
Administration	1,880,345	-	-	1,880,345
Fundraising	429,838	-	-	429,838
Governance	244,539	-	-	244,539
	15,266,667	-	-	15,266,667
Increase (decrease) in net assets before other income	(388,283)	35,847	228,598	(123,838)
Other income				
Bequests, Board designated functioning as an endowment	280,146	-	-	280,146
Second Century Campaign endowment contributions	-	-	130,009	130,009
Unrealized loss on investments	(498,321)	(189,919)	-	(688,240)
	(218,175)	(189,919)	130,009	(278,085)
Change in net assets	(606,458)	(154,072)	358,607	(401,923)
Net assets, beginning	8,961,363	2,193,086	4,020,313	15,174,762
Net assets, end	$ 8,354,905	$ 2,039,014	$ 4,378,920	$ 14,772,839

See Notes to Financial Statements.

The American Radio Relay League, Incorporated

Statements of Cash Flows
Years Ended December 31, 2016 and 2015

	2016	2015
Cash flows from operating activities		
Change in net assets	$ 1,689,307	$ (401,923)
Adjustments to reconcile change in net assets to net cash provided by operating activities		
Receipts to establish or increase permanent endowment	(160,713)	(358,607)
Depreciation	251,030	269,441
(Gain) loss on sale of equipment	4,381	(2,513)
Bad debt expense	-	49,811
Discount and allowance for pledges receivable	(29,039)	(15,684)
Change in inventory reserve	(20,006)	27,263
Unrealized (gain) loss on investments	(895,484)	688,240
Realized gain on investments allocated to general and permanent funds	(35,766)	(44,808)
Changes in operating assets and liabilities		
Accounts receivable	97,024	(95,709)
Inventories	147,429	(154,294)
Pledges receivable	147,394	125,017
Other receivables	5,947	(7,503)
Prepaid expenses and other current assets	43,982	32,414
Accounts payable and accrued liabilities	(45,530)	5,231
Deferred revenue	(3,423)	15,067
Deferred life membership dues, net of allocated realized gain	40,385	151,108
Deferred term membership dues	102,048	446,689
Net cash provided by operating activities	1,338,966	729,240
Cash flows from investing activities		
Purchase of equipment	(89,824)	(261,135)
Proceeds from sale of equipment	1,536	2,513
Sales of investments	2,877,902	2,645,431
Purchases of investments	(3,871,608)	(3,333,032)
Net cash used in investing activities	(1,081,994)	(946,223)
Cash flows from financing activities		
Receipts to establish or increase permanent endowment	160,713	358,607
Net increase in cash	417,685	141,624
Cash, beginning	957,526	815,902
Cash, end	$ 1,375,211	$ 957,526

See Notes to Financial Statements.

The American Radio Relay League, Incorporated

Notes to Financial Statements
December 31, 2016 and 2015

Note 1 - Organization and summary of significant accounting policies

Nature of activities

The American Radio Relay League, Incorporated (the "League") is a not-for-profit organization formed to promote interest in amateur radio communication, experimentation and the advancement of radio art, further the public welfare and foster education in the field of electronic communication. The League also publishes documents, books, magazines and pamphlets necessary or incidental to its purpose. The League's operations are primarily supported by membership dues, publication sales, advertising and contributions. The League's members are primarily located throughout the United States.

Basis of presentation

The accompanying financial statements have been prepared on the accrual basis of accounting in accordance with accounting principles generally accepted in the United States of America. To ensure observance of limitations and restrictions placed on the use of resources available to the League, the accounts of the League are maintained in the following net asset categories:

Unrestricted - Net assets represent available resources other than contributions restricted by donor-imposed stipulations or by operation of law. The Board of Directors of the League has earmarked a certain amount of those funds, which are shown as board designated net assets in the accompanying statements of financial position.

Temporarily restricted - Net assets represent contributions and earnings thereon that are restricted by donor-imposed stipulations or by operation of law either as to purpose or as to time of expenditure.

Permanently restricted - Net assets represent contributions received that are subject to donor-imposed restrictions or to those imposed by operation of law that the principal be invested in perpetuity while the income earned thereon is made available for operations.

Cash and cash equivalents

Cash and cash equivalents include all cash balances and highly liquid short-term instruments with an original maturity of three months or less when acquired. Temporary cash and cash equivalent balances associated with investment accounts are included with investments in these financial statements. There were no cash equivalents as of December 2016 or 2015 included in operating cash.

Allowance for doubtful accounts

Trade accounts receivable is stated at the amount management expects to collect from outstanding balances. The League performs on-going credit evaluations of its customers' financial condition and grants credit based on each customer's ability to pay. The League evaluates the need for an allowance for doubtful accounts based upon factors surrounding the credit risk of specific customers, historical trends and other information.

Pledges and contributions receivable

Pledges and contributions receivable are recorded at their net realizable value, which approximates fair value. Receivables that are expected to be collected in future years are discounted to their present values.

Inventories
Inventories consist of publications, software, membership supplies and other miscellaneous items. Inventories are stated at the lower of cost or market. Cost is determined by the first-in, first-out (FIFO) method. Inventories are reflected net of reserves for slow moving inventory of $112,367 and $132,373 as of December 31, 2016 and 2015, respectively.

Investments
The League reports investments at fair value (see Note 3) and reflects any gain or loss in the statements of activities. Investment income and gains and losses are considered unrestricted unless temporarily restricted by donor stipulation or by operation of law.

Land, building and equipment
The League capitalizes expenditures for building and equipment with a useful life of greater than one year and a cost of $1,000 or more. Purchased land, building and equipment are carried at cost less accumulated depreciation. Depreciation is computed using the straight-line method over the estimated useful life of the asset. Estimated lives for financial reporting purposes are as follows:

Asset	Estimated Useful Lives
Building	40 years
Furnishings, equipment and building improvements	3 - 15 years
Computer software	3 - 5 years

Expenditures for repairs and maintenance are charged to expense as incurred. For assets sold or otherwise disposed of, the cost and related accumulated depreciation are removed from the accounts and any resulting gain or loss is reflected in change in net assets for the period.

The League reviews its long-lived assets for impairment using an undiscounted cash flow method whenever events or circumstances indicate the carrying value of an asset may not be recoverable. There were no impairment losses related to long-lived assets as of December 31, 2016 and 2015.

Donations of land, building and equipment are recorded as support at their estimated fair value. Such donations are reported as unrestricted support, unless the donor has restricted the donated asset for a specific purpose. Assets donated with explicit restrictions regarding their use and contributions of cash that must be used to acquire land, building and equipment are reported as restricted support. Absent donor stipulations regarding how long those donated assets must be restricted, the League reports expirations of donor restrictions when the donated or acquired assets are placed in service. The League reclassifies temporarily restricted net assets to unrestricted net assets at that time.

Endowment and spending policy
The League adheres to investment and spending policies for endowment assets that attempt to provide a predictable stream of funding to programs supported by its endowment while seeking to maintain the purchasing power of the endowment assets. Endowment assets include those assets of donor-restricted funds that the League must hold in perpetuity as well as board-designated funds. Under this policy, as approved by the Board of Directors, the endowment assets are invested in accordance with sound investment practices that emphasize long-term investment fundamentals. It is recognized that short-term market fluctuations may cause variations in account performance and investment balances.

To satisfy its long-term rate of return objectives, the League relies on a total return strategy in which investment returns are achieved through both capital appreciation (realized and unrealized) and current yield (interest and dividends). The League targets a diversified asset allocation to achieve its long-term return objectives within prudent risk constraints.

The League appropriates funds for distribution based on an annual review of investment results and available net assets. The League's objective is to maintain the purchasing power of the endowment assets held in perpetuity or for a specified term as well as to provide additional real growth through new gifts and investment return.

Revenue recognition
Membership dues - Revenue from term membership dues is recognized to the extent of acquisition costs when memberships are received. The remaining portion is recognized as revenue on the straight-line basis ratably over the applicable membership period.

The by-laws of the League provide for a life membership dues rate that equals 25 times the term membership annual dues rate. Life member dues are deferred upon receipt. Investment earnings on allocated life member investments are deferred. Revenue is recognized at an amount representative of the estimated cost to the League for providing services to the life members.

Publication sales - Revenue from publication sales is recognized when the earnings process is complete and the risks and rewards of ownership have transferred to the customer, which is generally considered to have occurred upon shipment of the publication.

Advertising - Advertising revenue is recorded during the period in which the advertisements are published.

Contributions and bequests - Contributions and bequests received are recorded as unrestricted, temporarily restricted or permanently restricted support depending on the existence and/or nature of any donor restrictions or those imposed by operation of law. Support that is restricted by the donor is reported as an increase in temporarily restricted net assets even if the restrictions expire in the reporting period in which the support is recognized. When a restriction expires (that is, when a stipulated time restriction ends or purpose restriction is accomplished), temporarily restricted net assets are reclassified to unrestricted net assets and reported in the statements of activities as net assets released from restrictions.

Income taxes
The League is exempt from federal income taxes under Section 501(c)(3) of the Internal Revenue Code. However, the League is subject to federal and state income tax as a result of unrelated business income arising from net advertising income. There are no unrelated business income tax liabilities for the years ended December 31, 2016 and 2015.

The League's federal information returns prior to calendar year 2013 are closed and management continually evaluates expiring statutes of limitations, audits, proposed settlements, changes in tax law and new authoritative rulings. The League recognizes interest and penalties associated with uncertain tax positions as part of the income tax provision and includes accrued interest and penalties with the related tax liability in the statements of financial position. The League has no unrecognized tax positions at December 31, 2016 and 2015.

Functional expenses
The costs of providing various program and supporting services have been summarized on a functional basis in the statements of activities. Accordingly, certain costs have been allocated among the program and supporting services benefited.

Use of estimates
The preparation of the financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect certain reported amounts and disclosures. Accordingly, actual results could differ from those estimates.

Subsequent events
The League has evaluated events and transactions for potential recognition or disclosure through May 9, 2017, which is the date the financial statements were available to be issued.

Note 2 - Pledges receivable

Unconditional pledges receivable as of December 31, 2016 and 2015 are expected to be realized in the following periods:

	2016	2015
In one year or less	$ 115,858	$ 144,158
In one to five years	373,271	415,365
In more than five years	463,000	540,000
Total pledges receivable	952,129	1,099,523
Less allowance for uncollectible pledges	(76,953)	(90,103)
Less discount	(182,600)	(198,489)
	$ 692,576	$ 810,931

Amounts are shown in the statements of financial position as of December 31 as follows:

	2016	2015
Current	$ 115,858	$ 144,158
Long-term	576,718	666,773
	$ 692,576	$ 810,931

Pledges expected to be received in more than one year have been discounted using a discount rate of 3.75% and 3.5% at December 31, 2016 and 2015, respectively.

Note 3 - Investments

Investments are carried at their aggregate fair value. The following summarizes the relationship between the cost and fair values as presented in the financial statements as of December 31, 2016 and 2015:

	2016		2015	
	Fair value	Cost	Fair value	Cost
Cash and cash equivalents	$ 1,089,815	$ 1,089,815	$ 1,339,146	$ 1,339,146
Equities and mutual funds	12,882,511	9,762,440	11,261,000	8,993,903
Fixed maturities	9,801,939	9,803,650	9,226,711	9,270,932
	$ 23,774,265	$ 20,655,905	$ 21,826,857	$ 19,603,981

The League allocates its investments into categories related to life memberships, regular operations, temporarily restricted and endowment funds. The following summarizes the fair value of investments by category as of December 31, 2016 and 2015:

	2016	2015
Life membership	$ 7,296,114	$ 7,233,277
Regular operations	2,319,618	2,079,076
Temporarily restricted	2,439,604	2,039,014
Functioning as an endowment	7,179,296	6,096,570
Permanently restricted	4,539,633	4,378,920
	$ 23,774,265	$ 21,826,857

The following summarizes changes in relationships between cost and fair values of investments:

	2016	2015
Unrealized appreciation, beginning		
Fair value	$ 21,826,857	$ 21,754,401
Cost	19,603,981	18,843,285
Net gain	2,222,876	2,911,116
Unrealized appreciation, end		
Fair value	23,774,265	21,826,857
Cost	20,655,905	19,603,981
Net gain	3,118,360	2,222,876
Net unrealized gain (loss) for the year	$ 895,484	$ (688,240)

Investment income is summarized as follows for the years ended December 31, 2016 and 2015:

	2016	2015
Interest and dividend income	$ 479,057	$ 466,001
Net realized gain on investments	58,218	73,095
Gross investment income	537,275	539,096
Less		
Net investment income allocated to deferred life liability	(200,586)	(203,962)
Total investment income	$ 336,689	$ 335,134

Note 4 - Fair value measurements

The League values its financial assets and liabilities based on the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. In order to increase consistency and comparability in fair value measurements, a fair value hierarchy that prioritizes observable and unobservable inputs is used to measure fair value into three broad levels, which are described below:

Level 1: Quoted prices (unadjusted) in active markets that are accessible at the measurement date for identical assets or liabilities. The fair value hierarchy gives the highest priority to Level 1 inputs.

Level 2: Observable inputs other than Level 1 prices such as quoted prices for similar assets or liabilities; quoted prices in inactive markets or model-derived valuations in which all significant inputs are observable or can be derived principally from or corroborated with observable market data by correlation or other means. If an asset or liability has a specified (contractual) term, the Level 2 input must be observable for substantially the full term of the asset or liability.

Level 3: Unobservable inputs are used when little or no market data is available. The fair value hierarchy gives the lowest priority to Level 3 inputs.

In determining fair value, the League utilizes valuation techniques that maximize the use of observable inputs and minimize the use of unobservable inputs to the extent possible as well as considers counterparty credit risk in its assessment of fair value.

Financial assets carried at fair value at December 31, 2016 and 2015 are classified in the tables below in one of the three categories described above:

	2016			
	Level 1	Level 2	Level 3	Total
Money market fund	$ 1,089,815	$ -	$ -	$ 1,089,815
Mutual funds				
Closed-end funds	19,580	-	-	19,580
Large blend fund	13,855	-	-	13,855
Large growth fund	19,091	-	-	19,091
Total mutual funds	52,526	-	-	52,526
Exchange traded funds				
Small blend	335,296	-	-	335,296
Mid cap blend	438,138	-	-	438,138
Large blend	5,150,436	-	-	5,150,436
Short term bond	1,532,702	-	-	1,532,702
Foreign mid blend	75,224	-	-	75,224
Foreign large blend	424,540	-	-	424,540
Equity energy	157,020	-	-	157,020
Diversified emerging markets	125,230	-	-	125,230
Total exchange traded funds	8,238,586	-	-	8,238,586
Stocks				
Domestic large cap	4,310,164	-	-	4,310,164
Domestic mid cap	86,360	-	-	86,360
Domestic small cap	39,175	-	-	39,175
International developed	155,700	-	-	155,700
Total stocks	4,591,399	-	-	4,591,399
Fixed maturities				
Domestic corporate bonds	-	8,807,569	-	8,807,569
International developed bonds	-	795,998	-	795,998
Global high yield taxable	-	198,372	-	198,372
Total fixed maturities	-	9,801,939	-	9,801,939
Total assets at fair value	$ 13,972,326	$ 9,801,939	$ -	$ 23,774,265

	2015			
	Level 1	Level 2	Level 3	Total
Money market fund	$ 1,339,146	$ -	$ -	$ 1,339,146
Mutual funds				
Closed-end funds	17,290	-	-	17,290
Large blend fund	12,345	-	-	12,345
Small blend fund	8,706	-	-	8,706
Large growth fund	9,311	-	-	9,311
Total mutual funds	47,652	-	-	47,652
Exchange traded funds				
Small blend	287,664	-	-	287,664
Mid cap blend	396,086	-	-	396,086
Large blend	3,628,030	-	-	3,628,030
Short term bond	1,608,842	-	-	1,608,842
Foreign mid blend	74,296	-	-	74,296
Foreign large blend	430,662	-	-	430,662
Equity energy	124,680	-	-	124,680
Diversified emerging markets	133,794	-	-	133,794
Total exchange traded funds	6,684,054	-	-	6,684,054
Stocks				
Domestic large cap	4,001,833	-	-	4,001,833
Domestic mid cap	164,965	-	-	164,965
Domestic small cap	38,866	-	-	38,866
International developed	323,630	-	-	323,630
Total stocks	4,529,294	-	-	4,529,294
Fixed maturities				
Domestic corporate bonds	-	8,131,043	-	8,131,043
International developed bonds	-	795,068	-	795,068
Global high yield taxable	-	300,600	-	300,600
Total fixed maturities	-	9,226,711	-	9,226,711
Total assets at fair value	$ 12,600,146	$ 9,226,711	$ -	$ 21,826,857

Level 1 stocks, mutual funds, exchange traded funds and money market funds are valued at the daily closing price as reported by the fund. Mutual funds are registered with the Securities and Exchange Commission. These funds are required to publish their daily net asset value (“NAV”) and to transact at that price. These financial assets held by the League are deemed to be actively traded.

The fair value of fixed maturities (Level 2), which consists principally of corporate and international bonds, is estimated using market price quotations (where observable), recently executed transactions or bond spreads of the issuer. If the spread data does not reference the issuer, then data that references a comparable issuer is used. When observable price quotations are not available, fair value is determined based on cash flow models with yield curves or bond spreads.

The preceding is a description of the valuation methodologies used for assets at fair value. There have been no changes in the methodology used at December 31, 2016 and 2015.

The League's policy is to recognize transfers in and transfers out of levels at the actual date of the event or change in circumstances that caused the transfer. There were no transfers in or out of the respective levels during the years ended December 31, 2016 and 2015.

The preceding methods may produce a fair value calculation that may not be indicative of net realizable value or reflective of future fair values. Furthermore, although the League believes its valuation methods are appropriate and consistent with other market participants, the use of different methodologies or assumptions to determine the fair value of certain financial instruments could result in a different fair value measurement at the reporting date.

Note 5 - Land, building and equipment

Land, building and equipment, and related accumulated depreciation are comprised of the following at December 31, 2016 and 2015:

	2016	2015
Land and building	$ 1,094,693	$ 1,094,693
Furnishings, equipment and building improvements	4,369,915	4,333,533
Computer software	2,077,156	2,060,306
	7,541,764	7,488,532
Less accumulated depreciation	(6,114,034)	(5,893,679)
	$ 1,427,730	$ 1,594,853

Note 6 - 403(b) plan

The League has The ARRL, Inc. 403(b) Pension Plan. Employees are eligible to participate in the plan immediately upon employment. After an employee has worked for 6 months, the League provides a contribution of 2% of the employee's compensation and will match any elective contributions made by the employee up to the employee’s contribution of 4% of their compensation. The match was one dollar for every dollar contributed by the employee in 2016 and 2015. Total employer contributions were $278,412 and $287,062 in 2016 and 2015, respectively.

Note 7 - Board-designated net assets

The League's Board of Directors' intent is to treat unrestricted bequests over a specific amount as funds functioning as an endowment. Since the beginning of 2004, the League has received bequests in the amount of $5,243,423. As of December 31, 2016 and 2015, the balance of the bequests, inclusive of investment income and unrealized gains and losses, was $7,179,296 and $6,096,570, respectively.

Note 8 - Temporarily restricted net assets

Temporarily restricted net assets as of December 31, 2016 and 2015 were available for the following purposes:

	2016	2015
Exceptional merit	$ 1,358,695	$ 1,316,894
Education and research	289,523	184,602
Other specific purposes	791,386	537,518
	$ 2,439,604	$ 2,039,014

Note 9 - Permanently restricted net assets

Permanently restricted net assets as of December 31, 2016 and 2015 were comprised of the following:

	2016	2015
Colvin fund	$ 154,340	$ 154,340
W1AW fund	588,735	582,816
Second Century fund	3,235,115	3,100,321
Youth and Education fund	197,189	177,189
DX Log Archive fund	229,390	229,390
Dave Bell, W6AQ fund	134,864	134,864
	$ 4,539,633	$ 4,378,920

In 1993, the League became entitled, as beneficiary, to proceeds from a life insurance policy on one of its members, the Colvin fund. This endowment specifies that the principal is to be maintained in a fund and invested for the purpose of producing future income. The income from this endowment will be expended to reward deserving radio amateurs.

In 2002, an endowment fund was established for W1AW maintenance and upkeep.

In 2011, the League started the Second Century Campaign. This campaign was established for the purpose of defining a path to passionate involvement in amateur radio by new generations, and providing opportunities for educational enrichments, community service and personal achievement.

In 2012, the League became entitled to a bequest for the Youth and Education fund. This endowment specifies that the principal is to be maintained in a fund and invested for the purpose of producing future income. The income from this endowment will be used to support education and technology initiatives.

In 2014, the League received a donation to establish the DX Log Archive fund. This endowment specifies that the principal is to be maintained in a fund and invested for the purpose of producing future income. The income will fund the creation and management of the DX Log Archive Program for paper DX logs for rare and significant DXpeditions.

In 2015, the League became entitled to a bequest to establish the Dave Bell, W6AQ fund. This fund specifies that the principal is to be maintained in a fund and invested for the purpose of producing

future income. The income from this endowment will be used for the League's programs and operations in the best interests of the Amateur Radio Service as determined by the League.

Note 10 - Endowment

The League's endowment includes both donor-restricted endowment funds and funds designated by the Board of Directors to function as endowments. As required by accounting principles generally accepted in the United States of America, net assets associated with endowment funds, including funds designated by the Board of Directors to function as endowments, are classified and reported based on the existence or absence of donor-imposed restrictions. The Board of Directors has interpreted the Connecticut Uniform Prudent Management of Institutional Funds Act ("CTUPMIFA") as requiring the preservation of the fair value of the original gift as of the gift date of the donor-restricted endowment funds absent explicit donor stipulations to the contrary. As a result of this interpretation, the League classifies as permanently restricted net assets: (a) the original value of gifts donated to the permanent endowment, (b) the original value of subsequent gifts to the permanent endowment, and (c) accumulations to the permanent endowment made in accordance with the direction of the applicable donor gift instrument at the time the accumulation is added to the fund.

The remaining portion of the donor-restricted endowment fund that is not classified in permanently restricted net assets is classified as temporarily restricted net assets until those amounts are appropriated for expenditure by the Board of Directors in a manner consistent with the standard of prudence prescribed by CTUPMIFA. In accordance with CTUPMIFA, the League considers the following factors in making a determination to appropriate or accumulate donor-restricted endowment funds: (1) the duration and preservation of the various funds, (2) the purposes of the League and donor-restricted endowment funds, (3) general economic conditions, (4) the possible effect of inflation and deflation, (5) the expected total return from income and the appreciation of investments, (6) other resources of the League and (7) the League's investment policies.

The American Radio Relay League, Incorporated

Notes to Financial Statements
December 31, 2016 and 2015

Changes in endowment net assets for the year ended December 31, 2016 is as follows:

	Unrestricted	Temporarily restricted	Permanently restricted	Total
Endowment net assets, January 1, 2016	$ 6,096,570	$ 271,380	$ 4,378,920	$ 10,746,870
Investment income, net	125,716	25,702	-	151,418
Net unrealized gain	264,300	173,805	-	438,105
Contributions	717,505	-	160,713	878,218
Amounts appropriated for expenditure	-	(10,730)	-	(10,730)
Reclassifications	(24,795)	-	-	(24,795)
Endowment net assets, December 31, 2016	$ 7,179,296	$ 460,157	$ 4,539,633	$ 12,179,086

Endowment net asset composition by type of fund as of December 31, 2016 is as follows:

	Unrestricted	Temporarily restricted	Permanently restricted	Total
Donor-restricted endowment funds	$ -	$ 460,157	$ 4,539,633	$ 4,999,790
Board-designated endowment funds	7,179,296	-	-	7,179,296
Total funds	$ 7,179,296	$ 460,157	$ 4,539,633	$ 12,179,086

Changes in endowment net assets for the year ended December 31, 2015 is as follows:

	Unrestricted	Temporarily restricted	Permanently restricted	Total
Endowment net assets, January 1, 2015	$ 5,876,847	$ 436,247	$ 4,020,313	$ 10,333,407
Investment income, net	121,101	85,943	-	207,044
Net unrealized gain	(206,319)	(141,480)	-	(347,799)
Contributions	307,061	-	358,607	665,668
Amounts appropriated for expenditure	(2,120)	(109,330)	-	(111,450)
Endowment net assets, December 31, 2015	$ 6,096,570	$ 271,380	$ 4,378,920	$ 10,746,870

Endowment net asset composition by type of fund as of December 31, 2015 is as follows:

	Unrestricted	Temporarily restricted	Permanently restricted	Total
Donor-restricted endowment funds	$ -	$ 271,380	$ 4,378,920	$ 4,650,300
Board-designated endowment funds	6,096,570	-	-	6,096,570
Total funds	$ 6,096,570	$ 271,380	$ 4,378,920	$ 10,746,870

From time to time, the fair value of assets associated with individual donor-restricted endowment funds may fall below the level that the donor requires the League to retain as a fund of perpetual duration. There were no deficiencies of this nature reported in unrestricted net assets as of December 31, 2016 and 2015.

Note 11 - Lease obligations

The League leases warehouse space, office space and office equipment under operating leases with monthly payments ranging from $87 to $4,265, which expire at various times through May 2021. Total operating lease expense was $109,348 and $132,662 for the years ended December 31, 2016 and 2015, respectively.

The following are future minimum lease payments due under noncancelable operating leases as of December 31, 2016:

2017	$ 56,935
2018	56,935
2019	56,935
2020	56,935
2021	24,203
	$ 251,943

Note 12 - Concentrations

Credit risk

Financial instruments, which potentially subject the League to concentrations of credit risk, consist primarily of cash, pledges and trade receivables. The League maintains its cash with high-credit quality financial institutions. At times, such amounts may exceed the federally insured limit. At December 31, 2016, the Company had approximately $1,237,000 in excess of federally insured limits.

The League believes that the concentration of credit risk in its trade receivables is substantially mitigated by the League's credit evaluation process, relatively short collection terms and the financial stability of the larger customers comprising the League's credit base. The League does not generally require collateral from customers. Pledges receivable are comprised primarily of commitments from individuals who are members of the League. The League evaluates the need for an allowance for doubtful accounts based upon factors surrounding the credit risk of specific customers, historical trends and other information.

Market risk

The League invests in various debt and equity securities. These investment securities are exposed to interest rate, market, credit and other risks depending on the nature of the specific investment. Accordingly, it is at least reasonably possible that these factors will result in changes in the value of the League's investments which could materially affect amounts reported in the financial statements.

Note 13 - Related party transactions

The League has some common directors with The ARRL Foundation, Inc. The League performs administrative services for The ARRL Foundation, Inc. and was reimbursed for these services in the amount of $15,000 for the years ended December 31, 2016 and 2015.

The American Radio Relay League, Incorporated

Supplementary Information

Schedules of Expenditures
Years Ended December 31, 2016 and 2015

	2016	2015
Salaries, compensation and benefits	$ 7,257,268	$ 7,172,579
Publication costs	2,192,596	2,188,638
Shipping and forwarding costs	1,540,809	1,537,538
Communication and postage	826,726	867,993
Other	620,905	709,752
Occupancy costs	534,955	544,990
Office supplies and expenditures	519,983	534,156
Legal and professional fees	448,878	486,710
Administrative expenses	493,165	437,319
Travel	364,969	383,178
Depreciation	251,030	269,441
Rentals and equipment maintenance	139,661	134,373
Total	$ 15,190,945	$ 15,266,667

See Independent Auditor's Report.

The American Radio Relay League, Incorporated

Temporarily Restricted Fund Summary
Year Ended December 31, 2016

Fund name	Balance January 1, 2016	Redesignations	Contributions	Investment income, net	Unrealized gain	Released from restriction	Balance December 31, 2016
H.P. Maxim Award	$ 41,740	$ -	$ -	$ 988	$ -	$ (1,500)	$ 41,228
Project Goodwill	1,672	-	-	-	-	(1,672)	-
Exceptional Merit	1,316,894	-	-	24,710	57,091	(40,000)	1,358,695
Legal Research & Resource	168,914	-	11,584	-	-	(1,770)	178,728
Starr Technology	2,721	-	-	-	-	-	2,721
Rinaldo Technology	1,000	-	-	-	-	-	1,000
ARRL SAREX	6,709	-	-	-	-	-	6,709
Educational Activities	3,580	-	-	-	-	-	3,580
Ham Aid Fund	15,549	-	879		-	(2,387)	14,041
Defense of Frequencies	-	-	257,314	2,334	-	(259,648)	-
Lab Fund	6,987	-	4,724		-	(1,500)	10,211
Education and Technology	175,013	-	211,654	5,674	-	(120,094)	272,247
Steven Rich Fund	10,000	-	-	-	-	-	10,000
Direction Finding	1,334	-	-	-	-	-	1,334
Fred Fish Awards Fund	1,320	-	-	-	-	-	1,320
Legislative Issues Advocacy Fund	14,201	-	54,574	-	-	(27,800)	40,975
Preservation of Artifacts	-	24,795	12,549	-	-	(688)	36,656
Colvin Fund earnings	24,928	-	-	4,102	6,894	(1,500)	34,424
W1AW Fund earnings	120,868	-	-	15,549	27,415	(9,230)	154,602
Youth and Education Fund earnings	6,010	-	-	-	7,688	-	13,698
Capital Campaign Fund ("CCF") earnings	115,761	-	-	62,138	118,088	(62,138)	233,849
CCF Earnings - DX Log Archive	3,813	-	-	6,053	8,640	-	18,506
Dave Bell , W6AQ Fund earnings	-	-	-	3,583	5,080	(3,583)	5,080
Total temporarily restricted funds	$ 2,039,014	$ 24,795	$ 553,278	$ 125,131	$ 230,896	$ (533,510)	$ 2,439,604

The American Radio Relay League, Incorporated

Temporarily Restricted Fund Summary
Year Ended December 31, 2015

Fund name	Balance January 1, 2015	Contributions	Investment income, net	Unrealized loss	Released from restriction	Balance December 31, 2015
H.P. Maxim Award	$ 40,754	$ -	$ 986	$ -	$ -	$ 41,740
Project Goodwill	1,672	-	-	-	-	1,672
Exceptional Merit	1,379,750	-	25,583	(48,439)	(40,000)	1,316,894
Legal Research & Resource	165,709	14,556	-	-	(11,351)	168,914
Starr Technology	2,721	-	-	-	-	2,721
Rinaldo Technology	1,000	-	-	-	-	1,000
ARRL SAREX	6,709	-	-	-	-	6,709
Educational Activities	3,580	-	-	-	-	3,580
Ham Aid Fund	13,834	1,715	-	-	-	15,549
Defense of Frequencies	-	311,066	602		(311,668)	-
Lab Fund	8,087	1,069	-	-	(2,169)	6,987
Education and Technology	111,369	190,256	5,210	-	(131,822)	175,013
Steven Rich Fund	10,000	-	-	-	-	10,000
Direction Finding	1,334	-	-	-	-	1,334
Fred Fish Awards Fund	1,320	-	-	-	-	1,320
Legislative Issues Advocacy Fund	9,000	21,355	-	-	(16,154)	14,201
Colvin Fund earnings	35,936	-	4,321	(6,129)	(9,200)	24,928
W1AW Fund earnings	170,149	-	15,428	(24,350)	(40,359)	120,868
Youth and Education Fund earnings	12,019	-	-	(6,009)	-	6,010
Capital Campaign Fund ("CCF") earnings	213,520	-	59,771	(97,759)	(59,771)	115,761
CCF Earnings - DX Log Archive	4,623	-	6,423	(7,233)	-	3,813
Total temporarily restricted funds	$ 2,193,086	$ 540,017	$ 118,324	$ (189,919)	$ (622,494)	$ 2,039,014

See Independent Auditor's Report.

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ARRL is the National Association for Amateur Radio

The seed for Amateur Radio was planted in the 1890s, when Guglielmo Marconi began his experiments in wireless telegraphy. By 1914, there were thousands of Amateur Radio operators – hams – in the United States. Hiram Percy Maxim, a leading Connecticut inventor and industrialist, saw the need to organize this fledgling group of radio experimenters.

In May 1914, he founded the American Radio Relay League – ARRL – to meet that need. Today ARRL is the largest organization of radio amateurs in the United States.

ARRL is proud of its continuing traditions in five key areas of action, the Five Pillars.

Public Service

ARRL members provide thousands of volunteer hours to communities and organizations requesting aid in emergency communications planning and disasters. ARRL's ARES program is recognized by federal, state, and national organizations for the services it provides during crises.

ARRL members also provide many hours of volunteer communications services annually to local organizations conducting large events such as road races, parades, scouting events, and more.

ARRL Headquarters staff, Board members, Field Organization members, and volunteers at the 2016 Dayton Hamvention.

Advocacy

ARRL represents US radio amateurs in legislative matters.

ARRL also represents US amateurs with the Federal Communications Commission and other government agencies in the US and abroad.

ARRL is the International Secretariat for the International Amateur Radio Union, which is made up of similar societies in more than 150 countries around the world.

Education

ARRL promotes interest in Amateur Radio communications and experimentation.

ARRL publishes the monthly journal *QST*, as well as newsletters and other publications covering all aspects of Amateur Radio.

ARRL sponsors and coordinates classes in licensing, radio communications, electronic technology, and related topics both nationally and internationally.

Technology

The frequencies allocated to the Amateur Radio Service are the place on the usable radio spectrum where an individual can develop and experiment with wireless communication.

Membership

ARRL maintains a sense of community and a high standard of conduct among Amateur Radio operators.

ARRL provides direct services to members, such as the Volunteer Examiner Coordinator Program.

The staff at ARRL Headquarters, in the Hartford suburb of Newington, is dedicated to providing quality member services.

Basis and Purpose of the Amateur Service

a. Recognition and enhancement of the value of the amateur service to the public as a voluntary noncommercial communication service, particularly with respect to providing emergency communications.

b. Continuation and extension of the amateur's proven ability to contribute to the advancement of the radio art.

c. Encouragement and improvement of the amateur service through rules which provide for advancing skills in both the communication and technical phases of the art.

d. Expansion of the existing reservoir within the amateur radio service of trained operators, technicians and electronics experts.

e. Continuation and extension of the amateur's unique ability to enhance international goodwill.

Title 47, Code of Federal Regulations

ARRL The national association for AMATEUR RADIO®

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