

From: Alexis - Head of Bulk Dis.

Subject: Message from Mayor Carlos Mendez  
Time: 12:45 pm 10/4

Message: City of Aguadilla only has 1 truck of water for 60,000 people  
Needs requested in this order:

- Water
- Gas
- Diesel
- Food

- HAM radio operator for communication between Aguadilla and San Juan

Amateur Radio has repeatedly been the only means of communication

into or out of an area affected by a natural disaster. This October 4, 2017 message from

the mayor of Aguadilla, Puerto Rico specifically called for Amateur Radio operators.



**ARRL** The national association for AMATEUR RADIO®









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Cover: This note, dated October 4, 2017, details immediate needs in the hurricane Maria response for Aguadilla, Puerto Rico. Aguadilla Mayor Carlos Méndez has specifically requested a ham radio operator.

This page: Craig McVeay, NØCSM, was one of the 22 ham radio operators who deployed to Puerto Rico. Craig was no stranger to the island, having lived there in the 1960s, and had also been affected by hurricanes — his family lost nine homes in hurricane Katrina. "I have friends in Puerto Rico," Craig said. "So it hit close to home. I wanted to go help very badly."

In 2017, the Amateur Radio Service had varied roles in disaster response — most notably the Atlantic hurricane season, which was the fifth most active hurricane season on record. One of the ways ARRL helps is through our Ham Aid equipment lending program.



The program was created in 2005 to support Amateur Radio response to hurricanes in the US and the Caribbean. Ham Aid kits, which include radios, antennas, and the necessary accessories, were in use throughout Puerto Rico and the Caribbean for the hurricane Maria relief and recovery effort. At the advent of the 2017 Atlantic hurricane season, the inventory of Ham Aid kits had been depleted. ARRL fronted the funds to purchase more, and launched a campaign for donations to the Ham Aid Fund, to finance assembly of additional kits. The Amateur Radio community answered the call, with ARRL members and clubs from all over the country making donations that totaled nearly \$125,000. Numerous Amateur Radio retailers and manufacturers also stepped up with donations of equipment. ARRL thanks the Amateur Radio community for its generosity in support of the Ham Aid program. Their support made it possible to provide relief and recovery communications during the difficult 2017 hurricane season.

Right: Ham Aid kits being unloaded at the Southwest air cargo facility at the San Juan airport.





## A Message from the President

2017 was a year that won't be soon forgotten in the Amateur Radio community. The first thing that comes to mind is the hurricane relief effort in Puerto Rico and the Caribbean, during which Amateur Radio operators provided outstanding service. The extensive damage and widespread power outages that hurricanes Maria and Irma caused created exactly the type of situation that hams train for. ARRL responded to the American Red

Cross's request for ham radio volunteers to travel to Puerto Rico for a deployment under hardship conditions, resulting in 22 operators making the trip. Working with the Red Cross, FEMA, and other agencies, those 22 volunteers built and set up equipment, provided and facilitated communications, assisted relief personnel in obtaining and distributing medical supplies, food, and water, and more — and all on their own time.

Those of us who couldn't give our time to the relief effort offered assistance in other ways. In October 2017, I sent ARRL members a letter asking for donations to replenish ARRL's depleted Ham Aid equipment program, which ships "kits" of radio gear to areas where communications have been disabled. Ultimately, the ham radio community donated nearly \$125,000 to the Ham Aid fund, and there were numerous donations of equipment as well. When one considers the response on the ground in Puerto Rico, as well as the response to our call for aid, I believe this was Amateur Radio's finest hour.

As the Second Century of Amateur Radio, which began in 2014, continues to take shape, I am continually aware that ham radio is experiencing a paradigm shift, driven by what I call the "new generation ham." This new generation is everywhere, making themselves known at hamfests and conventions, on social media platforms, in the e-mails and letters received by ARRL Board members and at ARRL Headquarters.

Likewise, the research ARRL has conducted about the needs and interests of today's hams confirm these changing times. You'll read more about that research, as well as the exciting things that are growing out of it, later in this report. As I write these words in mid-2018, ARRL is engaged in an initiative to enhance the Technician-class Amateur Radio license, as yet another outgrowth of our research findings.

This is a special year for me in Amateur Radio. It was 50 years ago that I became a ham, and this wonderful hobby has brought so many good things into my life. I can't imagine what I would do without ham radio. I love Amateur Radio. I've seen a lot of changes in our hobby over those 50 years, especially now with the ever fast-changing times we have.

The wants and needs of the new generation hams are very different from those of "traditional" hams — of which I consider myself one. That paradigm shift is under way, and we've got to embrace and meet the challenges of new technological developments and the operating trends of the next generation. It's a different landscape than when I started.

ARRL is there to support and promote these new things as outlined in our mission statement — to advance the art, science, and enjoyment of Amateur Radio — and to fight for our spectrum allocations, but the organization does not "own" Amateur Radio. That ownership rests with hams. Each one of you helps to shape the ham radio hobby and community, by virtue of the activities you engage in and the viewpoints you hold — and it's ARRL's job to listen to you, and reflect what we hear. What I'm hearing, from traditional hams as well as new generation hams, is that it's time to make some changes in what ARRL offers the Amateur Radio community.

In 2017, ARRL heard that message loud and clear, and began planting seeds for change that are beginning to sprout here in 2018. I am excited by what we achieved in 2017 and by what the future holds. If we all work together, we will assure there will be a next generation that can celebrate their 50-year anniversary!

73,

Rick Roderick, K5UR  
**President, ARRL**

That paradigm shift is under way, and we've got to embrace

and meet the challenges of new technological developments

and operating trends of the next generation.



## Annual Report of the Chief Executive Officer

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

This represents my first annual report as the Chief Executive Officer of ARRL, and it looks back on a remarkable year for the organization. First and foremost, it was a year that was defined by the word “change.” Much of the change could be considered internal to the organization, and not always visible. But the changes that occurred helped create new ways to face and deal with some of the challenges presented throughout the year. And please understand, throughout the course of 2017, ARRL was presented with a series of continuing challenges. Conversely, those challenges presented opportunities for the organization to show how we can respond and show people, in a very public way, the capabilities of the Amateur Radio Service.

One of the biggest challenges we faced in 2017 — and one of the most public — was the response to the devastating hurricanes in the Caribbean and southeastern part of the United States. In the following pages, you will read about the unprecedented request for Amateur Radio volunteers that came from one of our served agencies, and how ARRL members and others responded to the call, leaving their homes for deployment in truly hardship conditions to provide communications support and other relief to the people of Puerto Rico and the Caribbean. In addition, while other amateurs provided support for their communities on the mainland, almost 1,000 radio amateurs donated a total of \$180,000 to support ARRL’s Ham Aid fund, which provides equipment for emergency deployments of this nature. To my way of thinking, these efforts define what Amateur Radio operators are all about.

While sometimes it seemed as if the hurricane response took up all our time in the second half of the year, there was progress made toward several of our other objectives in 2017. Activity in radiosport was strong, although not at the same levels of recent years, with the lack of sunspots

A staff working group spent a significant amount of time during

the year to define the makeup, needs, and objectives of the

group of new amateurs currently entering the hobby.

being the main impediment to HF activity. We saw similar results in the ARRL VEC — strong but not quite as robust as in the recent past. Still, over 30,000 people across the country were granted licenses for the first time, with a significant percentage of those coming through the ARRL VEC.

One of the goals in the ARRL Strategic Plan is to ensure the long-term financial stability of the organization. One of the reasons for this is to have resources available to expand our services for all our

members, new and longer-term alike. Although 1 year is not a trend, you will see in our financial statements, which are included with this report, that we were able to successfully guide the organization to a strong, positive financial result for the year.

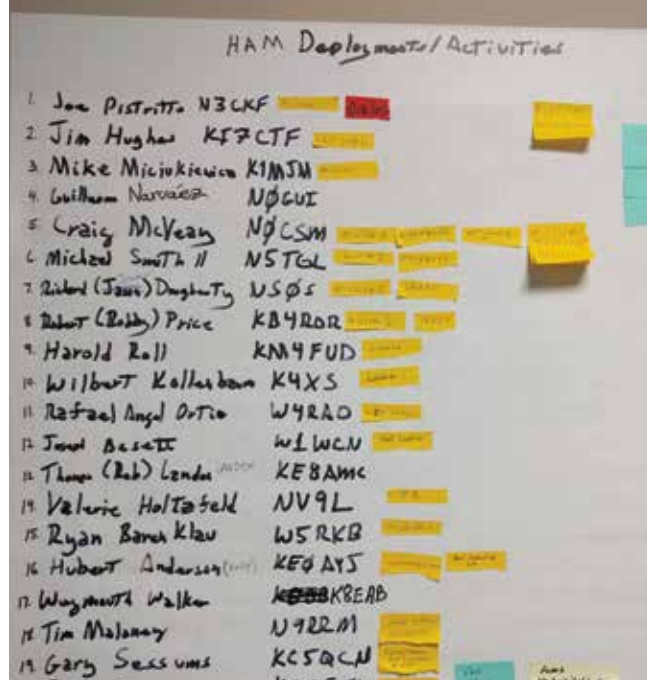
Another of the goals in the ARRL Strategic Plan is to try to increase the vitality of Amateur Radio through providing information and encouraging hams to get active and on the air. A staff working group spent a significant amount of time during the year to define the makeup, needs, and objectives of the group of new amateurs currently entering the hobby. Expect to hear more in the coming year about these efforts.

Although only recently elected, it is my honor to serve the ARRL membership as its Chief Executive Officer. No one person can claim responsibility for the results of the organization. It is a collaborative effort among staff, volunteers, and the members, with the members forming the solid foundation for all that we accomplish each year. Thank you for your continued support.

Sincere 73,

Barry J. Shelley, N1VXY  
Chief Executive Officer





American Red Cross

## Amateur Radio Making a Difference in Puerto Rico

On September 20, 2017, hurricane Maria slammed into the US Commonwealth of Puerto Rico, leaving devastation and despair, and such essentials as drinking water, food, shelter, and security in short supply. Most of the island's telecommunication systems were demolished, along with the electric power grid, which was already on shaky ground.



Volunteer Valerie Holtzfeld, NV9L, also served as a liaison to ARRL during the deployment.

Puerto Rico using PACTOR 3 and PACTOR 4 emissions, and radio amateurs in the continental US who were directly involved with HF hurricane relief communications involving Puerto Rico or the US Virgin Islands.

The Red Cross provided the necessary training for the ham radio volunteers, and covered their expenses. They arrived in San Juan on September 28. Mike Corey joined them on October 6.

"Hurricane Maria has devastated the island's communications infrastructure," ARRL Emergency Preparedness Manager Mike Corey, K1IU, said in September. "Without electricity and telephone, and with most of the cell sites out of service, millions of Americans are cut off from communicating. Shelters are unable to reach local emergency services. And, people cannot check on the welfare of their loved ones. The situation is dire."

At the request of the American Red Cross, ARRL President Rick Roderick, K5UR, put out a call for radio amateurs willing to take on hardship duty for a Red Cross mission in Puerto Rico. More than 500 ham radio operators from nearly every state answered the call, and were screened for certain abilities and requirements, leading to a pool of 50 qualified volunteers from which the Red Cross would draw.

A 22-member contingent of skilled Amateur Radio operators embedded as American Red Cross (ARC) volunteers, in accord with a memorandum of understanding (MOU) between the ARC and ARRL. In an unprecedented and crucial move, the Federal Emergency Management Agency (FEMA), with which ARRL also has an MOU, agreed to transport radio equipment from ARRL's Ham Aid program.

ARRL petitioned the FCC, and was granted a temporary waiver of current Amateur Radio rules to permit data transmissions at a higher symbol rate than currently permitted, in order to facilitate hurricane relief communications between the continental US and Puerto Rico. The waiver applied only to Amateur Radio operators in

**"One of the [search and rescue] team members took me to his home. His living room was full of sand.**

**He told me, 'I tell myself over and over that someday, things will be back to normal. I just have to live for that day.'**

**It takes a lot to crush the human spirit."**

Tim Moloney, N9RRM



## Hitting the Ground Running

Volunteers spent their first night in a local church, sleeping on pews that had been pushed together. Volunteers working with reunification teams helped gather disaster survivor information that could be put into the Red Cross's Safe and Well System.

When the Red Cross realized that the overall need was much greater, the mission morphed to include communication support, especially with regard to ensuring communications for hospitals and recovery logistics.

In the interim, Puerto Rico hams had been active in the response effort. ARRL Section Manager for Puerto Rico Oscar Resto, KP4RF, and other volunteers staffed VHF and HF nets at the American Red Cross temporary headquarters, despite damage to their own homes. Radio amateurs handled traffic to and from the power company, Autoridad de Energía Eléctrica (Electric Power Authority — AEE), and territory and local authorities. The incoming volunteers were assigned to provide communication for engineers involved in repairing the island's power distribution centers. Red Cross Headquarters net shifted to 24-hour operation, to be ready to assist in any emergency involving the already-crumbing Guajataca dam, built in the 1920s; residents in the districts downstream of the dam already had been told to leave. Superacueducto Alcantarillados, the water and sewer utility, asked for several radio amateurs to help in re-establishing water flow from Arecibo to San Juan.

One team penetrated to a Red Cross shelter in Mayagüez, at the westernmost end of the island, providing the first communication link to San Juan since Maria struck.

Two teams were positioned at Red Cross distribution centers to accompany and provide daily VHF communication.

One team deployed to Culebra Island to reestablish VHF and HF communication.

Puerto Rico Section Emergency Coordinator Juan Sepulveda, KP3CR, covered Lares Medical Center and the hospital, using equipment from ARRL's Ham Aid program.

An Amateur Radio station was installed and an operator embedded at the federal emergency operations center to relay information among the Red Cross, ARRL, FEMA, and the FEMA ESF-2 task force.

A station was set up in the FEMA Joint Field Office. Volunteers reported in from around the island to post situation reports.

Top, left to right: The 2017 Atlantic hurricane season was the fifth most active hurricane season on record. More than 500 Amateur Radio operators volunteered for deployment to Puerto Rico.

The 22 hams who deployed to Puerto Rico installed antennas, established communications, ran nets, and more.

A field hospital, set up for hurricane victims.

Right: Some of the key locations in the relief effort.



On their first few nights in San Juan, volunteers slept on church pews.







## Hospitals Become Communication Focus

Recognizing the range of capabilities the volunteers represented, the Red Cross asked them to establish VHF communication capability at 51 hospitals throughout the island, to provide direct contact with the federal emergency operations center. A local radio amateur handled communications at the main hospital, Centro Médico, which needed good communication with the hospitals on the island.

"This happened just in time, because the Menonita (Mennonite) Hospital in Caguas had both generators fail," volunteer Valerie Hotzfeld, NV9L, said in a situation report. The emergency room doctor at Centro Médico and the ham embedded there, Juan Trujillo, NØPSF, coordinated with Dennis Perez, WP4Q, at the Mennonite Hospital in Caguas to transfer four critical patients to the Mennonite Hospital in Cayey.

Volunteers relayed requests from hospitals all over the island, for generators, shelter, water, and supplies. Rob Landon, KE8AMC, stationed at the hospital on Vieques, learned that the hospital needed to evacuate dialysis patients, who require air conditioning that the hospital was unable to provide. "We made their day," Hotzfeld said. "They were not aware of our presence and were impressed with our communications capabilities." In other examples, ham radio helped to secure an oxygen tank for a nursing home resident, specialized IV fluids for a newborn, and insulin for a diabetic youth.

## ARRL Board Recognizes the Humanitarian Efforts of Hams in Puerto Rico and the US Virgin Islands

In recognition of the invaluable support that the ham community offered during the 2017 hurricane season, the ARRL Board of Directors conferred the 2018 ARRL International Humanitarian Award jointly on the Amateur Radio population of Puerto Rico — served by ARRL Section Manager Oscar Resto, KP4RF — and the radio amateurs of the US Virgin Islands, served by ARRL Section Manager Fred Kleber, K9VV.

ARRL established the International Humanitarian Award to recognize "Any licensed radio amateur world-wide, or group of amateurs, who by use of Amateur Radio skills has provided extraordinary service for the benefit of others in times of crisis or disaster."

In a separate motion at their January 2018 meeting, the Board recognized the outstanding work and service and commended all involved with the various hurricane relief communication efforts during 2017. The Board cited the Amateur Radio communities of Puerto Rico, US Virgin Islands, the Caribbean islands, and in south Florida and Texas for outstanding service during the 2017 Atlantic hurricane season, calling their efforts "a demonstrable exhibition of Amateur Radio public service."



ARRL Section Manager for Puerto Rico, Oscar Resto, KP4RF, and ARRL Section Manager for the US Virgin Islands, Fred Kleber, K9VV, received the 2018 ARRL International Humanitarian Award on behalf of the hams in their respective sections, in honor of the Amateur Radio response in the 2017 hurricane season.





## Amateur Radio's Moment to Shine

The 22 radio amateurs who deployed to Puerto Rico ended their mission in mid-October, after about 3 weeks on the ground that included an October 6 visit from Vice President Mike Pence at the emergency operations center. FCC Chairman Ajit Pai also acknowledged Amateur Radio's contribution to the relief effort after his visit to Puerto Rico in November.

Hotzfeld said the volunteers accomplished everything they went to Puerto Rico to do, and that the Red Cross felt they had exceeded all expectations.

"We opened a lot of peoples' eyes," she said, adding that the volunteers possessed a wide range of talents, from medical to mechanical, not just communications. She cited Andy Anderson, KEØAYJ, who set up a helicopter landing pad at Guajataca Dam and provided communications where there was none.

"The Amateur Radio community really came together in providing donations of equipment, funding, and personnel in response to the great need in Puerto Rico," President Roderick said. "The scale of these efforts and the response is making history. This has got to be one of Amateur Radio's greatest moments. Our sincere thanks go to all involved."



Above: ARRL Emergency Preparedness Manager Mike Corey's operating position at the Joint Field Office in San Juan, Puerto Rico.

Top, left to right: Matt Gonter, AC4MG (left), and Alexei Guadalupe Tirado, Facilities Engineer at Hospital HIMA-San Pablo, in Fajardo. Matt established HF communications at the hospital, and passed traffic from there to the Red Cross and FEMA.

ARRL Puerto Rico Section Manager Oscar Resto, KP4RF, and volunteer Gary Sessums, KC5QCN, work on an HF antenna.

Most of the volunteers bunked at the San Juan Joint Field Office.

The 2017 hurricane season was the costliest on record, with preliminary damage estimates at \$292.3 billion.

### Amateur Radio Operators Who Volunteered in Puerto Rico

Robb Landon, KE8AMC	Craig McVeay, NØCSM	Joe Pistritto, N3CKF
Jeremy Dougherty, NSØS	Valerie Hotzfeld, NV9L	Tim Moloney, N9RRM
Matthew Hackman, KB1FUP	Jeff Sumner, KC4FOX	Gary Sessums, KC5QCN
Mike Miciukiewicz, K1MJM	Rafael Ortiz, W4RAO	Bill Kollenbaum, K4XS
Michael Smith, N5TGL	Ryan Barenklau, W5RKB	Wey Walker, K8EAB
Guillermo Narvaez, NØGUI	Jim Hughes, KI7CTF	Matt Gonter, AC4MG
Andy Anderson, KEØAYJ	Joe Bassett, W1WCN	
Bobby Price, KB4ROR	Gene Roll, KM4FUD	

**"While doing the roof survey for my HF antenna, I took a moment to take in the view of the surrounding rainforest and was amazed at just how bare the landscape was. A huge number of utility poles were down — metal, wood, concrete, it didn't matter. Twisted, snapped into several pieces, and even severely bent concrete poles."**

Matt Gonter, AC4MG

# The Year in Review

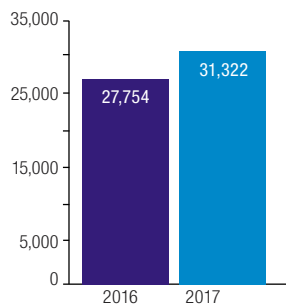
## Emergency Preparedness Department



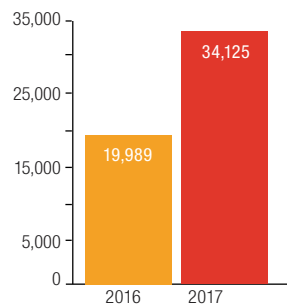
Continuing a trend observed in 2016, the percentage of ARRL Sections reporting ARES activity increased again in 2017, with 62 of 71 Sections reporting in. The challenge offered last year was to reach 88% reporting, and we nearly hit it, coming in at the 87% mark in 2017 — up from 76% in 2016. Several Sections that did not report in 2016 did report in 2017, including NM, OR, PR, RI, SD, VA, and WY.

Increased reporting gives a clearer picture of the amount of training ARES members engage in, the amount and type of services ARES provides, and the approximate dollar value of those services, which are provided at no cost to the organizations that ARES serves. The method for calculating Volunteer Value Provided is by multiplying the total Person Hours by the latest rate for value of volunteer time. The value of volunteer time is determined by Independent Sector, and was calculated at \$24.14 at the time of this report. This figure is a national average.

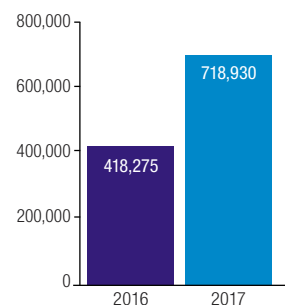
An increase in reported activity was noted during the months of August through November, due to Amateur Radio response activity for hurricanes Harvey, Irma, and Maria; wildfires in the western US, and the total solar eclipse that occurred on August 21.



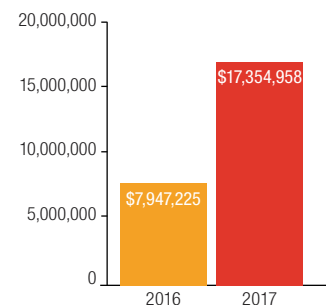
**Total ARES Members**



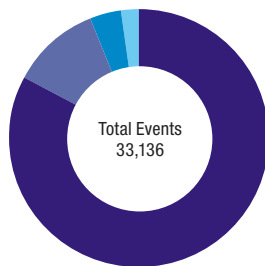
**Total ARES Nets**



**Total Volunteer Hours**

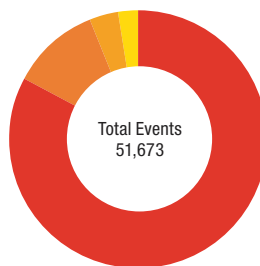


**Volunteer Value**  
(\$24.14 x Total Volunteer Hours)



**2016 ARES Events**

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



**2017 ARES Events**

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

**ARES Summary for 2017**

- Total ARES Membership: 31,322
- Active in 47 states and territories
- Total ARES Events: 51,673
- Total Volunteer Hours: 718,930
- Total Volunteer Value Provided: \$17,354,958

In 2017, there were changes in the ARES report forms that made it easier to process information at ARRL Headquarters and standardize the format for all forms. ARES Monthly Reports were posted to the ARRL website, providing regular information on Amateur Radio public service communications activity.

2017 was the final year in which reporting will be conducted using the ARES forms. Work has begun on the buildout and beta testing of *ARES Connect*, a volunteer management, communications, and reporting system that will allow information to be logged by ARES members and managed through the ARRL Field Organization.



## ARRL Partners with the American Red Cross and The Salvation Army on Solar Eclipse Emergency Communications Plan

One of the biggest science-related news stories of 2017 was the total solar eclipse on August 21. While most people were excited about the spectacle, there were those in the public safety and emergency management communities who understood that precautions were necessary.

To that end, ARRL partnered with the American Red Cross and The Salvation Army Team Emergency Radio Network (SATERN) to provide a nationwide communication link for local and regional American Red Cross units in the event that a communications failure occurred during the solar eclipse.

More than 7.5 million tourists would be traveling to the relatively narrow path of totality to get the best view, and there was a concern that the increased population density might overload and disrupt local communication infrastructure in some areas.

In the event of a disruption, the plan was for the Red Cross to use local Amateur Radio Emergency Service® (ARES) units to provide local backup communication. The Red Cross was interested in regional and national HF communication capability, and the ability to pass traffic to its Digital Operations Coordination Center (DOCC) at its national headquarters. At ARRL's request, SATERN activated its net on 14.265 MHz on an extended monitoring status the day of the eclipse. The SATERN Net was also to be used as a clearinghouse for voice traffic if the Red Cross required long-range or nationwide communication capability.

Stations checking into the SATERN Net were asked to report local conditions to provide The Salvation Army, the Red Cross, or ARRL with such "ground intelligence" as telecommunications infrastructure outages associated with the eclipse, special preparations being made by communities for handling large crowds, and any ARES, RACES, or other Amateur Radio public service communications activated to assist during the eclipse.

In addition, W1AW activated to provide *Winlink* connectivity to the Red Cross DOCC, monitor HF channels with federal partners, and provide coordination assistance between national partners and the field organization.

Most ARRL Sections shared ICS 205 Communications Plans with ARRL, SATERN, and the Red Cross, and were on standby that day, indicating that they planned to use nets on 40, 60, and 80 meters to handle traffic, mostly between the field and state emergency operations centers (EOCs).

On August 21, the eclipse came and went without a communications failure occurring. The preparations made for the eventuality had value as an exercise. "The collaboration between ARRL, the Red Cross, and SATERN was remarkable during the solar eclipse," ARRL Emergency Preparedness Manager Mike Corey, K1IU, said. "The three organizations, at a variety of levels, came together, shared information, crafted a plan, and were ready to go, to support communications if needed. Fortunately, no major communications issues came up. This effort was what made possible the coordinated response to hurricane Maria just a month later."



### ARRL Staff Enjoys the Total Solar Eclipse

Staff and volunteers at ARRL Headquarters in Newington, Connecticut eagerly awaited the total solar eclipse on August 21, 2017. Though Connecticut was not in the path of totality, many Headquarters employees trooped out into the parking lot at approximately 2:45 PM EDT to see the eclipse at the maximum that it would reach in the local area. Options for safe viewing of the eclipse included special eclipse glasses that were available commercially, as well as eclipse pinhole viewing boxes made by W1AW Station Manager Joe Garcia, NJ1Q.

Photos left to right: Joe Garcia tries out one of the pinhole projection boxes he made for the occasion. *QST* Assistant Editor Jen Glifort opted for eclipse viewing glasses. ARRL Membership Manager Diane Petrilli, KB1RNF, and Joe Garcia get a look at the eclipse's maximum, as *QST* Editor Steve Ford, WB8IMY, and ARRL Field Services Assistant Leona Adams, W1LGA, wait their turn.

# Report to America

## Amateur Radio Stepped Up During the 2017 Hurricane Season

The 2017 Atlantic hurricane season, which was predicted to be a near average season, turned out to be a hyperactive season with 17 named storms and six major hurricanes. It was the fifth most active hurricane season on record, tied with the 1936 hurricane season, and it had the highest number of major hurricanes (six) since the 2005 hurricane season (which had seven) — the season that produced hurricane Katrina.

The 2017 season was the costliest on record, with preliminary damage estimates at \$292.3 billion. Hurricanes Harvey, Irma, and Maria caused the most damage.

The Amateur Radio Service's role in the response varied over the three largest storms of the season — from minimal support, to providing communications after total devastation of infrastructure. What follows is a discussion of the roles Amateur Radio played in hurricane response, apart from our work in Puerto Rico after hurricane Maria.

**Hurricane Harvey made landfall in south Texas on August 25, 2017.** The “hardening” of the telecommunications infrastructure, to make it more immune to storm damage, diminished the need for Amateur Radio communication support, and altered hams' traditional role there.



The Amateur Radio telecommunications infrastructure in south Texas has remained analog, as “the lowest common denominator” of technology — VHF/UHF FM, and HF — and has the highest degree of interoperability. The area also has an extensive system of repeaters that makes it possible for local radio amateurs to serve as another set of eyes and ears in spotting and reporting problems that require official attention.

ARES volunteers supported communication at some Red Cross shelters in south Texas in the aftermath of the catastrophic and unprecedented flooding that resulted from hurricane Harvey. ARES members also served as net control liaisons to the Harris County Office of Emergency Management (OEM). At least 3 dozen volunteers assisted at shelters.

A variety of emergency, health-and-welfare, traffic, and tactical nets in south Texas were active on HF at various times of the day, as well as on a wide array of VHF and UHF repeaters. The Salvation Army Team Emergency Radio Network (SATERN) was active on 14.265 MHz, while the Military Auxiliary Radio Service (MARS) used the 5.330.5 (USB) interoperability channel on 60 meters.

Lloyd Colston, KC5FM, the Public Information Officer for Oklahoma at the time, said a station checked in via *EchoLink* on August 30 to request the rescue of a grandmother and children, as individuals in the flood zone were reporting cellular telephone degradation. The request was relayed to the United States Coast Guard Houston.

**In early September 2017, as Hurricane Irma moved closer to the Florida Peninsula,** ARRL West Central Florida (WCF) Section Manager Darrell Davis, KT4WX, reported that ARES teams were requested to provide communication support at evacuation shelters in Highlands, Hillsborough, and Polk counties.



The National Hurricane Center (NHC), issued a hurricane watch and a storm surge watch, prompting Davis to call on all ARES, ACS, and CERT personnel to continue closely monitoring NHC advisories on hurricane Irma and to be in communication with their respective leadership, in case their assistance with communication support is needed.

After hitting the Florida Keys, hurricane Irma made landfall near Naples, Florida, on September 10 at around 2100 UTC as a Category 2 storm. Thirty Florida counties were under mandatory evacuation orders. FEMA reported that 586 shelters were open, housing some 192,000 occupants, and that more than one-half of the state's customers — some 5.7 million people — were without electrical power. The priority during the weekend was tactical shelter communication, emergency operations center (EOC) communication, and SKYWARN nets as hurricane Irma approached. At one point, Pascoe County in the WCF Section put out a call for Amateur Radio support, seeking 20 volunteers with their own equipment.

The storm's eye passed over the Hardee County EOC just before midnight EDT, leading Davis to say, “We have survived hurricane Irma.” Irma was downgraded to a tropical storm at that point.

“At our own EOC, the data from APRS stations was very important to our decision makers in the EOC to allow Fire and EMS back on the road, post-storm,” Davis reported. “Our repeater went off the air due to power failure. I went to reverse and listened to the repeater input and transmitted on the output and we maintained communications through the storm.”



Davis said he was grateful for the Ham Aid equipment — four handheld transceivers and one mobile transceiver — that ARRL sent to Florida before the storm hit. Davis said the Ham Aid mobile transceiver went to the area's special needs shelter at a local community college, primarily due to the fact that a handheld's signal was hampered by the building.

Puerto Rico fared better than had been expected. "We were lucky that all we got were tropical storm winds," said Puerto Rico Section Public Information Coordinator Angel Santana, WP3GW, adding that the storm did fell some trees on the island. While electrical power has been up, there is still no water, Santana said.

"Some repeater systems did operate without problems, and, besides reports on Irma's route, many were indicating local conditions," Santana said. "Our Section Emergency Coordinator remained in contact with the Red Cross," he said, and on September 9, volunteer radio amateurs went to the island of Culebra to establish HF communication there so they could keep in touch with the Red Cross office in San Juan, where ARRL Puerto Rico Section Manager Oscar Resto, KP4RF, was stationed. More than 350 Puerto Rico residents took advantage of Red Cross shelters, and about 150 evacuated to shelters in the US Virgin Islands.

### **The hurricane season had one last big trick up its sleeve —**

**hurricane Maria**, which devastated Puerto Rico, the US Virgin

Islands, and other Caribbean nations, including Dominica, an island nation with approximately 70,000 residents. In the immediate aftermath of then-Category 5 hurricane Maria's passage over Dominica on September 18, 2017, Frans van Santbrink, J69DS, on St. Lucia checked into the VoIP Hurricane Net to relay damage reports he'd gathered via repeater conversations with other hams there. *The New York Times* also reported and posted audio that Amateur Radio was a primary source to gather initial damage reports from the storm-ravaged island. US-based Jullian Antoine, J73JA, solicited reports via a VoIP connection with the J73MAN repeater on Dominica.

"All power lines are down, our telephone lines are down, internet lines, everything is down," came a reply to Antoine's inquiry. "Roads are blocked with debris. No confirmed information on fatalities or injuries."

VoIP Hurricane Net Operations Director Rob Macedo, KD1CY, recorded the audio that the *Times* used while he was monitoring the J62DX-L link on *EchoLink*.

In his report to the VoIP Hurricane Net, van Santbrink recounted a damage account from Kerry Fevrier, J73YH, in Roseau, Dominica. "Trees down, river has flooded half the village, cars are all over, most houses have lost their roofs or are destroyed, the area between his house and the church is just flattened. . .in his words, 'devastation is total,'" van Santbrink told the net.

ARRL's After-Action Report on the 2017 Hurricane Season is available at [www.arrl.org/files/file/Public%20Service/ARES/2017%20Hurricane%20Season%20AAR.pdf](http://www.arrl.org/files/file/Public%20Service/ARES/2017%20Hurricane%20Season%20AAR.pdf).



## **USVI Hams Increase in Number, in Response to 2017 Hurricanes**

For years, the St. John Amateur Radio Club in the US Virgin Islands (USVI) tried to expand membership. But, like many small clubs in remote vacation spots, membership was older, seasonal, and suffered from natural attrition. With fewer than six members on the club roster prior to the 2017 Atlantic hurricane season, only one, Gilly Grimes, NP2OW, was on St. John when hurricane Irma hit.

Two weeks later, hurricane Maria arrived, dumping huge amounts of water onto already damaged or destroyed structures, and directly hitting neighboring St. Croix and Puerto Rico. The need for a larger ham presence was clear.

In December, a member of the St. John club, Phyllis Benton, NP2MZ, reached out to newly

formed community working groups focused on island infrastructure. Benton connected with Jennifer Pruss and Larry Pruss, NP2LP, of St. John Rescue, a volunteer emergency first-response group. Both had seen the critical importance of Amateur Radio communications, and were eager to grow the local ham presence.

With support from ARRL USVI Section Manager Fred Kleber, K9VV, the core team put out information about a licensing class. Thirty individuals signed up.

Pulling the needed Volunteer Examiners together, post-storms, in a remote place, was a challenge. With the help of the local club on St. Thomas and Fred Kleber on St. Croix, an

exam team was assembled. On May 6, 2018, 16 individuals took their Technician exam, and all passed. There are now 13 newly licensed hams from St. John, one from St. Thomas, and one each from Tortola and Virgin Gorda in the neighboring British Virgin Islands. This group included Jennifer Pruss, NP2QT, and Thomas Alexander, NP2QU, who each passed the Technician and General exams.

The youngest of the newly licensed hams, 12-year-old Skylar Pruss, NP2QS, is encouraging classmates to get licensed. Next steps for the fledgling group include practicing 2-meter relay. If another big storm or unforeseen disaster hits, this group of hams will be ready.

## ARRL HQ Staff Does Their Part for the 2017 Hurricane Response

Many members of the ARRL Headquarters staff stepped up in the autumn of 2017 to assist the organization's response to the hurricane season. The ARRL HQ Emergency Response Team met on September 7 to discuss developments. The inventory of ARRL's Ham Aid program was assessed, and was found to be seriously depleted due to the Ham Aid response to the 2016 Ecuador earthquake. More equipment was ordered on overnight delivery, from DX Engineering. By September 9, that equipment was on its way to Puerto Rico for the response to hurricane Irma.

W1AW Station Manager Joe Garcia, NJ1Q, was involved with technical support for the Ham Aid kits, including the assembly of HF antennas, configuration of radios, configuration of laptop computers for *Winlink 2000* use, and more. ARRL placed another major equipment order with DX Engineering on September 25, for the radios that would travel to Puerto Rico with the 22 Red Cross/ARRL volunteers who were to be deployed there. The gear was delivered on September 26, and 16 HQ employees and volunteers worked together to assemble 19 Ham Aid kits of HF equipment in less than 8 hours.

During the 2017 hurricane season, particularly after the damage hurricane Maria caused in Puerto Rico, ARRL experienced a significant increase in awareness of Amateur Radio and the service that ham radio operators can offer in times of emergency. Several positive stories were broadcast/published by national media outlets — including *The New York Times*, CNN, NPR, The Weather Channel, and others — about the work that ham radio operators did in Puerto Rico, with ARRL Media and Public Relations Assistant Michelle Patnode, W3MVP, taking on the responsibility of coordinating and scheduling the media requests, often outside of traditional working hours. ARRL Marketing Manager, Bob Inderbitzen, NQ1R, created pages on the ARRL website to organize media hits, news stories, and helplines in an easily navigable format. Daily e-mail reports from ARRL Emergency Preparedness Manager Mike Corey, KI1U, who had deployed to Puerto Rico, were very helpful in letting HQ staff know what was happening “on the ground,” enabling staff to develop story pitches to the media and to share information with ARRL members.

ARRL's Hiram Percy Maxim Memorial Station, W1AW, is always ready to assist in emergency communications when necessary. During the most active part of the 2017 North Atlantic Hurricane season, W1AW's primary responsibilities were to monitor various HF nets active during the hurricanes, and in some instances, check into these nets, in addition to the sending and receiving of any possible hurricane-related e-mail traffic via *Winlink 2000*. W1AW's regularly scheduled bulletins were suspended at the height of the response to hurricane Maria, in order to allow station operators to monitor nets. During hurricane Katrina in 2005, a separate telephone line was set up in W1AW to pass any storm-related calls to W1AW/ARRL HQ personnel after normal business hours. That line was reestablished for this storm season, and is now a permanent aspect of the station for its emergency communication functions.

Operators at W1AW also passed some outgoing traffic from people in Puerto Rico who were affected by hurricane Maria to family members or friends in the US. This traffic — the content of which essentially contained messages that the senders were okay — were received via the SATERN and Caribbean Health and Welfare (Friendly) nets. W1AW's presence on the various HF nets was welcomed by all net participants. The station was active not only to assist with any outgoing traffic, but also to listen for any possible interference — intentional or otherwise — that might be experienced by the net.

ARRL Emergency Preparedness Manager Mike Corey, KI1U, said he was very grateful for the assistance provided by ARRL HQ staff, saying, “The Puerto Rico mission would not have happened without their support.” ARRL CEO Barry Shelley, N1VXY, said, “Many ARRL Headquarters staff members stepped outside their regular job positions to volunteer and get the job done. We're grateful for their service, during the busiest hurricane season in many years.”



Top: W1AW Station Manager Joe Garcia, NJ1Q, made certain that the station was ready to assist.

Below: ARRL Headquarters employees Eric Casey and Amanda Grimaldi, N1NHL, pack Ham Aid kits for shipment to Puerto Rico.

## FEMA Assists in Delivery of ARRL Ham Aid Gear



In the midst of the hurricane response last fall, then-ARRL CEO Tom Gallagher, NY2RF, thanked FEMA for expediting the delivery of Ham Aid Kits to the US Virgin Islands in the wake of hurricane Irma. In a September 18 e-mail to FEMA Administrator Brock Long, Gallagher wrote:

“ARRL HQ received an urgent request for high-frequency digital radio equipment from our USVI official on Thursday, 7 September. While we were able to provision the equipment in 15 hours, we were unable to arrange for its transportation to St. Thomas. A telephone call to FEMA's CTO Ted Okada, K4HNL, also a ham radio operator, connected us with a Virgin Island-bound FEMA CACI contractor in the person of Jeff Hugabone,

N1KBY. He arrived at our HQ on Friday afternoon, taking several kits along with him. He delivered one to the island's FEMA-fortified PEP broadcast station this week. Without the logistical intervention of FEMA, this vital equipment might still be awaiting shipment. This assistance was repeated for Puerto Rico.”



## Ham Radio Bridges the Gap in Wildfire-Stricken California

In October 2017, more than a dozen wildfires in northern California damaged or destroyed cellular telephone and internet infrastructure in some areas, and Amateur Radio helped to fill the communication gap. Mendocino County Sheriff Thomas Allman told news media that damage to cell towers and fiber-optic telephone and computer lines led officials to rely on Amateur Radio operators to communicate with area hospitals.

During the fires, ham radio operators were stationed at all North County hospitals and large nursing homes, supplementing the county's emergency communication system.

Radio amateurs also assisted with communication at Ukiah Valley Medical Center in Ukiah; Northbrook nursing home in Willits; the Mendocino Coast Hospital in Fort Bragg, and Red Cross shelters at Ukiah High School and Willits High School.

In Sonoma County, Sonoma County Radio Amateurs (SCRA) conducted an ARES Fire Watch Net to relay fire and emergency information on its repeater. Auxiliary Communication Service (ACS) Radio Officer Dan Ethen, WA6CRB, said a controlled Sonoma County Fire and Emergency Services RACES/ACS net was also active.

ARRL member Steve Fischer, K6ETA, told ARRL that the Sonoma County ACS supported shelters in Petaluma, and had placed an operator the area Emergency Operations Center (EOC). "Our efforts helped coordinate the delivery of over 500 cots, breakfasts from the Redwood Empire Food Bank, and many donation and volunteer offers," Fischer said.

The fast-moving, wind-driven blazes — 18 large fires in all, according to FEMA — drove thousands from their homes, killed at least 2 dozen people, and destroyed more than 1,300 homes. The Atlas Fire in Solano and Napa counties was the largest and most disastrous wildfire, covering more than 42,300 acres.

FEMA said the fires covered some 150,000 acres in all. Some towns were virtually leveled. According to FEMA, some 106,000 residents were under mandatory evacuation orders, more than 36,500 homes were threatened, and 59 Red Cross and independent shelters were open to 5,117 evacuees.

ARRL San Francisco Section Manager Bill Hillendahl, KH6GJV, said, "The Tubbs Fire came to within two blocks of my home, but stopped on its own."

Hillendahl had no phone or internet service. He said that hams in northern California "performed admirably" during the wildfires.

The County of Sonoma RACES/ACS ran a net, along with the SCRA FireWatch and ACS nets. Hillendahl said he heard mostly informational traffic, as public safety and business radio systems held up during the fires.

Gary Gross, KE6QR, speaking for the North Bay Amateur Radio Association in Vallejo, California, and its role in the response, said the Office of Emergency Services (OES) put out a call for communication support on October 11. "An additional call for communications was requested from Napa CERT [Community Emergency Radio Team]," he said. "We were asked to provide communications between three shelters — one in American Canyon and two in Napa. There was no cell service in one, and very poor service in the other two."

Gross said a communications link was established at a moment's notice on the 442.425 repeater, with a cross-band link to VHF simplex. The three-way link connected Crossroads Church shelter in Napa, Napa Community College, and American Canyon High School.

Powell Helems, KK6YVV, and Mary Tabbert, KM6JCP — also working with American Canyon CERT — were instrumental in establishing the shelter with communications and logistics at American Canyon High School, Gross said, while Matthew Pearce, KA6ACE, established communications at the Crossroads Church in Napa. Pearce had been contacted directly by Napa CERT, requesting assistance.

According to Sacramento Valley Section Emergency Coordinator Greg Kruckewitt, KG6SJT, Dale Anderson, KK6EVX, reported that radio amateurs deployed on October 9 to a Red Cross shelter in Oroville. They were set up for VHF, to monitor public service frequencies, and for *Winlink*. Shelter status reports were sent to the California Office of Emergency Services (CAL OES), via *Winlink*.

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## Section Manager Orientation at ARRL Headquarters

In mid-October 2017, a crop of ARRL's newest Section Managers attended an orientation workshop at ARRL Headquarters. The group included: (front row, left to right) Dan Ringer, K8WV (West Virginia); Steve Morgan, W4NHO (Kentucky); Rick Paquette, W7RAP (Arizona); Ron Morgan, AD9I (Illinois); ARRL Field Organization Team Supervisor Steve Ewald, WV1X; (back row, left to right) ARRL Emergency Preparedness Assistant Ken Bailey, K1FUG; Dale Durham, W5WI (West Texas); Jay Ferguson, N5LKE (Arkansas); Ray Lajoie, KB1LRL (Western Massachusetts); David Benoist, AG4ZR (Georgia); and John Fritze, K2QY (Eastern New York).





A NASA image of the wildfires that plagued northern California in October 2017. Amateur Radio operators supplemented North County, California's emergency communications system, providing communications at all hospitals and large nursing homes.

In Nevada County, radio amateurs deployed to a shelter that opened to accept evacuees from the McCourtney Fire. Richard Vizcarra, K6TM, said that the shelter had more than 80 evacuees.

"The Red Cross was *very* impressed with the communication abilities we demonstrated, and immediately had several ideas of how it could be used to eliminate unnecessary legwork for communication in emergency situations," Vizcarra said. The shelter team was able to send and receive messages via *Winlink* on VHF. The radio amateurs handled health-and-welfare and other message requests.

In Amador County, ARES Emergency Coordinator Daniel Edwards, KJ6WYW, said that the Red Cross requested ARES support at a shelter in Pioneer for Calaveras County residents. Edwards set up a temporary net control station using a 2-meter mobile radio, working through the K6ARC repeater. "Nancy Edwards, KK6CZG, provided additional relay support from our home as well as providing alternate net control when I needed to step away," Edwards said.

Contact was made with the Calaveras County CERT Team, and the Red Cross opened a shelter in West Point. Communication was set up at the shelter by Guy Johnstone, KK6VQY, using a handheld transceiver until a more permanent station could be set up with VHF and UHF capabilities. Several volunteers stepped up to staff the station until the need for the shelter ended.

In December 2017, the massive and barely contained Thomas Fire in southern California consumed more than 230,500 acres, and the emergency caused residents in threatened areas to evacuate. Amateur Radio volunteers were active supporting communication for American Red Cross shelters in Ventura County.

Ventura County Auxiliary Communication Service (ACS)/ARES activated to support Red Cross shelters, providing communications between shelters. Radio amateurs also deployed to the Ventura County Emergency Operations Center (EOC). According to ARRL Ventura County District Emergency Coordinator Rob Hanson, W6RH, the ACS/ARES staffed four evacuation centers, in addition to the EOC.



The Santa Barbara Section Manager at the time, Jim Fortney, K6IYK, told ARRL that an Amateur Radio digital network (ARDN) MESH video network livestreamed images from several sites.

“Loss of primary power has required using the solar power backup capabilities, but, unfortunately, the heavy smoke has made that backup less than fully reliable,” he said. In addition, some sites were down because of power outages, and at least one hilltop site was overrun by fire.

“The Santa Barbara District ARES organization works closely with Santa Barbara County OEM [and] is prepared to support any requests as the Thomas Fire continues to burn into Santa Barbara County,” Fortney said.

The Fallbrook Amateur Radio Club, N6FQ, and other groups in North County (San Diego) provided communication at some evacuation centers, and the Red Cross activated its Amateur Radio group.

In addition to power loss to repeater sites, solar panels charging off-grid batteries were affected by the huge plumes of smoke blocking the sun.

ARRL Los Angeles Section Manager Diana Feinberg, AI6DF, said little official use of Amateur Radio was made during the fires in her Section. “All city and county governmental radio systems, commercial cell phone networks, and landline phone systems operated normally throughout the three fires in Los Angeles County, with just a few minor power outages of short duration,” she said. At one point, the ARES-LAX Northwest District was very briefly in standby mode when it was thought that power might become intermittent at a hospital in the Santa Clarita area.

Feinberg said the City of Los Angeles Fire Department ACS opened a net for any traffic resulting from the small Skirball Fire, which claimed a half-dozen high-priced homes and shut down a major freeway during the morning commute.



A NASA image of the Thomas Fire, the largest fire on record to date in California. The Thomas Fire threatened 12,000 homes. Amateur Radio operators supported communications between Red Cross shelters during the evacuation.

## Plane Crash Drill Turns to Major Fire Response

On July 8, 2017, ARES® Los Angeles (ARES LAX) Northwest District operators took part in a plane crash mass-casualty drill that involved numerous hospitals and agencies responding to a private plane crash at a busy freeway junction in the Encino area. ARES LAX-Northwest members deployed to their assigned hospitals by 7 AM for the drill, prepared to handle backup communication on hospital utilization and bed availability. ARRL Los Angeles Section's ARES Northwest District Emergency Coordinator (DEC) Roozy Moabery, W1EH, said the drill provided an excellent example of how ARES interfaces with other disaster-focused Amateur Radio organizations.

About 12 hours later, an explosion and fire at a City of Los Angeles Department of Water and Power 230 kV receiving station in the San Fernando Valley's Northridge area put the group's training into action. While firefighters fought flames, electric power was cut for up to 11 hours to 147,000 homes and businesses that were already suffering from 108-degree heat that day.

Five hospitals that ARES LAX-Northwest serves, including major trauma center Northridge Hospital Medical Center, switched to emergency backup power. ARES LAX-Northwest quickly established a net, and Moabery immediately deployed to Northridge Hospital, remaining there until nearly 6 AM the next day.

Assistant DEC Marty Woll, N6VI, served as net control while Assistant DEC Dean Cuadra, WA6P, and Emergency Coordinator David Goldenberg, WØDHG, kept in contact with other hospitals to determine their operational status.

Although ARES only physically deployed to Northridge Hospital, other ARES members were on standby throughout the incident. The reduced electric power available at Northridge Hospital combined with the extreme heat resulted in numerous patients being relocated to unaffected hospitals.

## Advocacy

### Two New Band Allocations Were “A Big Win” in 2017



Amateur Radio gained two new bands in 2017 as the result of an FCC proposal that first saw the light of day in 2015. ARRL had been trying since the 1970s to convince the FCC to allow amateur access to parts of the spectrum below the Standard Broadcast Band. Through the Utilities Technology Council (UTC, formerly the Utilities Telecoms Council), electric power utilities opposed Amateur Radio use of the MF and LF spectrum, raising unsubstantiated fears of interference to unlicensed Part 15 power line carrier (PLC) systems used to manage the power grid.

In April 2015, the FCC proposed a new secondary 630-meter allocation at 472 to 479 kHz to Amateur Radio, implementing decisions made at World Radiocommunication Conference 2012 (WRC-12). At the same time, the FCC allocated a new LF band, 135.7 to 137.8 kHz (2200 meters), to the Amateur Service on a secondary basis, in accordance with the *Final Acts* of WRC-07.

By early 2017, activity from Amateur Radio and experimental stations was popping on 630 meters in several countries that had access to the band. The US was not yet among them, as the FCC was still in the process of determining the specific Part 97 rules it must frame to permit operation on 630 meters and 2200 meters.

On March 28, 2017, the FCC adopted rules that allowed secondary Amateur Radio access to 472 – 479 kHz (630 meters) on a secondary basis, and to 135.7 – 137.8 kHz (2200 meters). The FCC said the Amateur Radio Service rules it adopted for the two bands allow for co-existence with PLC systems that use those bands.

“It’s a big win for the amateur community and ARRL,” then-ARRL CEO Tom Gallagher, NY2RF, said at the time. “We are excited by the FCC’s action to authorize Amateur Radio access for the first time on the MF and LF spectrum. As amateurs begin using these new allocations. . .we encourage the entire Amateur Radio community, as secondary users, to be especially attentive to the rules.”

In this case, the rules included a notification requirement. Amateur Radio operators who want to use the bands are required to notify the UTC of their station location prior to commencing operations.

The new bands are available to General-class and higher licensees, and permissible modes include CW, RTTY, data, phone, and image. Automatically controlled stations are permitted to operate in the bands, after completing the required registration.

ARRL urged interested radio amateurs to register at the earliest opportunity — which had not yet been announced — and reminded them that the new bands were not yet available for use.

ARRL’s WD2XSH 600-Meter Experimental Group, coordinated by Fritz Raab, W1FR, kept tabs on the progress, and held the group’s fifth annual Experimental MF/LF Outreach and Demonstration during ARRL Field Day, June 24 – 25.

During the event, radio amateurs who also hold FCC Part 5 Experimental licenses for 630 and 2200 meters transmitted Field Day greetings. Participating stations from Arizona, Texas, Vermont, Washington, Alaska, and other areas submitted reception reports to the Experimental Group after the event.

In September, the long-awaited UTC notification procedure was announced. Radio amateurs were asked to complete a form (<https://utc.org/plc-database-amateur-notification-process/>) that asked for the latitude and longitude at which their station is located.

“Many of us filed notices with the Utilities Technology Council on September 15, the day the notification procedure was announced,” said Fritz Raab. “We did not expect to hear from the UTC unless they were objecting to amateur operation. Much to our surprise, on Friday, October 13, a number of operators received ‘okay’ notices. So, the first amateur operations commenced that night.”

And so, as of October 13, 2017, Amateur Radio’s two newest bands — 630 meters (472 – 479 kHz) and 2200 meters (135.7 – 137.8 kHz) — were available to operators who had received UTC clearance. ARRL’s Hiram Percy Maxim Memorial Station, W1AW, was among the stations that had registered for, and received, clearance.

By the year’s end, operating and experimentation on the new bands had yielded some ham radio “firsts.” International ARRL member David Bowman, GØMRF, of England, reported that he and Dave Riley, AA1A, an ARRL member in Massachusetts, completed what is believed to be the first transatlantic contact on 630 meters since the MF band was released to US radio amateurs. They used the JT9 digital mode to complete the more than 5,160-kilometer (approximately 3,200 miles) contact during the early hours of December 23.

Reports early in 2018 indicate that the new allocations are in active use, with radio amateurs making contacts, experimenting, and developing antennas for use on the bands.

As of October 13, 2017, Amateur Radio’s two newest bands — 630 meters (472 – 479 kHz) and 2200 meters (135.7 – 137.8 kHz) — were available to operators who had received UTC clearance.



## The Amateur Radio Parity Act's Journey in 2017



The Amateur Radio Parity Act, which ARRL has championed since early 2014, calls on the FCC to protect Amateur Service communications against preclusive private land-use restrictions. The measure guarantees each radio amateur residing in a deed-restricted community the opportunity to install and maintain an effective outdoor antenna, while also preserving the existing authority of homeowners associations (HOAs) to regulate aesthetics in the community. This carefully crafted balance is the result of months of work in 2016, culminating in the accord reached by ARRL and the Community Associations Institute (CAI).

In 2016, the measure passed the US House of Representatives but stalled in the Senate. At the time, ARRL Hudson Division Director Mike Lisenco, N2YBB, acknowledged, "The passage of the Bill in the House [was] a major accomplishment, due to the hard work of so many." Lisenco has been at the forefront of the legislative initiative since its inception. Encouraged by the speed with which the Bill moved through the house, ARRL made plans to approach the 115th Congress in 2017.

In January 2017, just 10 days after being introduced in the US House of Representatives, the 2017 Amateur Radio Parity Act legislation, H.R. 555, passed on unanimous consent under a suspension of House rules. The Bill's language is identical to that of the 2015 measure, H.R. 1301. The new Bill, again sponsored by Rep. Adam Kinzinger (R-IL), was introduced on January 13, 2017 with initial cosponsorship by Rep. Joe Courtney (D-CT) and Rep. Greg Walden, W7EQI (R-OR), chair of the influential House Committee on Energy and Commerce (the committee of jurisdiction for the Bill). FCC Chairman Ajit Pai applauded the Bill in late January, saying that it would "help Amateur Radio operators, and take several steps to promote public safety."

The Amateur Radio Parity Act was introduced in the US Senate as S. 1534 on July 12, marking another step forward for the landmark legislation. Senators Roger Wicker (R-MS) and Richard Blumenthal (D-CT) are the sponsors. The Senate Bill is identical to the Bill that passed the US House of Representatives in January.

"This bipartisan measure ensures that operators have access to the tools they need to support our first responders when lives are at stake."

The Bill's cosponsors spoke highly of Amateur Radio, with Wicker citing ham efforts in disaster communications. "Amateur Radio continues to be a critical part of our emergency communications operations," he said. "Mississippians learned firsthand after hurricane Katrina how Amateur Radio operators can provide a resilient, distributed network to first responders and disaster relief organizations when other communications tools fail."

Cosponsor Blumenthal spoke to the necessity of the legislation, saying, "This bipartisan measure ensures that operators have access to the tools they need to support our first responders when lives are at stake."

ARRL President Rick Roderick, K5UR, expressed appreciation to the Senate sponsors, saying "ARRL is grateful for the support of Senators Wicker and Blumenthal for sponsoring this important piece of legislation, and for advocating this Bill for the past 3 years. Their continuing support is critical to the success of our efforts." President Roderick also thanked Senator John Thune (R-SD), who chairs the Senate Commerce Committee, for "championing the Parity Act in the Senate since the beginning of our effort."

The Bill has enjoyed widespread, bipartisan support. In the 114th Congress, nearly 130 cosponsors signed onto the legislation in the House and the Senate.

In August, ARRL developed and posted a list of frequently asked questions (FAQs) about the legislation, entitled, "The Amateur Radio Parity Act: Setting the Record Straight." The document explained and clarified what the passage of the legislation would accomplish — as well as what it would not. At the time of the FAQ's release, Mike Lisenco encouraged Amateur Radio operators to "buckle down and get this Bill passed. We can only do this with your help."

By year's end, the Bill was still alive in the Senate, being considered by the US Senate Committee on Commerce, Science, and Transportation. Lisenco testified in support of the Bill before the Committee in January 2018.

ARRL continues to work toward getting the legislation passed before the current session of Congress adjourns on December 31, 2018.

## Amateur Radio Administration Course a Success in Mexico, ARRL Helps Make Inroads in Costa Rica

ARRL, IARU Region 2, and the Federación Mexicana de Radioexperimentadores (FMRE) presented the Amateur Radio Administration Course (ARAC) August 7 – 9 in Mexico City. The course covered the legal framework for Amateur Radio in the International Telecommunication Union (ITU), Amateur Radio spectrum, reciprocal licensing, emergency communication, and the IARU and its member-societies. Information was also shared about Amateur Radio DXpeditions and contests, digital communication, and Earth-Moon-Earth (moonbounce) communication. ARRL and IARU collaborated in developing the curriculum.

ARAC concluded with a visit to an Amateur Radio station, where participants had the opportunity to get on the air and gain a better understanding of what they had learned in class.

ARAC is aimed at the people in charge of administering the Amateur Radio and Amateur Satellite services within the participants' respective countries. Participants were from the Instituto Federal de Telecomunicaciones (IFT) from México; Ministerio de Tecnologías de la Información y las Comunicaciones (MINTIC) from Colombia; Ministerio de Ciencia, Tecnología y Telecomunicaciones (MICITT) from Costa Rica, and from the Comisión Nacional de Telecomunicaciones (CONATEL) of Honduras. This year marked the second time the course was taught in Spanish.

ARRL Technical Relations Specialist Jon Siverling, WB3ERA, was instrumental in coordinating the attendance of the regulator from Costa Rica, Erick Sanabria Calvo, TI3SIC. Jon and Erick had met at the Superintendence of Telecommunications (SUTEL) meeting in Orlando, Florida, where Erick's presence was notable because Costa Rica is not usually represented at SUTEL.

Costa Rica suspended Amateur Radio licensing in 2014, with existing licenses set to expire in 2018. Erick had been working against the cessation of Amateur Radio licensing in Costa Rica for years. Also active in the fight were the Radio Club of Costa Rica (RCCR), IARU Region 2, and ARRL, with Jon Siverling and IARU Region 2 Vice President Ramón Santoyo, XE1KK, advocating strongly.

Thanks to the efforts of the Citizens Advocacy Office (Defensoría de los Habitantes) and SUTEL, Costa Rica restarted Amateur Radio licensing in the summer of 2017.

Commenting on the promising turnaround in Costa Rica, Jon Siverling said, "I'd like to throw every bit of credit to Erick. He's an Amateur Radio operator aware of what the law did. He was trying to improve it, but it just takes a long time... Erick was in the right place at the right time, knew the problem, and was in a situation to fix it."



Erick Sanabria, TI3SIC (center), displays his ARAC certification in the company of ARRL Technical Relations Specialist Jon Siverling, WB3ERA (left), and IARU Region 2 Vice President Ramón Santoyo, XE1KK (right), who both taught sessions at ARAC.

## ARRL Prepares for the Regulatory Challenges Ahead at WRC-19



Preparations for the next World Radiocommunication Conference, WRC-19, to be held in Egypt from October 28 – November 22, 2019, have been under way since the conclusion of WRC-15. The International Telecommunication Union (ITU) holds World Radiocommunication Conferences every 3 to 4 years for the purpose of reviewing and revising the Radio Regulations.

Though several WRC-19 agenda items will impact Amateur Radio, the greatest threat is known as International Mobile Telecommunications (IMT) 2020, or 5G, also known as WRC-19 agenda item 1.13. There is no doubt that the Conference will make new allocations to the Mobile Service for IMT applications; and it is expected to be a very large allocation. The questions are: how much spectrum will be taken, and which radio service will the spectrum be taken from.

Two main ITU groups are working on the IMT issue: Task Group 5/1 (TG 5/1) and Working Party 5D (WP 5D). WP 5D is responsible for the overall radio system aspects of IMT systems, comprising the IMT-2000, IMT-Advanced, and IMT for 2020 and beyond.

Task Group 5/1 will conduct the sharing studies required for the IMT above 24.25 GHz. All interested parties actively participate in TG 5/1 regarding the spectrum needs, technical and operational characteristics, protection criteria, and the various deployment scenarios for the terrestrial component of IMT. ARRL is also watching the protection criteria for adjacent bands that may be impacted by the deployment of IMT. ARRL is participating in the process to guard against any threats to Amateur Radio Service and Amateur Satellite bands such as 24 – 24.25 GHz, 47 – 47.2 GHz, and 76 – 81 GHz.

The Inter-American Telecommunication Commission (CITEL) is also preparing for WRC-19. The CITEL Working Group to Prepare for Conferences readies Inter American Proposals (IAPs) for World Conferences. "This is the working group that will develop proposals from the Americas region to WRC-19," said ARRL Technical Relations Specialist Jon Siverling, WB3ERA.

IAPs for WRC-19 include one regarding the 50 – 54 MHz agenda item for Region 1 (agenda item 1.1). The proposal is for there to be "no change" ("NOC" in ITU-speak) to the existing Primary allocation to the Amateur Service in Region 2 and no regulatory impact to Region 2. Region 1 is developing the proposal, and it is hoped that governments in both Region 2 and 3 will lend support, so that 6 meters can become a globally harmonized band.



There is an entire team of radio amateurs from ARRL and the IARU working on these issues and preparing for WRC-19, headed up by IARU President Tim Ellam, VE6SH, and Vice President Ole Garpestad, LA2RR. Jon Siverling represents ARRL in the ITU Task Groups as well as in the CITEL Working Group.

In June, Siverling served on the US delegation to the CITEL Permanent Consultative Committee II (PCC.II) hosted by the US in Orlando, Florida. Approximately 170 delegates from 16 countries throughout the Americas attended the meeting.

The delegates to PCC II are preparing preliminary views, which will mature into proposals and later Inter-American Proposals, or IAPs, to the Conference for each WRC-19 agenda item, including several that may impact Amateur Radio. These include agenda item 1.11, railway train-to-trackside radiocommunication systems; agenda item 1.12, Intelligent Transport Systems; agenda item 1.16, wireless access systems/radio local area networks (WAS/RLANs) in the bands between 5,150 and 5,925 MHz, including additional allocations to the mobile service; agenda item 1.13, International Mobile Telecommunications (IMT) above 24 GHz, and agenda item 1.15, land mobile and fixed service applications in the 275 – 450 GHz range.

"This meeting also advanced the work to update the International Amateur Radio Permit (IARP) to allow administrations to process applications and issue the permit electronically, a requirement for many countries as they transition to eGovernment," Siverling said.

## The ARRL Laboratory

### The ARRL Laboratory: Strengthening Amateur Radio's Place in Industry

When ARRL members think of the ARRL Lab, it's likely that they associate it with the "Product Review" feature that appears in every issue of *QST*. 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.

While product testing and review is one of the most visible functions of the ARRL Lab, it's far from being the only function. ARRL Lab staff members 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), doing high-level, behind-the-scenes work on an ongoing basis.

ARRL Lab Manager Ed Hare, W1RFI, allows that the work isn't glamorous, but emphasizes that it's vitally necessary, that ARRL is lucky to be part of the process, and that the Amateur Radio community benefits as a result.

Hare points out that ARRL's place at the table on these committees — in some cases at the head of the table — serves two purposes. "We're able to represent and protect Amateur Radio's interests," he said. "And we're also able to educate on Amateur Radio's value and impact. We bring the value of Amateur Radio to industry."

In November 2016, 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. Ed 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. Ed and the Lab staff also work formally and informally with representatives from companies such as Motorola and AT&T, dealing with radio frequency interference issues on a global scale.

"ARRL Lab staff members occupy key positions on committees and working groups with standards and regulatory bodies."

Ed Hare says that this work is consistent and ongoing. The IEEE meets three times each year, and ANSI meets twice a year, and these larger meetings last a week at a stretch. In between those meetings, Lab staff members who serve on these committees and working groups are involved in webinars and teleconferences on a nearly weekly basis. Hare says that topics appearing in the Amateur Radio news are, in effect, "old news" to members of these committees. "All the issues we're hearing about now, the Lab has been working on, quietly, behind the scenes, for years," he said.

As an example, Hare cited ARRL RFI Engineer Mike Gruber's, W1MG, work with solar power manufacturers — Gruber has identified the major noise source in the solar industry. "Prior to it becoming a major issue, we had identified this problem," Hare said. "To our knowledge, it's only [one] company that has consistent reports of interference. We're working with them; we're providing information about what amateurs have discovered about how to cure [the problem]. They are resolving these problems as they occur in the field, and working on a more permanent solution."

Mike Gruber, who heads up the Lab's extensive RFI program, is the Chairman of IEEE working group p1897, which is developing a standard of how to resolve power line noise — part of the ongoing work put in by ARRL Lab staff members in service to industry. "The Lab brings its resources to bear on real-world technical problems," said Ed Hare.

The process of identifying problems and working with a manufacturer to resolve them also applies to the Lab's most popular endeavor, *QST* Product Review. "We think of the Lab's work as testing products and reporting on the numbers," Ed Hare said. "But the real work we do is with the manufacturers." 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 *QST* Product Review doesn't just state whether a radio is "good" or "bad." Test results are presented, and any problems with a product are discussed — as are any modifications or improvements a manufacturer made as a result of the Lab's findings. It's a win-win situation in which the manufacturer has a chance to produce a better-quality product — and the Amateur Radio community gets more high-quality products to choose from.

Ed Hare views this larger community as an invaluable resource, and a force for change in the industry. "ARRL is consistently there to protect radio. We go all in, and *stay* all in, over decades, to make this happen," he said. "In the Lab, we have four full-time employees, and we do good work. But out there, there are 750,000 amateurs, and I can guarantee you that those 750,000 amateurs can do more for Amateur Radio than the four of us in the Lab.

"In a very real sense, Amateur Radio is making ongoing contributions to the development of modern technology. This is not something we did only back in the 1920s. Still, today, now, there are ongoing contributions coming from Amateur Radio and its vast pool of resources."

## **AM Transmitter Is an Ambassador to the Community**

In 2017, the National Capital Radio and Television Museum (NCRTV Museum) in Bowie, Maryland reached out to ARRL about taking ownership of a Gates BC-1T AM Broadcast Transmitter. At the same time, they contacted the Vintage Radio and Communications Museum of Connecticut (VRCMCT) in Windsor, which also expressed interest in the historic radio. ARRL Lab Assistant Manager Bob Allison, WB1GCM, who is also on the VRCMCT Board of Directors, worked out a collaborative solution — the VRCMCT would own and restore the radio, while ARRL would house and maintain it at Headquarters in Newington. This allows the two radio organizations to cross-promote each other to visitors.

"We also get to promote the fact that AM is a mode enjoyed by many, alongside some of the most modern state-of-the-art AM equipment in our museum," Allison added. This was the first step to a project that ended up bringing together radio amateurs across the country.

Built around the 1950s, the AM transmitter was originally used to transmit country music from Page, Arizona. Its operation ceased in 1995, and the transmitter eventually was brought to the NCRTV Museum.

On March 24, 2017, Bob and ARRL RFI Engineer Mike Gruber, W1MG, made the more than 8-hour trek to Maryland. Upon first seeing the transmitter, Gruber realized that restoring the radio "was going to be a great challenge, even more than anticipated." The 800-pound transmitter was taken apart to separate the heavy pieces for portability, and it was covered in the red dirt of Arizona.

Fortunately, the VRCMCT had the perfect candidate for the restoration job. Dan Thomas, NC1J, was a former broadcast engineer who worked on amplitude modulation (AM) devices and had experience with the high-voltage equipment. He spearheaded the cleaning, evaluation, and restoration of the transmitter to its original broadcast configuration on 1,340 kHz.

The process took several days stretched out over the course of months, but ARRL staff time was minimized due to the generous efforts of numerous volunteers. While ARRL was able to help with providing some parts, most of what was needed was donated by the AM community.

Previously, many in the amplitude modulation community had felt as though ARRL did not often cover their side of the hobby. However, Allison described the community's reaction to the project as a "home run," citing new and renewed ARRL memberships as operators become excited by the recent AM activities.

This benefit of representing another facet of the Amateur Radio community, combined with the collaboration of so many people and organizations, is why Bob Allison has nicknamed the AM transmitter "The AM-bassador." He explained, "That big, old transmitter is like a hand reaching out into the AM community, also bridging the past with the future. We look behind us to see what we've done, and that's exciting and motivates us to do good things in the future."

Going forward, the transmitter will be converted for use on Amateur Radio bands. Allison said, "Our members will see the results in upcoming operating events as we make improvements to the whole system. We'll report on it as time goes on."

## Membership Department

### 2017 Membership Surpasses Goal

2017 ended with 159,070 members — 735 members ahead of the year-end goal. This represents a loss of 3.05% or 5,000 members for the year.

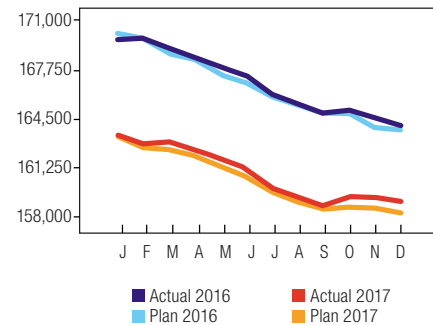
ARRL Membership Manager Diane Petrilli, KB1RNF, says that the loss of members is occurring in the exact fashion that was forecasted due to the 2016 dues increase, and notes, “We continue to realize additional income from the dues increase. As with all previous increases in dues in ARRL’s history, membership is forecast to continue to decline in 2018 (2.0% loss is forecast). The decline should begin to flatten out in 2019/20.”

As was the case in 2016, membership in 2017 came in slightly above forecast.

Diane Petrilli says that test mailings to new hams in mid-June, and fully converted for all new ham mailings mid-October, are likely responsible for the variance at year end. Multiple tests for the new ham mailings are scheduled for 2018. Data for 2017 indicates that 6% of all new hams have already joined ARRL by the time their license is issued or are otherwise unsolicitable.

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.

Membership Forecast vs. Actual



### The First-Ever AM Rally Was a Hit in April

On the weekend of April 1 – 2, 2017, the AM mode took to the bands between 160 and 10 meters (except 30, 17, and 12 meters) as well as 6 meters, in the first-ever AM Rally.

Full-carrier amplitude modulation (AM) was once the primary voice mode on the ham bands. AM eventually gave way to single sideband (SSB), a form of AM. Today, a group of dedicated radio amateurs keeps the flame alive. The AM Rally gave the uninitiated a chance to try this vintage mode.

Clark Burgard, N1BCG, spearheaded the event with Steve Cloutier, WA1QIX, and Brian

Kress, KB3WV. The event was sponsored by Radio Engineering Associates (REA), in cooperation with ARRL.

Seventy-two logs were submitted, with nearly 1,500 total contacts reported. The top stations in terms of total contacts were W1AW at ARRL Headquarters, and Steve Cloutier, WA1QIX, and Stephen Harris, KB1VWC, both in Massachusetts. W1AW and Cloutier — an AM Rally co-organizer — were ineligible to receive award certificates, however.

W1AW, which has added AM phone to the list of modes on which it sends bulletins, was

active on 80, 40, 20, and 15 meters, making 177 contacts. Burgard said that several AM “tall ships” anchored throughout the bands greeted newcomers and helped them to make some easy contacts. Burgard hopes the annual AM Rally will enjoy even greater participation next year, now that it has left so many positive experiences in its wake.

Above: AM guru and veteran broadcast engineer Tim “Timtron” Smith, WA1HLR, tinkers inside the Gates BC-1T AM Broadcast Transmitter.



## ARRL Working Group Tests Content Geared to New Hams

In late 2016, managers from several ARRL departments formed a working group that grew out of their informal discussions about the future of Amateur Radio and ARRL. The group, comprised of ARRL Membership Manager Diane Petrilli, KB1RNF; ARRL Production Department Manager and *QST* Editor Steve Ford, WB8IMY; ARRL Radiosport Manager Norm Fusaro, W3IZ; *QST* Managing Editor Becky Schoenfeld, W1BXY; ARRL Business Services Manager Debra Jahnke, K1DAJ (now a Silent Key); and then-ARRL Media & Public Relations Manager Sean Kutzko, KX9X, began to analyze and discuss the results of formal and informal market research that ARRL had conducted over the past several years, in an effort to begin proactively shaping the second century of ham radio and ARRL.

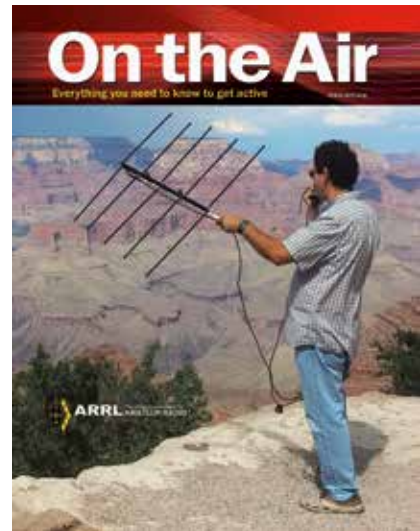
After several months, the group presented their findings to the ARRL Board of Directors at its January 2017 meeting. The group had identified a segment of newer Amateur Radio licensees that were asking for specific types of information and services from ARRL. At its July 2017 meeting, the Board approved a formal research project targeted to these hams.

The working group developed a package of test material and, with the help of market research experts Readex, formulated survey questions to gauge hams' interaction with, and reaction to, the material.

The test material took the form of a 32-page "mini-magazine" called *On the Air*. ARRL Advertising Graphics Designer Diane Szlachetka, KB1OKV, provided a clean, eye-catching design for the material, which was geared toward Technician-class Amateur Radio licensees. As *On the Air* and its accompanying survey began to arrive in the mailboxes of the test audience in autumn 2017, positive comments began popping up on ham radio social media channels and in e-mails to ARRL HQ.

In early 2018, Readex compiled and tabulated the survey results and released them to the ARRL working group. Survey respondents had an overwhelmingly positive response to the "mini-magazine" test material, and gave the working group a great deal of other information to consider in terms of where the Amateur Radio Service is headed, and what hams want from a membership organization. As a result, there are exciting things in the works at ARRL — follow our news feed at [www.arrl.org](http://www.arrl.org), as well as our social media feeds, to keep up with the latest developments.

*On the Air* was a 32-page "mini-magazine" mailed to a statistically valid sample of newly licensed hams for research purposes.



## Production Department

### *QST* Redesign Makes its Debut

2017 was a year of change for ARRL's venerated membership journal, *QST*. For some time, *QST* Editor Steve Ford, WB8IMY, had been hearing from members that the magazine looked stale, and that the content wasn't meeting their needs. In response to this feedback, Steve and *QST* Managing Editor Becky Schoenfeld, W1BXY, decided to apply the design of the *On the Air* test piece to *QST*, and make changes to the way the content is presented. The *QST* redesign was rolled out with the January 2018 issue (produced in late 2017), and was met with widespread praise. "Keep talking to us," Ford implored members in an editorial about the redesign. "We'll keep listening, and making changes as needed."



Left: Doyle Ross, W7KTY, an ARRL member for 60 years, said of the January 2018 issue, "I have seen different versions of *QST*. I think the current issue is the best I have seen. Great work, guys; I love it."

Right: The new design allows for a broader approach to layout and illustration.

### APRS on the Grand Tour

**Bob Miller, N2SR**  
After 35 years of motorcycle touring and 17 years of traveling, my wife and I decided to do it all over again, but this time with a GPS device and a small motorhome. It's not just about the road, it's about the people we meet along the way. We'll be back in the States in the fall, and we'll be back in the States in the fall, and we'll be back in the States in the fall.

**APRS on the Grand Tour**  
One of my goals for this operation was to be able to use the APRS system along our route. To give the network a good check, I decided to use more power than the handheld could provide. Also, since I was in the States in the fall, I did not want to cut the handheld at all. I'll be back in the States in the fall, and we'll be back in the States in the fall.

**With a Moku-Lite 2-in-1 amplifier**  
I needed a power source that could provide about 100 watts, which is the power level of a 2-in-1 output.

**APRS on the Grand Tour**  
The APRS system is a network of radio stations that can be used for a variety of purposes. It can be used for tracking, for emergency services, and for other purposes. It can be used for tracking, for emergency services, and for other purposes.

**DC Power**  
The APRS system is a network of radio stations that can be used for a variety of purposes. It can be used for tracking, for emergency services, and for other purposes. It can be used for tracking, for emergency services, and for other purposes.

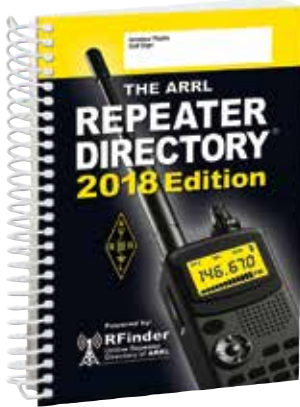
**Assembling, Configuring, and Testing the Station**  
I decided to use the APRS system for a variety of purposes. It can be used for tracking, for emergency services, and for other purposes. It can be used for tracking, for emergency services, and for other purposes.

**APRS on the Grand Tour**  
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## ARRL Utilizes Crowdsourced Information for its 2017 – 2018 Repeater Directory



For decades, *The ARRL Repeater Directory* has been an invaluable resource for radio amateurs who wanted to locate repeater frequencies while traveling. New hams often use the *Directory* to find local activity after purchasing a new handheld radio. And, public service volunteers keep a copy of it nearby or in their emergency “go kit.”

In 2017, ARRL brought the *Repeater Directory* more fully into the digital age. ARRL partner RFinder, the creator of a crowdsourced web- and app-based directory of Amateur Radio repeaters worldwide, supplied all data for the 2017 – 2018 *ARRL Repeater Directory*.

With over 31,000 listings, the 2017 – 2018 edition is the most complete printed directory of on-the-air repeaters ever, with 10,000 more listings than the previous edition. The *ARRL Repeater Directory* covers repeater systems throughout the US and Canada, listing them by state/province, city, and operating mode.

Although RFinder's data is primarily supplied by users and repeater owners (listings are reviewed for accuracy), ARRL invited volunteer frequency coordinators to contribute their coordination data to RFinder. Every coordinator that supplied repeater data to RFinder has its listings credited as coordinated repeaters in the *Repeater Directory*.

## Marketing

### ARRL at 2017 Hamvention®

In July 2016, the Amateur Radio community got the news that everyone knew would be coming... eventually: after 52 years of hosting Dayton Hamvention, the tired and worn out Hara Arena would close.

Soon after, the Dayton Amateur Radio Association (DARA) — who sponsors the popular event — announced that Hamvention would move to the Greene County Fairgrounds in nearby Xenia, Ohio, and began the countdown for 2017 Hamvention, May 19 – 21. As the new venue is smaller, ARRL's exhibit area was reduced to approximately one-third of the size we had occupied at the Hara Complex since 2005, when Hamvention approached ARRL for help with filling unsold exhibit space.

The smaller exhibit area required our staff to focus on key membership programs and services. Additionally, we committed to representing activities that would be of particular interest to students and younger adults. These booths included the ARRL Collegiate Amateur Radio Initiative (CARI), the ARRL Education & Technology Program, and a guest booth organized by HamSCI: The Ham Radio Science Citizen Investigation.

Throughout the months leading up to Hamvention, our staff fielded a lot of calls from exhibitors and prospective attendees. While Hamvention is not organized by ARRL, we were happy to support good information-sharing that ultimately benefited Hamvention and all of its stakeholders. 2017 Hamvention was sanctioned as the ARRL Ohio State Convention.

The ARRL team at 2017 Hamvention included over 100 volunteers, and 17 members of the Headquarters staff. Despite a rather crowded exhibit space, and occasionally long lines, ARRL EXPO received overwhelmingly positive comments from members and attendees.

Organizers reported that there were 29,296 visitors to 2017 Hamvention (25,364 in 2016). By all accounts, credit goes to the organizers for successfully relocating Hamvention to Xenia. And, most of all, to the 657 Hamvention volunteers who made it happen!



ARRL Circulation Manager Yvette Vinci, KC1AIM, and ARRL Senior Member Services Representative Kimberly McNeill, KB1WUX, creating a display of ARRL Field Day merchandise in the ARRL EXPO at Hamvention.



Having QSL cards checked at ARRL's Hamvention booth is important to many award-chasing hams.



Attendees who bring a piece of gear to the ARRL Laboratory's booth can have it tested by ARRL staff and volunteers, including (seated, from left to right) volunteer Pete Turbide, W1PT; Assistant Lab Manager Bob Allison, WB1GCM; volunteer Nancy Skeen, N1WMS; (standing, from left to right) volunteer Matthias Zapatka, AJ4BB, and RFI Engineer Mike Gruber, W1MG.

## ARRL Supports Ham Radio at Maker Faires



Since the first Maker Faire in the California Bay Area in 2006, ARRL has supported members and radio clubs who have participated at the Faires, demonstrating ham radio to the worldwide community of modern tinkerers and do-it-yourselfers. Dale Dougherty, creator of the Maker Faire, once referred to ham radio operators as among the originals in the making movement.

“There’s a natural overlap among the ham radio and maker communities,” said ARRL Marketing Manager Bob Inderbitzen, NQ1R. “For our part, ham radio makes anything electronic even more interesting when you introduce wireless communications to it: microcontrollers, robotics, geo-tracking, space science and satellites, and more.” Inderbitzen participated in the ham radio exhibits at the 2017 World Maker Faire in New York City (September 23 – 24). Three Amateur Radio clubs took part in the event, held at the New York Hall of Science in Corona, Queens. The Faire drew upward of 90,000 visitors.

An exhibit hosted by students from the Garden School Amateur Radio Club (K2GSG) in Jackson Heights was aimed at introducing ham radio to those who stopped by. They demonstrated electronic kit construction and soldering skills with supplies contributed by ARRL. The Garden School ARC students are mentored by the Hall of Science Amateur Radio Club (WB2JSM/WB2ZZO), which co-exhibited at the World Maker Faire. Both are ARRL-affiliated clubs.

“The Garden School students, led by their club advisor, science teacher John Hale, KD2LPM, did a great job engaging the public through kit building,” said Inderbitzen. “They helped demonstrate the educational benefits of having students engaged in the STEM [science, technology, engineering, and math] disciplines. Garden School ARC was recognized at the Faire with an Editor’s Choice Blue Ribbon.”

Inderbitzen said the Hall of Science ARC worked hard to get people on the air. Their “Get On the Air” (GOTA) station paired attendees with experienced station operators to make VHF and shortwave radio contacts throughout the Faire. Club trustee and ARRL Life Member Steve Greenbaum, WB2KDG, helped organize the joint exhibit with Garden School.



A third group, HamHacks, also exhibited. Led by Sam Zeloof, KD2ENL, and his older brother Adam, KD2MRG, and made up of high school and college students, HamHacks “contributed to the ‘cool factor’ with a lot of unconventional innovation,” according to Inderbitzen. Their demonstrations included a WSPR (Weak Signal Propagation Reporter) software-controlled station, and an RF plasma generator.

Students from the Garden School Amateur Radio Club in Queens, New York teach a soldering lesson at the 2017 New York Maker Faire.

## ARRL Warehouse Worker Identifies Cost-Saving Measure

In an era where superstores spend billions of dollars on business infrastructure, the initiative of an ARRL employee helped identify a cost-saving measure that has resulted in a significant expense reduction. ARRL Warehouse Clerk Michael Scharr tested for an advantage to rate-shopping for shipping carriers after parcels are fully packed and weighed at the ARRL Warehouse. He discovered that some packages, while previously assigned a carrier or mailing class, could be re-assigned to a lower-cost option at the shipping scale — sometimes because the final weight of a

package is a few ounces higher or lower than was previously estimated.

Using software integrated with multiple carriers and their shipping options, Michael devised a programming rule to help double-check and, when applicable, to re-assign packages automatically, at the scale. These steps have helped reduce the overall expense, and without impact to the quality of package handling, tracking, and delivery speed. In 2017, Michael and his warehouse colleagues shipped 53,734 parcels — mostly ARRL



books — for members and customers. As a result of his effort, shipping expenses were reduced by nearly \$30,000 in 2017.

Above: ARRL Warehouse Clerk Michael Scharr helped realize a cost savings of nearly \$30,000.



## VEC Department

### ARRL Volunteer Examiner Coordinator Program (VEC)



For the fourth year in a row, the ARRL VEC conducted more than 7,000 Amateur Radio exam sessions in a year. ARRL VEC is by far the largest of the Volunteer Examiner Coordinator (VEC) groups in the US, coordinating approximately 70% of all Amateur Radio exams.

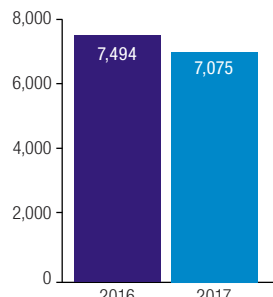
A total of 7,075 ARRL-sponsored exam sessions were administered in 2017, down from 7,494 in 2016. 35,352 exam applicants were served in 2017, compared to 38,097 in 2016.

As one of three FCC-authorized Club Station Call Sign Administrators, ARRL VEC processed and transmitted 1,761 club licenses for the FCC this year, of which 338 were for new club licenses.

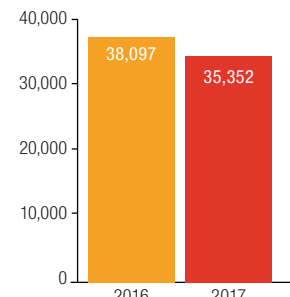
ARRL VEC also processed and transmitted electronically to the FCC 8,765 address changes and license renewals for ARRL Members in 2017. This service to members continues to be a strong draw.

In 2017, 1,761 new Volunteer Examiners (VEs) have been 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.

ARRL VEC continues to participate as a member of the National Conference of VECs Question Pool Committee. The five-member committee prepared a revised Technician-class question pool (Element 2) for examination use by the amateur community. The new pool is effective as of July 1, 2018, and it will remain valid until June 30, 2022.



ARRL-Sponsored VEC Exam Sessions

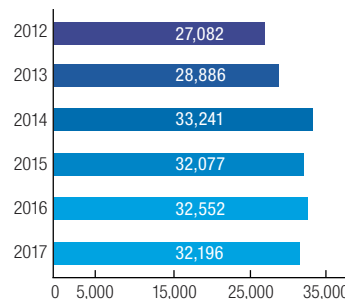


VEC Exam Applicants

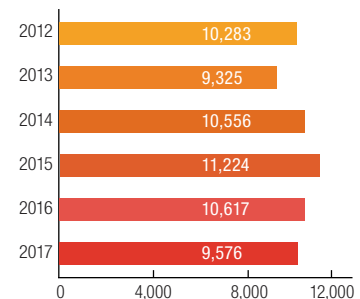
### Amateur Radio Licenses: An All-Time High in 2017

For the past 4 years, new licensees have totaled more than 30,000 each year. In the first half of the year, new amateur licenses issued were off 2016 totals by 8%. However, interest in Amateur Radio took an upturn in the second half of the year, due to a heightened awareness of Amateur Radio's potential role during natural disasters, brought on by the Atlantic hurricane season. By year end, the gap had narrowed to a marginal 1%.

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, 2017, the number of licensees reached an all-time high of 748,136.



New FCC Licenses



Upgraded FCC Licenses

### FCC Revises 605 Form: Adds Basic Qualifications Section

On September 7, 2017, the FCC added a basic qualifications section to the 605 Form (FCC, NCVET, and Club) which includes a question regarding whether an applicant has been convicted of a felony in any state or federal court. Applicants answering yes must provide an explanation. This item enables the FCC to determine whether an applicant is eligible under §§ 310(d) and 308(b) of the Communications Act of 1934, as amended, to hold or have ownership interest in a station license.

Applicants are required to answer the question only if they are filing any Form 605 for one of the following purposes indicated: New, Amendment, Modification (Upgrade or Call sign change), or Renewal with a Modification. Applicants using any Form 605 for any other purpose are not required to answer this question.

The last major change to the NCVET version of the 605 Form occurred 17 years ago (April 2000), when the FCC restructured the license classes.

## Education Department

### The 2017 Teachers Institute: “Good People, Good Fun, Good Education”

ARRL's Education & Technology Program (ETP) continues striving to meet its educational outreach goals by offering three types of resources for schools: projects and kits, grants for school radio stations, and professional development opportunities for teachers. These opportunities take the form of ARRL's renowned Teachers Institute on Wireless Technology — an expenses-paid seminar that takes place every summer in various locations throughout the US. Through sponsoring these 5-day courses, ARRL aims to introduce teachers to Amateur Radio as an instructional resource.



Providence High School teacher Sue Beckenham, KM6LYV, earned her Technician-class license at the 2017 TI-1, and has helped eight of her students to get licensed.

The Teachers Institute (TI) sessions use a project-based curriculum to help educators at all grade levels develop an educational foundation for wireless technology literacy. Attendees leave the program with the tools and strategies needed to integrate basic electronics, the science of radio, space technology, satellite communications, weather science, introduction to microcontrollers, and basic robotics into their classrooms.

“I used the curriculum from the ARRL site to teach a semester-long course of which ham radio was a focal point,” said Sue Beckenham, KM6LYV, a teacher at Providence High School in Burbank, California, who participated in the 2017 TI-1 session led by Tommy Gober, N5DUX.

The curriculum of the 5-day TI-1: Introduction to Wireless Technology covered fundamental principles of electronics, Ohm's Law, electronic components, simple circuits, and a “Soldering 101” tutorial. The course also introduced digital signals and processing, microcontrollers, and programming, and participants built and tested a variety of circuits to demonstrate programming concepts. They constructed Boe-Bot robots, learned firsthand about tracking satellites to try to make contacts, and

took part in a foxhunt, using radios to pinpoint the origin of transmitted signals. The program ended with participants making action plans on applying learned concepts in the classroom, solidifying the goals of the session.

The Teachers Institute curriculum is designed for highly motivated teachers, and Sue was a perfect fit. She received her Technician license while at the Teachers Institute, upgraded to General soon after, has become a Volunteer Examiner (VE), and most importantly, she has used the skills she learned from the Teachers Institute to guide eight of her students through getting their Amateur Radio licenses.

Sue described the experience, saying it was a culmination of “good people, good, fun, [and] good education.” After such an amazing experience, Sue is dedicated to immersing herself in her “newfound love,” adding, “I absolutely intend on applying and going to the TI-2.”

In the TI-2 Workshop: Remote Sensing and Data Gathering, Sue and her fellow teachers will receive further instruction on the entire process of remote sensing, from developing sensor packages to collecting and analyzing the sensor's data. They will discuss high-altitude balloons and land and marine deployment systems, working up to exploring a buoy system for deploying sensors to do environmental studies. By the end of the program, teachers will have the tools they need to help their students utilize technology in active research.

Promoting the teaching of technology is one of ARRL's main goals, and as an investment in the next generation of STEM professionals, ARRL will remain active in educational outreach.

### W1AW Grateful for Donations

In 2017, Bob Heil, K9EID, of Heil Sound, donated a gold grill PR 781G studio microphone, a PR 40 gold microphone, two Pro 7-DY headsets, a Pro Set Elite 6 headset with HC-6 element, three FS-3 single footswitches, two “Topless” mic booms, and replacement Pro Set Plus cords and PS3 cables.

Thanks to Heil Sound's support, not only does W1AW have the benefit of modern audio equipment, but visitors to W1AW also get

firsthand use of some of the many products produced by Heil Sound.

From Erwin Hübsch Neto, PY2QI/KK4CGD, of Radiohaus/America in Brazil, W1AW received a Callsight lighted call sign display. This display is an LED-lit device that allows the user to change color, as well as flash rates, fade, and so on. The Callsight is on display in the main area at W1AW.



Thanks to Erwin Hübsch Neto, PY2QI/KK4CGD, of Radiohaus/America, W1AW's call sign shines brightly. The Callsight lighted call sign display changes color and features other effects.

## Radiosport and Awards

### Data-Driven Successes: Better Member Service, At a Lower Cost

In 2017, the Field Services and Radiosport departments took a close look at their financial performance and are beginning to use the data collected to construct key performance indicators and tune forecasts. Department processes were reviewed, and plans are being developed to improve the handling of award applications, certificate printing and mailing, and contest score reporting. The early results are very positive.

After implementing a new pricing model for the QSL bureau at the end of 2016, there is now a full year's worth of transactions to review, in order to determine the impact of the changes. ARRL Radiosport Manager Norm Fusaro, W3IZ, reports that, as a result of the changes, ARRL members are being better served, while costs are down. "Because pricing encourages members to send their cards in larger quantities, we can process the cards more efficiently while reducing the cost of handling," Fusaro said.

A new operating event was introduced in August 2017 — the 222 MHz and Up Contest, an annual event developed to appeal to UHF enthusiasts.

Newly designed DXCC Honor Roll and Top of Honor Roll plaques were unveiled in 2017. The colorful designs on modern acrylic plaques reflect the challenge and prestige of these pinnacle awards offered in ARRL's DXCC program.

Work was completed on a new Mobile DXCC achievement award. A companion to the existing QRP DXCC achievement award, the award certificates share a similar design theme.

In the contest area, the online log submission tools were improved, making it easier to submit a log and get a confirmation of logs received. The department also began utilizing log data to better serve ARRL members who enjoy competitive operating.

"Because pricing encourages members to send their cards in larger quantities, we can process the cards more efficiently while reducing the cost of handling."

## W1AW

### W1AW Takes Part in the 100th Anniversary Recreation of the First Transcontinental Relay

At 4:30 AM on January 27, 2017, W1AW received a Morse code message sent from Caltech club station W6UE as part of the 100th anniversary of the 1st Transcontinental Relay of Formal Message Traffic. A cross-country, station-hopping relay recreated the January 27, 1917, route of the first formal Amateur Radio transcontinental message traffic bound for ARRL Headquarters. This method of traffic handling is in the DNA of ARRL's name — the American Radio Relay League.

ARRL member Kent Trimble, K9ZTV, organized the commemoration, in which a message originating at W6UE in Los Angeles was passed to Dick Williams, K8ZTT, in Denver; to the Corwin Heritage Amateur Radio Club, W9ABD, in Jefferson City, Missouri; to Bob Dillon, KT2D, in Albany, New York, and finally to W1AW. The message, which included commemorative greetings from the stations that were involved in the first transcontinental message in 1917, was addressed to then-ARRL CEO Tom Gallagher, NY2RF. The commemorative event was conducted on the 160-meter band, as it was the band closest to the 200-meter wavelength used for the original accomplishment.

"The spirits of 6EA 9ZF 9ABD 2AGJ and 1ZM send commemorative greetings on the 100th anniversary of first transcontinental relay of formal message traffic 73," read the message. The signature included the call signs and locations of the stations involved in the relay.



The Hiram Percy Maxim Memorial Station, W1AW



Left: ARRL member Kent Trimble, K9ZTV, organized the recreation of the first transcontinental relay to commemorate the 100th anniversary of this communications milestone. Kent originated the commemorative Morse code message at W6UE in Los Angeles, California.

Right: Dick Williams, K8ZTT, in Denver, Colorado, copied the message from Kent, and transmitted it to the next station in the relay — W9ABD in Jefferson City, Missouri. From there it went to Albany, New York, and finally to W1AW at ARRL Headquarters in Connecticut.



Kent Trimble said that the message followed the same path of the 1917 message relay. The significance of the 1917 event is that — aside from the telegraph — it wasn't that easy to send messages back and forth in a relatively short amount of time using only RF.

The commemorative recreation faced some difficulties as well, in the form of troublesome noise and fading. Bob Dillon reported that "persistence paid off" in completing the route to W1AW. W1AW Station Manager Joe Carcia, NJ1Q, who was on the receiving end at the message's final stop, reported that copy on Dillon's signal was "fair."

The original 1917 message was directed to ARRL Founder and First President Hiram Percy Maxim, W1AW (then 1ZM). Joe Carcia commented, "It only seems fitting that for the anniversary, W1AW would again be at the final receiving end of a message that spanned across the US in a relatively short amount of time, given the somewhat tepid band conditions."

To have Amateur Radio stations coordinated to both send and receive messages — and to do so with some level of accuracy — was a momentous feat in 1917. While broadcasting messages over RF wasn't going to go away, the coordinated effort of the 1st Transcontinental Relay demonstrated that there was another alternative to the process.

"Given that ARRL was initially founded on the principle of relaying messages back and forth between Amateur Radio operators, it was only fitting that W1AW was involved with the anniversary event," Carcia said.

## Development Department



### Eleven New Scholarships Founded in 2017

In 2017, the ARRL Foundation established 11 new scholarships, which will each be awarded annually, beginning in 2018.

**The K6GO Gayle Olson and NA6MB Mike Binder Scholarship** is open to high school seniors in California who will be entering an accredited college, university, junior college, or trade technical school in the US in the coming fall.

- Applicants must demonstrate activity and interest in radio service or some technical proficiency by participating in radio-related activities such as emergency communications, equipment construction, community radio services, scouting, etc. Preference for the \$1,000 annual award will be given to residents of San Diego County, followed by Orange and Los Angeles Counties.

**The Homer V. Thompson, W4CWV, and Annette P. Thompson, W4LKM, Memorial Scholarship** is open to US citizens and Amateur Radio licensees enrolled at an accredited 2- or 4-year college or university, pursuing a degree in an agriculture, business, science, math, engineering, or technology-related field.

- Preference will be given to Florida residents. If no qualified Florida applicant is identified, the scholarship may be awarded to an applicant from the ARRL Southeastern Division (Alabama, Florida, Georgia, Puerto Rico, and US Virgin Islands). The scholarship award will be \$1,500 annually.

**The New England Amateur Radio Festival (NEAR-Fest) Memorial Scholarship** provides funding toward the educational expenses of a currently licensed Amateur Radio operator who is pursuing a post-secondary education. The award is \$1,500 annually.

- Applicants must be US citizens or permanent residents, reside in the ARRL New England Division (Maine, New Hampshire, Vermont, Rhode Island, Connecticut, Massachusetts), and have held an Amateur Radio license for at least 1 year prior to the date of application. Preference will be given in descending order of license class as well as to applicants pursuing full-time studies at a 4-year undergraduate degree-granting institution, pursuing post-graduate studies (any degree), or enrolled in radio communications at a 2-year technical school.

**The Ozaukee Radio Club, W9CQO, Scholarship**, is intended to help support the post-secondary educational expenses of a current Amateur Radio licensee. The Ozaukee Radio Club of Cedarburg, Wisconsin is an ARRL-affiliated Special Service Club.

- The scholarship award is \$2,000 annually. Applicants must be US citizens, residents of Wisconsin, under 26 years old, and be performing at a high academic level. Eligible candidates must be pursuing full-time undergraduate studies at a 4-year degree-granting institution.

**The Medical Amateur Radio Council (MARC) Scholarship Fund** provides financial assistance for the educational expenses of a radio amateur pursuing higher education in the healing arts. The applicant's field of study may include, but is not necessarily limited to, medicine, dentistry, veterinary medicine, nursing, pharmacology, emergency medicine (EMT), or radiology. Preference will go to undergraduates and to those in certificate programs, but graduate students also may apply.

- Applicants should provide details regarding their involvement in Amateur Radio-related volunteer and/or public service activities. If possible, they should demonstrate a desire to encourage others in the healing arts to become Amateur Radio licensees. The award is \$500 annually.

**The RFinder LLC — Arthur L. Greenberg, W2LH, and Madeleine Greenberg, W2EEO, Memorial Scholarship** is open to US citizens enrolled in an accredited 2- or 4-year college or university, pursuing a degree in a science, math, engineering, or technology field, and must hold a General class or higher Amateur Radio license. The award is \$1,000 annually.

**The Shenandoah Valley Amateur Radio Club (SVARC) Scholarship** provides financial assistance for the educational expenses of a radio amateur enrolled in an accredited 2- or 4-year college or university and pursuing a degree in a business, science, math, engineering, or technology-related field.

- Preference will be given to applicants who live in the Virginia counties of Page, Shenandoah, Warren, or Clarke, or in the City of Winchester, or living in the West Virginia counties of Hampshire, Jefferson, or Berkeley. If no qualified applicant is identified, the scholarship may be awarded to any applicant residing in Virginia who meets the other eligibility requirements. The scholarship award is \$1,000 annually.

**The Harry A. Hodges, W6Y00, Scholarship** is intended exclusively for educational use. Applicants must be high school seniors accepted at an accredited college, university, junior college, or a trade technical school in the United States, and must hold a valid Amateur Radio license.

- Applicant must demonstrate activity and interest in radio service or some technical proficiency by participating in some form of radio-related activities such as emergency communications, equipment construction, community radio services, scouting, etc. Preference for the \$1,000 annual award will be given to applicants from San Diego County, California. If no qualified applicant is identified, preference will be given to an applicant from California.

**The Old Man International Sideband Society (OMISS) Scholarship** is intended exclusively for educational use. Applicants must hold a valid FCC-issued General Class or higher Amateur Radio license, and be enrolled in an accredited 4-year college or university and pursuing a degree in a science, math, engineering, or technology-related field. Special consideration will be given if the applicant is an adult beginning or returning to college. The award is \$1,000 annually.

**The William Gordon Buckner, W0VZK, Memorial Scholarship Fund** provides funding for the educational expenses of a young Amateur Radio operator who is pursuing higher education. The award is \$2,000 annually. Applicants must be US citizens who hold a valid Amateur Radio license.

**The Richard G. Kirkpatrick, K8WU, Memorial Scholarship** provides funding for the educational expenses of a young Amateur Radio operator who is pursuing higher education. The award is \$1,000 annually.

## Connecticut Radio Amateur Endows ARRL Collegiate Amateur Radio Initiative

A generous donation from Dr. Ed Snyder, W1YSM, of Wallingford, Connecticut, will endow a fund to support the ARRL Collegiate Amateur Radio Initiative (CARI). Snyder said that he hopes the “W1YSM Snyder Family Collegiate Amateur Radio Endowment Fund” will lead to the development of a national network of college Amateur Radio clubs under the aegis of ARRL and set up ways for these clubs to stay in close contact and communicate on the air, in meetings, and through other activities.

“College Amateur Radio activities can provide the ideal bridge between youthful interest in the subject and lifelong participation in our community,” then-ARRL CEO Tom Gallagher, NY2RF, said. “Dr. Snyder, through his generosity, has provided foundational funding for this important mission.”

Although he didn't become a ham until fairly recently, Snyder developed an interest in Amateur Radio as a teenager; his father and his uncle were involved with the retail side of radio — his dad, Jack, at Allied and Lafayette, and his uncle, Ben Snyder, W2SOH (SK), an executive at New York City's Harrison Radio. Young Snyder was involved with radio in a manner common for many young men of his day — as a shortwave listener.

More recently, James Surprenant, AB1DQ — one of Snyder's colleagues at Yale University, where he is a professor of laboratory medicine — noticed the antique radios in Snyder's office. Within a few months, Snyder had earned his Technician, General, and Amateur Extra-class licenses, and he became a Volunteer Examiner and traded his first call sign, KC1FCJ, for W1YSM (Yale School of Medicine). Soon, he found himself as secretary/treasurer and net control station of the newly reinvigorated Yale Amateur Radio Club (W1YU) as well as the chair of the Meriden (Connecticut) Amateur Radio Club Activities Committee.

Snyder said he wanted to give something tangible back to Amateur Radio and to honor his family members' prominent association with Amateur Radio. “The idea of setting up an endowment through ARRL seemed like a perfect solution,” he said. “I want to focus on collegiate Amateur Radio and hope that the W1YSM Snyder Family Collegiate Amateur Radio Endowment will help ARRL focus some of its efforts on getting college club stations back on the air and active.”



Then-ARRL CEO Tom Gallagher, NY2RF (left), with Dr. Ed Snyder, W1YSM, and ARRL Development Manager Lauren Clarke, KB1YDD.

## Skylar Fennell, KDØWNB, Wins 2017 Hiram Percy Maxim Award

The ARRL Board of Directors designated 19-year-old Skylar Fennell, KDØWNB, of Denver, Colorado, to receive the 2017 Hiram Percy Maxim Award. Fennell has been actively involved in a wide range of Amateur Radio activities and community service, establishing two clubs, mentoring other students, and using Amateur Radio to aid the community. Among other accomplishments, he built an AllStar link node providing internet from his house and assembled and put on the air a repeater to support his college community. He also built his own APRS transceiver to track public service event support vehicles, plus a 900 MHz cross-band link to stay in touch even when the operator is outside the vehicle.

Skylar has given many presentations on Amateur Radio at hamfests — including Hamvention — and youth gatherings. He has also volunteered in schools to demonstrate the benefits of Amateur Radio.

Fennell was the recipient of a 2016 ARRL Foundation General Fund Scholarship and was the 2016 Amateur Radio Newline Bill Pasternak, WAGITF, Memorial Young Ham of the Year (YHOTY). He was also the recipient of the 2016 ARRL Rocky Mountain Division Young Ham of the Year Award as well as the Rocky Mountain Division Technical Achievement Award. The Maxim Award is presented to an ARRL member under age 21 whose accomplishments and contributions to the Amateur Radio and local communities are of the most exemplary nature. It carries a \$1,500 stipend and an engraved plaque.



Skylar Fennell, KDØWNB, of Denver, Colorado, is the winner of the 2017 Hiram Percy Maxim Award.

## Collegiate Amateur Radio Initiative Holds Second Annual Meeting

The Amateur Radio Club at Yale University (W1YU) was the host for the 2nd annual Collegiate Amateur Radio Initiative (CARI) forum at the ARRL New England Division Convention, September 8 – 10, 2017, in Boxboro, Massachusetts.



Participants at the 2nd annual Collegiate Amateur Radio Initiative (CARI) forum, held at the ARRL New England Division Convention in September 2017.

Sean Barnes, N3JQ, of Harrisburg Academy, shared how ham radio fits into the curriculum at this small private prep school in Pennsylvania, where all physics students earn their Technician licenses while studying electromagnetics. Barnes compiled a database of 329 collegiate Amateur Radio stations for CARI.

Scott Westerman, W9WSW, from Michigan State University, outlined simple things collegiate radio clubs can do to promote their clubs and increase membership.

Captain Matthew Sherburne, KF4WZB, and a contingent of US Military Academy cadets, recounted the revitalization of the West Point Amateur Radio Club, W2KGY. Sherburne emphasized the importance of installing cutting-edge technology, and making sure there's plenty of power to meet present and future equipment needs. He also discussed the delicacy of installing antennas at historical properties such as West Point.

Case Western Reserve University Amateur Radio Club Faculty Advisor David Kazdan, AD8Y; Treasurer Nathaniel Vishner, KB1QHX, and Vice President-Secretary Rachel Boedicker, AC8XY, discussed the University's Amateur Radio activities, which are intertwined with the electrical engineering curriculum. Kazdan spoke about the role of the faculty advisor in the collegiate club and the importance of working collaboratively with the engineering faculty to promote and grow a collegiate club.

The forum concluded with a roundtable discussion about the state of college Amateur Radio, moderated by W1YU President Scott Matheson, N3NFP, who earned his Amateur Extra-class license at the convention. Participants shared challenges and ideas regarding what works and what doesn't when rebuilding a collegiate club.

## ARRL Funds AWA Program for Youth

The ARRL Foundation approved a \$3,000 grant to the Antique Wireless Association (AWA) to fund AWA's Technology Explorers Radio Fab Lab — Level 1. AWA Technology Explorers are youth under the age of 20 who are interested in learning about wireless communication. These monthly workshops feature hands-on activities that include the basics of analog/digital electronics and communication. Participants build a receiver, oscillator/transmitter, and antenna, and learn about digital communications. In partnership with the Rochester Amateur Radio Association, children are paired with a mentor and encouraged to get their licenses, operating from the club station, W2AN.

Robert Hobday, Deputy Director, Antique Wireless Association, said, "With generous support from the ARRL Foundation, AWA was able to graduate 23 youngsters from its new series of AWA Technology Explorers Radio Fab Lab classes. Over 12 2-hour classes, the youngsters were introduced to electronics and wireless communication technologies from Ohm's Law to SDR (software-defined radio). Each student took home a basic tool kit, including a DVM and seven projects that they built. Thanks, ARRL."





## The ARRL Donor Recognition Reception at Hamvention® 2017

Every year, ARRL honors donors with a reception at the biggest Amateur Radio event of the year, the Dayton Hamvention®, held in May. In 2017, Hamvention moved to a new venue — Greene County Fairgrounds and Expo Center, in Xenia, Ohio — and the reception moved to a new venue as well — America's Packard Museum, in Dayton, Ohio. This restored Packard dealership operates as a full-time museum, with more than 50 vintage autos in an Art Deco showroom. ARRL was pleased to honor our valued donors in this beautiful setting on May 18, 2017.

Above: ARRL staff was pleased to welcome a large number of Maxim Society Members to the 2017 Donor Recognition Reception.



ARRL Maxim Society Member Paul Trouten, W8PI, and his wife, Vickie.



Maxim Society Members Kent Trimble, K9ZTV, and Leigh, WCØT, and John, WCØW, Patterson.



Maxim Society Member Dan Dubray, NS5G, and his wife, Kayleen.



Maxim Society Members Marjorie and Harry Flasher, AC8G.



ARRL Maxim Society Member Craig Thompson, K9CT.



Joel Hallas, W1ZR, QST contributing editor and author of the popular "The Doctor is In" column and podcast, delivered the keynote speech.



Maxim Society Members Carter Craigie, N3AO; Kay Craigie, N3KN, with ARRL First Vice President Greg Widin, KØGW. Kay was ARRL's 15th President, serving three terms, beginning in 2010. She was succeeded by current ARRL President Rick Roderick, K5UR, in 2016.



ARRL President Rick Roderick, K5UR, accepts a pledge payment from Dayton Amateur Radio Association's Treasurer Mike Kalter, W8CI, in acknowledgment of DARA's commitment to ARRL's Second Century Campaign. The Campaign is focused on building the ARRL Endowment to ensure resources to fund ARRL's continuing commitment to the future of Amateur Radio.



Clockwise from lower left are Maxim Society Members Carter Craigie, N3AO; Kay Craigie; Frank Butler, W4RH; former ARRL President Joel Harrison, W5ZN, and Kim Harrison. The group is rounded out by Tony Milluzzi, KD8RTT, and Andy Milluzzi, KK4LWR, who are instrumental in ARRL's Collegiate Amateur Radio Initiative (CARI).



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## 2017 ARRL Leadership Donors

**ARRL gratefully acknowledges the following individuals, clubs, and organizations for their generous support in 2017 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, the Ham Aid Fund, and the Legislative Issues Advocacy Fund.**



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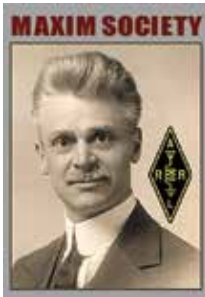
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# Financial Summary



From a financial perspective, 2017 was a good year for ARRL. Overall revenues were up and expenses were down, resulting in ARRL producing a \$1.4 million gain from operations. Support in the form of voluntary contributions and increases in the value of ARRL's investment portfolio, along with a focus on controlling costs, resulted in an increase in the organization's net assets by \$4 million for the year.

ARRL membership declined in 2017 to 159,070 members, which was a decrease of 3% from the end of 2016. The decline was expected as a result of the 2016 dues increase, and continued to follow the historical pattern seen after previous dues increases. Despite this drop in membership, dues revenues increased by 4.7% to almost \$6.7 million.

Although ARRL publications and products continue to be popular with our members and the public, revenues from publication sales were essentially flat at \$4 million in 2017, in comparison to the prior year.

Print advertising, as with many organizations, continued a downward trend in 2017. Sales of advertising across the various ARRL platforms were \$2.06 million in 2017, a 6.5% decrease from 2016.

Revenues from license examination activities and programs and services totaled \$960,000 in 2017, down by about 7.6% from the prior year. While the National Parks on the Air operating event was popular, it did not drive a significant amount of revenue-generating activities.

Voluntary contributions from thousands of ARRL members and others — including unrestricted, temporarily restricted, and permanently restricted contributions — were up once again in 2017. The amount of voluntary contributions received in 2017 totaled almost \$2.9 million, an increase of \$785,000 from the prior year. This included a total of \$1,048,000, an increase of 46% from 2016, in individual bequests over \$50,000 from people who remembered ARRL in their wills. As indicated in Board policy, bequests over \$50,000 were added to the endowment of the organization to produce income for various operations into the future.

Through the continued focus on expense management, total expenses were down in 2017 by almost \$540,000, or 3.5% in comparison to the prior year. Total expenditures across the organization stood at \$14.7 million, down from \$15.2 million in 2016.

Total assets for the organization increased to \$32.7 million at the end of 2017, from \$28.5 million at the end of 2016. Of these totals, cash and investments totaled \$29.3 million and \$25.1 million, respectively. The investment portfolio supports the various restricted and temporarily restricted funds in addition to the long-term liability represented by the Life Member program. Net assets increased to \$20.5 million at December 31, 2017, from \$16.5 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.

In summary, ARRL continues to be in good financial condition and has a strong financial foundation. There are sufficient reserves to support existing programs going forward. The challenge remains to create new funding sources for expanding the programs and services in order to meet the demands of the membership and increase the value to our membership. The organization has the commitment and resources to navigate these challenges as we move forward.



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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, 2017 and 2016, 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, 2017 and 2016, 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.



Hartford, Connecticut  
May 18, 2018



**The American Radio Relay League, Incorporated**

**Statements of Financial Position  
December 31, 2017 and 2016**

<u>Assets</u>	<u>2017</u>	<u>2016</u>
Current assets		
Cash	\$ 1,829,880	\$ 1,375,211
Accounts receivable, net of allowance for doubtful accounts of \$34,897 and \$38,120	291,267	258,592
Inventories, net	562,821	666,928
Pledges receivable, current	100,158	115,858
Other receivables	80,310	61,390
Prepaid expenses and other current assets	226,586	217,205
Total current assets	<u>3,091,022</u>	<u>2,695,184</u>
Other assets		
Investments	27,478,256	23,774,265
Long-term pledges receivable, net of discount and allowance of \$234,378 and \$259,553	417,072	576,718
Land, building and equipment, net	1,716,246	1,427,730
Total other assets	<u>29,611,574</u>	<u>25,778,713</u>
 Total assets	 <u>\$ 32,702,596</u>	 <u>\$ 28,473,897</u>
<u>Liabilities and Net Assets</u>		
Current liabilities		
Accounts payable	\$ 329,932	\$ 266,696
Accrued liabilities	331,166	342,472
Deferred revenue	39,338	27,439
Subtotal operational current liabilities	700,436	636,607
Deferred life membership dues, current	515,475	517,319
Deferred term membership dues, current	3,095,816	3,027,669
Total current liabilities	<u>4,311,727</u>	<u>4,181,595</u>
Long-term liabilities		
Deferred life membership dues, less current portion	6,943,997	6,778,795
Deferred term membership dues, less current portion	935,470	1,051,361
Total long-term liabilities	<u>7,879,467</u>	<u>7,830,156</u>
 Total liabilities	 <u>12,191,194</u>	 <u>12,011,751</u>
Commitments		
Net assets		
Unrestricted		
Undesignated	3,790,266	2,303,613
Board designated	8,936,839	7,179,296
Total unrestricted	12,727,105	9,482,909
Temporarily restricted	3,206,657	2,439,604
Permanently restricted	4,577,640	4,539,633
Total net assets	<u>20,511,402</u>	<u>16,462,146</u>
 Total liabilities and net assets	 <u>\$ 32,702,596</u>	 <u>\$ 28,473,897</u>

See Notes to Financial Statements.

**The American Radio Relay League, Incorporated**

**Statement of Activities  
Year Ended December 31, 2017**

	<u>Unrestricted</u>	<u>Temporarily restricted</u>	<u>Permanently restricted</u>	<u>Total</u>
Revenues and contributions				
Membership dues	\$ 6,682,264	\$ -	\$ -	\$ 6,682,264
Net publication sales	3,965,971	-	-	3,965,971
Advertising	2,060,716	-	-	2,060,716
Investment income	321,498	186,187	-	507,685
Examination fees and other	436,396	-	-	436,396
Program and service fees	523,938	-	-	523,938
Contributions and support	779,470	929,227	103,641	1,812,338
Net assets released from restrictions	758,402	(758,402)	-	-
	<u>15,528,655</u>	<u>357,012</u>	<u>103,641</u>	<u>15,989,308</u>
Expenditures				
Programs and services	7,730,654	-	-	7,730,654
Publications	3,881,972	-	-	3,881,972
Administration	2,205,281	-	-	2,205,281
Fundraising	500,747	-	-	500,747
Governance	252,959	-	-	252,959
	<u>14,571,613</u>	<u>-</u>	<u>-</u>	<u>14,571,613</u>
Increase in net assets before other income (expense)	<u>957,042</u>	<u>357,012</u>	<u>103,641</u>	<u>1,417,695</u>
Other income (expense)				
Bequests, Board designated functioning as an endowment	1,048,174	-	-	1,048,174
Second Century Campaign endowment contributions	-	-	17,549	17,549
Uncollectible pledge	-	-	(83,183)	(83,183)
Unrealized gain on investments	1,238,980	410,041	-	1,649,021
	<u>2,287,154</u>	<u>410,041</u>	<u>(65,634)</u>	<u>2,631,561</u>
Change in net assets	3,244,196	767,053	38,007	4,049,256
Net assets, beginning	<u>9,482,909</u>	<u>2,439,604</u>	<u>4,539,633</u>	<u>16,462,146</u>
Net assets, end	<u>\$ 12,727,105</u>	<u>\$ 3,206,657</u>	<u>\$ 4,577,640</u>	<u>\$ 20,511,402</u>

See Notes to Financial Statements.

**The American Radio Relay League, Incorporated**

**Statement of Activities  
Year Ended December 31, 2016**

	<u>Unrestricted</u>	<u>Temporarily restricted</u>	<u>Permanently restricted</u>	<u>Total</u>
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)	-	-
	<u>14,961,651</u>	<u>144,899</u>	<u>25,917</u>	<u>15,132,467</u>
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
	<u>15,190,945</u>	<u>-</u>	<u>-</u>	<u>15,190,945</u>
Increase (decrease) in net assets before other income	<u>(229,294)</u>	<u>144,899</u>	<u>25,917</u>	<u>(58,478)</u>
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
	<u>1,357,298</u>	<u>255,691</u>	<u>134,796</u>	<u>1,747,785</u>
Change in net assets	1,128,004	400,590	160,713	1,689,307
Net assets, beginning	<u>8,354,905</u>	<u>2,039,014</u>	<u>4,378,920</u>	<u>14,772,839</u>
Net assets, end	<u>\$ 9,482,909</u>	<u>\$ 2,439,604</u>	<u>\$ 4,539,633</u>	<u>\$ 16,462,146</u>

See Notes to Financial Statements.



**The American Radio Relay League, Incorporated**

**Statements of Cash Flows  
Years Ended December 31, 2017 and 2016**

	2017	2016
Cash flows from operating activities		
Change in net assets	\$ 4,049,256	\$ 1,689,307
Adjustments to reconcile change in net assets to net cash provided by operating activities		
Receipts to establish or increase permanent endowment	(38,007)	(160,713)
Depreciation	240,825	251,030
(Gain) loss on sale of equipment	(218)	4,381
Uncollectible pledge	83,183	-
Discount and allowance for pledges receivable	(25,175)	(29,039)
Change in inventory reserve	(15,936)	(20,006)
Unrealized gain on investments	(1,649,021)	(895,484)
Realized gain on investments allocated to general and permanent funds	(175,198)	(35,766)
Changes in operating assets and liabilities		
Accounts receivable	(32,675)	97,024
Inventories	120,043	147,429
Pledges receivable	117,338	147,394
Other receivables	(18,920)	5,947
Prepaid expenses and other current assets	(9,381)	43,982
Accounts payable and accrued liabilities	51,930	(45,530)
Deferred revenue	11,899	(3,423)
Deferred life membership dues, net of allocated realized gain	63,670	40,385
Deferred term membership dues	(47,744)	102,048
Net cash provided by operating activities	2,725,869	1,338,966
Cash flows from investing activities		
Purchase of equipment	(529,413)	(89,824)
Proceeds from sale of equipment	290	1,536
Sales of investments	5,463,577	2,877,902
Purchases of investments	(7,243,661)	(3,871,608)
Net cash used in investing activities	(2,309,207)	(1,081,994)
Cash flows from financing activities		
Receipts to establish or increase permanent endowment	38,007	160,713
Net increase in cash	454,669	417,685
Cash, beginning	1,375,211	957,526
Cash, end	\$ 1,829,880	\$ 1,375,211

See Notes to Financial Statements.

## The American Radio Relay League, Incorporated

### Notes to Financial Statements December 31, 2017 and 2016

#### 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 31, 2017 and 2016 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.

**The American Radio Relay League, Incorporated**

**Notes to Financial Statements  
December 31, 2017 and 2016**

**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 \$96,431 and \$112,367 as of December 31, 2017 and 2016, 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:

<u>Asset</u>	<u>Estimated Useful Lives</u>
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, 2017 and 2016.

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.



## The American Radio Relay League, Incorporated

### Notes to Financial Statements December 31, 2017 and 2016

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, 2017 and 2016.

The League's federal information returns prior to calendar year 2014 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, 2017 and 2016.

The American Radio Relay League, Incorporated

Notes to Financial Statements  
December 31, 2017 and 2016

**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 18, 2018, which is the date the financial statements were available to be issued.

**Note 2 - Pledges receivable**

Unconditional pledges receivable as of December 31, 2017 and 2016 are expected to be realized in the following periods:

	<u>2017</u>	<u>2016</u>
In one year or less	\$ 100,158	\$ 115,858
In one to five years	240,450	373,271
In more than five years	<u>411,000</u>	<u>463,000</u>
Total pledges receivable	751,608	952,129
Less allowance for uncollectible pledges	(57,470)	(76,953)
Less discount	<u>(176,908)</u>	<u>(182,600)</u>
Total	<u>\$ 517,230</u>	<u>\$ 692,576</u>

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

	<u>2017</u>	<u>2016</u>
Current	\$ 100,158	\$ 115,858
Long-term	<u>417,072</u>	<u>576,718</u>
Total	<u>\$ 517,230</u>	<u>\$ 692,576</u>

Pledges expected to be received in more than one year have been discounted using a discount rate of 4.50% and 3.75% at December 31, 2017 and 2016, respectively.

**The American Radio Relay League, Incorporated**

**Notes to Financial Statements  
December 31, 2017 and 2016**

**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, 2017 and 2016:

	2017		2016	
	Fair value	Cost	Fair value	Cost
Cash and cash equivalents	\$ 619,238	\$ 619,238	\$ 1,089,815	\$ 1,089,815
Equities and mutual funds	14,974,025	10,198,929	12,882,511	9,762,440
Fixed maturities	11,884,993	11,892,708	9,801,939	9,803,650
<b>Total</b>	<b>\$ 27,478,256</b>	<b>\$ 22,710,875</b>	<b>\$ 23,774,265</b>	<b>\$ 20,655,905</b>

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, 2017 and 2016:

	2017	2016
Life membership	\$ 7,459,487	\$ 7,296,114
Regular operations	3,297,633	2,319,618
Temporarily restricted	3,206,657	2,439,604
Functioning as an endowment	8,936,839	7,179,296
Permanently restricted	4,577,640	4,539,633
<b>Total</b>	<b>\$ 27,478,256</b>	<b>\$ 23,774,265</b>

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

	2017	2016
Unrealized appreciation, beginning		
Fair value	\$ 23,774,265	\$ 21,826,857
Cost	20,655,905	19,603,981
Net gain	3,118,360	2,222,876
Unrealized appreciation, end		
Fair value	27,478,256	23,774,265
Cost	22,710,875	20,655,905
Net gain	4,767,381	3,118,360
<b>Net unrealized gain for the year</b>	<b>\$ 1,649,021</b>	<b>\$ 895,484</b>



**The American Radio Relay League, Incorporated**

**Notes to Financial Statements  
December 31, 2017 and 2016**

Investment income is summarized as follows for the years ended December 31, 2017 and 2016:

	<u>2017</u>	<u>2016</u>
Interest and dividend income	\$ 526,691	\$ 479,057
Net realized gain on investments	274,886	58,218
Gross investment income	<u>801,577</u>	<u>537,275</u>
Less		
Net investment income allocated to deferred life liability	<u>(293,892)</u>	<u>(200,586)</u>
Total investment income	<u>\$ 507,685</u>	<u>\$ 336,689</u>

**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, 2017 and 2016 are classified in the tables below in one of the three categories described above:

The American Radio Relay League, Incorporated

Notes to Financial Statements  
December 31, 2017 and 2016

	2017			Total
	Level 1	Level 2	Level 3	
Money market fund	\$ 619,238	\$ -	\$ -	\$ 619,238
Mutual funds				
Short-term bond fund	249,791	-	-	249,791
Large blend fund	345,460	-	-	345,460
Large growth fund	31,984	-	-	31,984
Total mutual funds	627,235	-	-	627,235
Exchange traded funds				
Small blend	384,280	-	-	384,280
Mid cap blend	514,158	-	-	514,158
Large blend	6,141,291	-	-	6,141,291
Short term bond	1,465,353	-	-	1,465,353
Europe stock	118,300	-	-	118,300
Foreign mid blend	95,384	-	-	95,384
Inflation-protected bond	194,005	-	-	194,005
Foreign large blend	623,299	-	-	623,299
Equity energy	148,425	-	-	148,425
Diversified emerging markets	160,685	-	-	160,685
Total exchange traded funds	9,845,180	-	-	9,845,180
Stocks				
Domestic large cap	4,418,600	-	-	4,418,600
International developed	83,010	-	-	83,010
Total stocks	4,501,610	-	-	4,501,610
Certificates of deposit	299,709	-	-	299,709
Fixed maturities				
Domestic corporate bonds	-	10,093,210	-	10,093,210
U.S. Treasury Bills	-	895,410	-	895,410
International developed bonds	-	398,150	-	398,150
Global high yield taxable	-	198,514	-	198,514
Total fixed maturities	-	11,585,284	-	11,585,284
Total assets at fair value	\$ 15,892,972	\$ 11,585,284	\$ -	\$ 27,478,256

**The American Radio Relay League, Incorporated**

**Notes to Financial Statements  
December 31, 2017 and 2016**

	2016			Total
	Level 1	Level 2	Level 3	
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	<u>52,526</u>	<u>-</u>	<u>-</u>	<u>52,526</u>
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	<u>8,238,586</u>	<u>-</u>	<u>-</u>	<u>8,238,586</u>
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	<u>4,591,399</u>	<u>-</u>	<u>-</u>	<u>4,591,399</u>
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	<u>-</u>	<u>9,801,939</u>	<u>-</u>	<u>9,801,939</u>
Total assets at fair value	<u>\$ 13,972,326</u>	<u>\$ 9,801,939</u>	<u>\$ -</u>	<u>\$ 23,774,265</u>

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. Certificates of deposit are valued at cash values based on the instrument issued plus interest accrued.

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, 2017 and 2016.

## The American Radio Relay League, Incorporated

### Notes to Financial Statements December 31, 2017 and 2016

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, 2017 and 2016.

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, 2017 and 2016:

	<u>2017</u>	<u>2016</u>
Land and building	\$ 1,094,693	\$ 1,094,693
Furnishings, equipment and building improvements	4,512,340	4,369,915
Computer software	2,073,306	2,073,306
	<u>7,680,339</u>	<u>7,537,914</u>
Less accumulated depreciation	(6,339,366)	(6,114,034)
	<u>1,340,973</u>	<u>1,423,880</u>
Construction in progress	375,273	3,850
Total	<u>\$ 1,716,246</u>	<u>\$ 1,427,730</u>

#### 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 2017 and 2016. Total employer contributions were \$272,956 and \$278,412 in 2017 and 2016, 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 \$6,291,600. As of December 31, 2017 and 2016, the balance of the bequests, inclusive of investment income and unrealized gains and losses, was \$8,936,839 and \$7,179,296, respectively.



**The American Radio Relay League, Incorporated**

**Notes to Financial Statements  
December 31, 2017 and 2016**

**Note 8 - Temporarily restricted net assets**

Temporarily restricted net assets as of December 31, 2017 and 2016 were available for the following purposes:

	2017	2016
Exceptional merit	\$ 1,440,809	\$ 1,358,695
Other specific purposes	1,347,798	791,386
Education and research	418,050	289,523
Total	\$ 3,206,657	\$ 2,439,604

**Note 9 - Permanently restricted net assets**

Permanently restricted net assets as of December 31, 2017 and 2016 were comprised of the following:

	2017	2016
Second Century fund	\$ 3,149,481	\$ 3,235,115
W1AW fund	592,376	588,735
DX Log Archive fund	229,390	229,390
Youth and Education fund	217,189	197,189
Colvin fund	154,340	154,340
Dave Bell, W6AQ fund	134,864	134,864
Snyder Collegiate fund	100,000	-
Total	\$ 4,577,640	\$ 4,539,633

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.

## The American Radio Relay League, Incorporated

### Notes to Financial Statements December 31, 2017 and 2016

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.

In 2017, the League received a donation to establish the W1YSM Snyder Family Collegiate Amateur Radio Endowment 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 the League's Collegiate Amateur Radio Initiative activities.

#### **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, 2017 and 2016**

Changes in endowment net assets for the year ended December 31, 2017 are as follows:

	<u>Unrestricted</u>	<u>Temporarily restricted</u>	<u>Permanently restricted</u>	<u>Total</u>
Endowment net assets, January 1, 2017	\$ 7,179,296	\$ 460,157	\$ 4,539,633	\$ 12,179,086
Investment income, net	193,925	39,025	-	232,950
Net unrealized gain	515,441	312,491	-	827,932
Contributions	1,048,177	5,243	121,190	1,174,610
Amounts appropriated for expenditure	-	(30,949)	-	(30,949)
Net assets released	<u>-</u>	<u>-</u>	<u>(83,183)</u>	<u>(83,183)</u>
Endowment net assets, December 31, 2017	<u>\$ 8,936,839</u>	<u>\$ 785,967</u>	<u>\$ 4,577,640</u>	<u>\$ 14,300,446</u>

Endowment net asset composition by type of fund as of December 31, 2017 is as follows:

	<u>Unrestricted</u>	<u>Temporarily restricted</u>	<u>Permanently restricted</u>	<u>Total</u>
Donor-restricted endowment funds	\$ -	\$ 785,967	\$ 4,577,640	\$ 5,363,607
Board-designated endowment funds	<u>8,936,839</u>	<u>-</u>	<u>-</u>	<u>8,936,839</u>
Total funds	<u>\$ 8,936,839</u>	<u>\$ 785,967</u>	<u>\$ 4,577,640</u>	<u>\$ 14,300,446</u>

**The American Radio Relay League, Incorporated**

**Notes to Financial Statements  
December 31, 2017 and 2016**

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

	<u>Unrestricted</u>	<u>Temporarily restricted</u>	<u>Permanently restricted</u>	<u>Total</u>
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	<u>(24,795)</u>	<u>-</u>	<u>-</u>	<u>(24,795)</u>
Endowment net assets, December 31, 2016	<u>\$ 7,179,296</u>	<u>\$ 460,157</u>	<u>\$ 4,539,633</u>	<u>\$ 12,179,086</u>

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

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

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, 2017 and 2016.

**Note 11 - Lease obligations**

The League leases warehouse space, office space and office equipment under operating leases with monthly payments ranging from \$77 to \$4,265, which expire at various times through May 2021. Total operating lease expense was \$137,010 and \$109,348 for the years ended December 31, 2017 and 2016, respectively.



## The American Radio Relay League, Incorporated

### Notes to Financial Statements December 31, 2017 and 2016

The following are future minimum lease payments due under noncancelable operating leases as of December 31, 2017:

2018	\$	56,935
2019		56,935
2020		56,935
2021		<u>24,203</u>
Total	\$	<u>195,008</u>

#### 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, 2017, the Company had approximately \$1,698,000 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, 2017 and 2016.

The American Radio Relay League, Incorporated

**Supplementary Information**  
**Schedules of Expenditures**  
**Years Ended December 31, 2017 and 2016**

	<u>2017</u>	<u>2016</u>
Salaries, compensation and benefits	\$ 6,985,910	\$ 7,257,268
Publication costs	2,025,436	2,192,596
Shipping and forwarding costs	1,483,725	1,540,809
Communication and postage	687,241	826,726
Other	656,997	620,905
Occupancy costs	541,390	534,955
Office supplies and expenditures	491,322	519,983
Legal and professional fees	515,999	448,878
Administrative expenses	458,351	493,165
Travel	288,190	364,969
Depreciation	240,825	251,030
Rentals and equipment maintenance	196,227	139,661
Total	<u>\$ 14,571,613</u>	<u>\$ 15,190,945</u>

See Independent Auditor's Report.

The American Radio Relay League, Incorporated

Temporarily Restricted Fund Summary  
Year Ended December 31, 2017

Fund name	Balance January 1, 2017	Redesignations	Contributions	Investment income, net	Unrealized gain	Released from restriction	Balance December 31, 2017
H.P. Maxim Award	\$ 41,228	-	\$ -	\$ 986	-	-	\$ 42,214
Exceptional Merit	1,358,695	-	-	24,566	97,548	(40,000)	1,440,809
Legal Research & Resource	178,728	-	13,884	-	-	(710)	191,902
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	14,041	-	180,864	-	-	(84,218)	110,687
Defense of Frequencies	-	-	312,861	14,381	-	(327,242)	-
Lab Fund	10,211	-	5,588	-	-	-	15,799
Education and Technology	272,247	1,000	254,315	7,594	-	(148,401)	386,755
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	40,975	-	49,523	-	-	(24,946)	65,552
Preservation of Artifacts	36,656	-	106,949	-	-	(2,301)	141,304
Colvin Fund earnings	34,424	-	-	5,761	11,733	(7,000)	44,918
W1AW Fund earnings	154,602	-	-	22,031	46,650	(19,074)	204,209
Youth and Education Fund earnings	13,698	-	-	-	14,017	-	27,715
Capital Campaign Fund ("CCF") earnings	233,849	-	-	94,601	210,539	(94,601)	444,388
CCF Earnings - DX Log Archive	18,506	-	-	8,562	15,095	(787)	41,376
Dave Bell , W6AQ Fund earnings	5,080	-	-	5,034	8,458	(5,034)	13,538
Snyder Collegiate Amateur Radio earnings	-	-	5,243	2,671	6,001	(4,088)	9,827
Total temporarily restricted funds	\$ 2,439,604	\$ -	\$ 929,227	\$ 186,187	\$ 410,041	\$ (758,402)	\$ 3,206,657

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

See Independent Auditor's Report.



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



Founded in 1914 by Hartford, Connecticut inventor and technologist Hiram Percy Maxim, the American Radio Relay League (ARRL) is the national association for Amateur Radio in the US. Today, with over 159,000 members, ARRL is the largest organization of radio amateurs in the world.

## 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



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