



ARES COMMUNICATOR

Information for Scott County Amateurs



March, 2016

Accurate, Reliable Emergency Communications for our Community

Volume 16, Number 3

US Ham Numbers Soar

ARRL Letter 29Feb2016

Amateur Radio is alive and well! Growth in the US continued in 2015, with a record 735,405 licensees in the FCC's Universal Licensing System database by the end of the year. That's up 9130 over December 2014, a 1.2 percent rise, continuing a steady increase in the Amateur Radio population in every year since 2007. In 2014, the Amateur Radio ranks grew by a net 8149 licensees. The figures, compiled by Joe Speroni, AH0A, on his FCC Amateur Radio Statistics web pages, exclude expired licenses that are within the 2-year grace period, and club station licenses. Compared with the same month 10 years ago, the Amateur Radio population in the US has expanded by 72,805 licensees — or nearly 11 percent.

As expected, the biggest growth by license class was in Technician licensees, which rose by 6570 in 2015. General ranks increased by 3079, and Amateur Extra numbers went up by 3496. The 2015 overall numbers faltered a little in April before rebounding in July. The introduction of a new General class question pool on July 1 appeared to have only a slight effect on month-to-month numbers in that license class. ARRL VEC Manager Maria Somma, AB1FM, said 2015 was another banner year for ARRL VEC-sponsored test sessions.

“For the second year in a row, we have conducted more than 7000 Amateur Radio exam sessions in a year, an important milestone for the ARRL VEC,” she said. “A total of 7358 ARRL-sponsored exam sessions were administered in 2015, compared to 7216 in 2014. The number of exam applicants was down slightly in 2015, compared to the previous year, and the number of examination elements administered also dipped slightly, she noted.

“Since 2014 was a record-setting year, the numbers of 2015 examinees didn't drop so much as return to more typical levels,” she explained.

Somma pointed out that the ARRL-VEC also processed and

filed nearly 10,100 license renewals and address changes for members in 2015. This is a free service to ARRL members. Technician licensees still comprise a little less than one-half of the US Amateur Radio population. As of December 31, some 47,850 Advanced and 10,800 Novice licensees remained in the FCC database. The FCC no longer issues Advanced and Novice licenses, and their numbers continue to decline.

Once again, California far and away was home to the largest number of licensees among the 50 states, with 103,938 at the end of 2015, up from 102,735 at the end of 2014. North Dakota remained the state with the fewest number of Amateur Radio licensees, with 1510, up very slightly over the previous 12 months. Club station licenses in the US number 11,599, according to Speroni's web pages.

BREAK - OVER



ARES Activities

Weekly Net Monday 7 PM 146.535 mhz (s)

Breakfast Saturday, April 9th

Digital Monday, April 11th

ARES Nets

MN ARES Phone Net	6:00PM Sunday	Freq: 3.860 mhz
ARRL MN Phone Net	12:00p, 5:30p CST Daily	Freq: 3.860 mhz
ARRL MN CW Net	6:30p, 9:50p CST Daily	Freq: 3.568 mhz

NETS WITH OUR NEIGHBORS

North Dakota:	Daily 3.937 mhz	6:30pm
South Dakota:	Daily 3.860 mhz	6:00pm
Wisconsin:	Daily 3.985 mhz	5:30pm
Iowa:	Daily 3.970 mhz	12:30/5:30pm

The ARES COMMUNICATOR is published for the benefit of Amateur Radio Operators in Scott County and other interested individuals.
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 Reader submissions encouraged!



Saturday, April 16, 2016 9AM-1PM

**Amateur Radio,
Electronic & Computer Equipment**

Brainerd National Guard Armory, 1115 Wright Street,
Brainerd, MN

Directions: From the south, come into Brainerd on Business Highway 371. One block after the Brainerd Hotel, turn right on Wright Street. The Armory is about three blocks east on the left side. From the north, east, and west, go to the center of Brainerd and turn south on Business Highway 371 (also known as South 6th Street). Before the Brainerd Hotel, turn left on Wright Street. The Armory is about three blocks east on the left side.



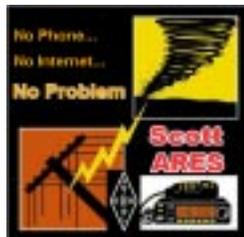
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VE TESTING – 10:00 AM Tickets at door \$6.00. Children under 12 free

ARRL Awards QSL Card Checking at Hamfest

- **Parking is free.** All events and sales indoors
- Tables \$12.00 each (Best to reserve in advance)
- WØUJ Talk-in 147.225+ (no tone)
Chatter on 145.13(-) 110.9 Hz tone and 443.925+ 110.9 Hz, and 53.110- 123.0 Hz
- **Prizes / Food / Fun / Raffle**
Need not be present to win the Grand Prize. You must be present to win hourly drawings.
- Free on-street parking. Food, beverages, commercial vendors, & door prizes.
- 75% of items to be sold must be Hamfest/computer/electronics related.

Hamfest info flyer available at the Brainerd Area Amateur Radio Club hamfest website: <http://www.brainerdham.org/hamfest/index.html>

Amateur Radio License Exam

Want to become a ham? Want to upgrade your license? You can find information and resources to success in ham radio at this page: <http://www.scottares.org/License Info.htm>

If you want to ask questions or find a local Elmer (Mentor) just drop an email to: newhaminfo@scottares.org

The hams in Scott ARES gather for breakfast the first Saturday of the month at the Perkins Restaurant in Savage. Bring your ham radio questions and talk to local amateur radio operators.

Now that you have done the work to study for your upgrade, here is where to find a convenient exam session near you. There is a VE exam search engine at: http://www.arrl.org/exam_sessions/search

Walk-ins allowed at most sessions however it is always best to check the details at the specific session you are planning to attend. Below is a list of scheduled sessions close to Scott County. Good Luck!

March 26, 2016 Saturday 9:00 AM

Sponsor: Bloomington Off/Emergency Mgmt

Daniel J. Royer (952) 888-9756

Email: dan-arrl@droyer.org

Location: City Hall-Police Department

1800 W Old Shakopee Rd

Bloomington MN 55431

Walk-ins allowed, Pre-reg requested

March 28, 2016 Monday 6:00 PM

Sponsor: SMARTS

Dale A. Blomgren (952) 402-2155

Email: kd0b@arrl.net

Location: Carver County Library

7711 Kerber Blvd

Chanhassen MN 55317

Walk-ins allowed, Pre-reg requested

April 02, 2016 Saturday 10:00 AM

Sponsor: St Paul Radio Club

Leon H. Dill (651) 688-9964

Email: w0coe@arrl.net

Location: Ramsey Co Library Maplewood

3025 Southlawn Dr

Saint Paul MN 55109-157

Walk-ins allowed, Pre-reg requested

April 13, 2016 Wednesday 7:00 PM

Sponsor: VARC

James C. Rice (612) 384-7709

Email: jrice@danpatch.org

Location: Perkins Restaurant & Bakery

17387 Kenyon Avenue

Lakeville MN 55044-4459

Walk-ins allowed, Pre-reg requested

Take a Dip in the General Pool

Time to test your knowledge of the information covered by the General Class license exam. Each month we'll take a look at a selection from the question pool.

Strap on your thinking cap and see what you can recall. Here is this month's sample:

1. Which of the following is the best instrument to use when checking the keying waveform of a CW transmitter?
 - A. An oscilloscope
 - B. A field-strength meter
 - C. A sidetone monitor
 - D. A wavemeter
2. Which of the following might be a use for a field strength meter?
 - A. Close-in radio direction-finding
 - B. A modulation monitor for a frequency or phase modulation transmitter
 - C. An overmodulation indicator for a SSB transmitter
 - D. A keying indicator for a RTTY or packet transmitter
3. Which of the following could be a cause of interference covering a wide range of frequencies?
 - A. Not using a balun or line isolator to feed balanced antennas
 - B. Lack of rectification of the transmitter's signal in power conductors
 - C. Arcing at a poor electrical connection
 - D. The use of horizontal rather than vertical antennas

(Check next month's issue of the ARES Communicator for the answer.)



February General Pool Answers

1. What is the maximum symbol rate permitted for RTTY or data emission transmissions on the 10 meter band?
 - C. 1200 baud
2. Which of the following is sufficient for you to be an administering VE for a Technician Class operator license examination?
 - D. An FCC General Class or higher license and VEC accreditation
3. Which mode is most commonly used for voice communications on the 17 and 12 meter bands?
 - A. Upper sideband

Pave PAWS Upgrade

Air Force Pledges Continued Cooperation

ARRL Letter 03/08/2016

As updating of the Pave PAWS radar installation gets under way at the Cape Cod Air Force Station in Massachusetts, the US Air Force has reached out to the Amateur Radio community to continue the positive working relationship developed between the two parties since March 2007. Pave PAWS radar installations on both coasts have required the modification of some 70 centimeter Amateur Radio systems to mitigate interference to the military radars. The Amateur Service is secondary on 70 centimeters. ARRL Regulatory Information Manager Dan Henderson, N1ND, said work now has begun to install the updated early-warning radar standards at Cape Cod.



Pave PAWS radar installation at the Cape Cod Air Force Station in Massachusetts.

“This is the new version of Pave PAWS and will bring the Cape Cod radar up to the same higher standard already employed at the Beale Air Force Base Pave PAWS facility in California, as well as at others in the Space Early Warning system,” Henderson said. “The radar will be a little more sensitive, so some additional mitigation is possible, but nothing like that required when the project started. This is the last Pave PAWS site to be upgraded.”

Henderson, who has served as the League’s point person on this project, and ARRL New England Division Director Tom Frenaye, K1KI, were briefed in late 2015 on the changes by officials at the Cape Cod facility. “The fact that the Air Force reached out to inform us of the pending changes speaks volumes about the excellent working relationship we have managed to build with them over the past 9 years,” said Henderson. “The Amateur Radio communities in proximity to both the Cape Cod and Beale sites have stepped up to the plate and demonstrated their willingness to be good-faith partners with the Air Force, accepting their responsibility as secondary users of this part of the spectrum, and, in almost all cases, taking the necessary steps

cont'd col. 2

to achieve the required mitigation standards while still maintaining Amateur Radio access to this spectrum.”

In a statement, Cape Cod AFS Sixth Space Warning Squadron Crew Commander and Public Affairs Officer Lt Drew S. Dutcher said his facility recognizes and appreciates Amateur Radio’s service to the community and its continued cooperation.

“In the coming months we will be undergoing upgrades to our facility which will help us improve our capabilities to locate and track satellites for entities such as NASA and Space-X,” Dutcher said. “The improvements will also ensure utilization of cutting-edge technology to protect our eastern sea border from incoming Intercontinental Ballistic Missiles and Sea Launched Ballistic Missiles. As always, we ask that you be mindful and courteous of our frequency range. We do not anticipate any interference or spurious emissions to any [Amateur Radio] frequencies.”

Dutcher asked radio amateurs experiencing “any anomalies” on their 70 centimeter frequencies to contact the Public Affairs Office. He thanked the ham community for advancing the art, science, and enjoyment of Amateur Radio and continuation of cooperation. The Cape Cod Pave PAWS installation was the first in the US.

More information will become available as work at Cape Cod AFS continues. Henderson asked amateurs with questions about the project to contact him at ARRL Headquarters and to copy him on any communications to the US Air Force regarding interference or spurious emissions believed to be associated with the Pave PAWS radar system.

“Pave” is a program name for electronics systems. “PAWS” stands for Phased Array Warning System. The technical nomenclature for the radar is AN/FPS-123.

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Amateur Radio Newsletter



Ham radio news, commentary, giveaways, and more!
Celebrating 20 years of service - 1995-2015
Over 3,000 subscribers!
www.amateurradio.com/

Your editor stumbled across this on-line newsletter and found it brings a wide variety of ham radio oriented topics to the in-box on a regular basis. Stop by, check it out and see what you think. There is absolutely NO connection between the editor and this e-letter. Really, none. Other than enjoying a variety of Ham radio info. Haa Haa!

BREAK - OVER

Test Your NIMS Knowledge

This month we will begin our review of ICS-800: National Response Framework. The purpose of the National Response Framework is to ensure that all response partners across the Nation understand domestic incident response roles, responsibilities, and relationships in order to respond more effectively to any type of incident. The Framework focuses on response and short-term recovery instead of all of the phases of incident management.

Check your recall of the course material with this question.

Which organization serves as FEMA's primary operations management center, as well as the focal point for national resource coordination?

- A. Strategic Information and Operations Center
- B. National Response Coordination Center
- C. Federal Operations Center
- D. Disaster Response Center

Check next month's ARES Communicator for the solution

February NIMS Knowledge Solution

1. As a member of the Unified Coordination Group, the Principal Federal Official (PFO):

- A. Promotes collaboration and works to resolve any Federal interagency conflict that may arise.

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NBEMS Current Versions

The current version of the Fldigi manual is available at NBEMS Info page at www.scottares.org. Look under the 'Help Sheets' heading.

Now is a good time to check to your digital software to make sure you are running the newest versions. You can find the most recent versions posted at both: www.w1hkj.com/download.html and <http://www.scottares.org/NBEMS.htm>

Here are the most recent releases as of March 15, 2016.

Software	Version
Fldigi	3.23.08
Flwrap	1.3.4
Flmsg	2.0.15
Flamp	2.2.03

The Monday evening training net is a great place to have your digi questions answered and problems solved! Join the Scott ARES group on 146.535 MHz simplex at 7:00pm on Monday evenings.



Cut Numbers

The original mode of digital communications has shown the ingenuity of users in creating abbreviations and shortcuts that increase speed. The CW abbreviations are included in the general category of Pro Signs.

Cut Numbers are a subset of these efficiency measures that a CW operator will most likely encounter during contesting. Cut numbers are sometime second nature to experienced operators and may cause some confusion when new Hams encounter the technique.

Imagine your very first non-US contact as a Novice is with a station from Sweden! The callsign prefix 'SM' is strange but you recall from somewhere that it might be from Sweden! Your hand pounds that straight key with a speed you never thought possible. You wait for a response. With shaky hands you copy S – M – E ????. You ask for a repeat. Same thing. Another repeat request. This time the Op slowly sends S – M – 5! Success, it IS a Swede on the key! Thankfully, an experienced ham who recognizes he has a new Novice on the line slows down to the 5 wpm, or less, range.

This first encounter with cut numbers leaves quite an impression. Even 40+ years later!

So, what is the secret to cut numbers? Here is a simple explanation from several internet sites. Numbers consist of five dots and/or dashes, which takes a fairly long time to send. "Cut numbers" provide an alternative way of representing numbers using (mostly) shorter Morse sequences that are faster to send. The actual sequences used are:

Number	Normal Morse	"Cut" number	Equivalent character
0	dah-dah-dah-dah-dah	dah	T
1	di-dah-dah-dah-dah	di-dah	A
2	di-di-dah-dah-dah	di-di-dah	U
3	di-di-di-dah-dah	di-di-di-dah	V
4	di-di-di-di-dah	di-di-di-di-dah	4
5	di-di-di-di-dit	dit	E
6	dah-di-di-di-dit	dah-di-di-di-dit	6
7	dah-dah-dit-dit-dit	dah-dah-dit	G
8	dah-dah-dah-di-dit	dah-di-dit	D
9	dah-dah-dah-dah-dit	dah-dit	N

Note that for all numbers except "5", the "cut" numbers simply replace all the dashes in the usual Morse representation of the number with a single dash. This is an easy way to remember the cut numbers. By far the most common in practice are "T" for "0" and "N" for "9", so you should be familiar with at least these.

Signal reports are another introduction to cut numbers. To simplify things, contesters just routinely send 599 reports. However the number "9" is replaced by the letter "N" because it is faster to send.

BREAK - OVER



April 9th, Univ. St Thomas, Minneapolis

The 11th annual Minnesota Severe Storms Conference will be held on April 9, 2016 on the campus of the University of St. Thomas in Minneapolis.

The objective of the Minnesota Severe Storms Conf. is to help Train... Equip... and Connect... severe storms spotters and chasers throughout the region through this one-day conference with speakers and great conversation about severe weather.

The topics included are: severe storms, meteorology, technology advancements, and what you as a spotter can do to help during severe storms. This year's keynote speaker is Mr. Bob Dixon, mayor of Greensburg, KS.

What happens after a major weather disaster? On May 4th, 2007, Greensburg, KS was hit by an EF-5 tornado (the first "5" under the new Enhanced Fujita scale) that destroyed 95% of the town leading to disaster declarations and a massive rebuilding effort.

Mayor Dixon will talk about this effort and what it has meant for the town as they try to come back from this. When you talk about the Greensburg tornado with folks, they are surprised it has already been almost 9 years since this happened. A lot has indeed happened! Greensburg is not only rebuilding, but is also rebuilding green.

Has this been good for the town? What happened since then? Did this lead to a new, greener, Greensburg or was it a short-fused injection of cash from insurance, government disaster relief, and private investment? In general, rural towns across the plains are struggling as population continues to decline so has this reversed that trend for Greensburg?

Rebuilding from a storm that was estimated to cause losses over \$248 million, not to mention the loss of 11 lives, is a monumental task. How do you look to the future while needing to work with FEMA on temporary housing so people have somewhere to sleep today? What does it mean to have a presidential visit right after a disaster when you're trying to help people?

This is sure to be an outstanding conversation about resiliency, determination, and looking to the future following a huge weather disaster. The role of the storm spotter and chaser may end immediately after a storm, but the impact can last years.

BREAK - OVER

Garage Door RFI

Update From the Front Lines of RFI

A frustrated Ham reports his latest experience with interference from appliances within his home.

"We can add the new Chamberlain "PD" series garage door openers to the growing list of RFI-generating devices. Two weeks ago, I replaced a Chamberlain HD series model but found that this series is long out of production.

In the case of my PD series opener, it was generating RFI on 80m. It caused a 10 dB rise of the noise floor and also generated 40 kHz switching "bumps," the type of which we've all become familiar. Investigating the transmission mode a bit further, I found that the switching supply is coupling RFI onto the lines leading to the wall switch as well as the lines leading to the optical safety sensors.

To cure the defect, I added several feet of control wire on each line at the opener. This allowed me to wrap 10-tuns of the bundle onto a large #31 ferrite core. That reduced the RFI level but did not eliminate it. The opener is about 30 feet distant from my balanced open wire feeders. I had several 0.1 uF Sprague Orange Drop caps and installed them on each of the four wire leads, each bypassed to chassis ground. That solved the problem.

Whether or not this is a problem in other installations, the magnitude of the RFI detected will be affected by the proximity of the opener wiring to antennas and transmission lines, especially open feeders. In addition to this problem, the new openers are not backward compatible with an older vehicle's HomeLink opener (typically located near a sun visor or rear view mirror). For that, Chamberlain sells a HomeLink "repeater" to bridge the two technologies. Unless there's a compelling reason why the new openers could not be designed with backward HomeLink compatibility, the design error is unforgivable."

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Deep Thoughts

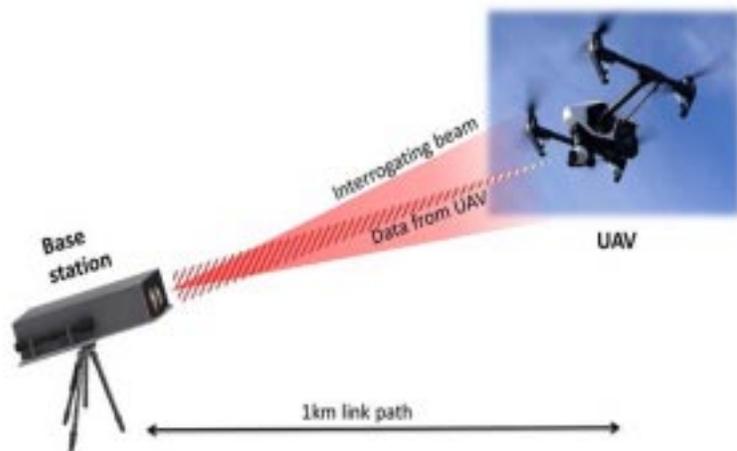


Beam it up Scotty!

Shooting Planes with Lasers

Whether they're flying over battlefields, disaster sites or search-and-rescue operations, aircraft can prove to be a valuable "eye in the sky" for ground crews. Usually, data is transmitted from those planes using radio signals. Such signals can be jammed or intercepted, however, plus bandwidth limitations put a damper on just how much data can be sent. That's why scientists from the University of Oxford and Airbus Group Innovations are now using lasers instead.

The system is known as Hyperion, and here's how it works ... A ground-based eye-safe optical laser, with a wavelength of 1550 nanometers, automatically tracks a manned or unmanned aircraft passing overhead, focusing its beam on a device on the vehicle's underside. Called a Modulated Retro Reflector (MRR), this device modulates the reflected laser light, turning it into an optical code that transmits large amounts of encrypted data from the aircraft back to the ground crew. They in turn decode the message.



Currently the system is limited to a range of 1 km (0.6 mile), although work to improve this figure is ongoing. And yes, it might be simpler to just have a laser in the aircraft, although the equipment can be quite heavy – this is particularly an issue with small drones, in which every gram counts.

Hyperion has already been successfully tested using a drone, and may even one day be used to receive data from low-orbit satellites. It is hoped to be in commercial use within three to five years.

BREAK - OVER



Frequency Hits the Tube

New Show Features Ham Radio

ARRL Letter

The buzz from Hollywood is that a TV series based on the 2000 movie "Frequency" is in development and — appropriately enough for a show featuring ham radio — on The CW network. Amateur Radio served as a plot device in the movie and will play the same role in the TV series.

In November 2014, The Hollywood Reporter indicated that NBC had committed to a "Frequency" series, but those plans apparently fell by the wayside. Now, The CW has ordered a pilot episode of "Frequency," and, if the network does go forward with the project, the modern-day version of "Frequency," the TV series, would feature a young female police detective named Raimy, who uses ham radio to communicate through time with her deceased father.

Actress Peyton List is said to have landed to role of Raimy, reprising Jim Caviezel's movie character. Riley Smith would play her father.

When the original "Frequency" movie debuted, the ham radio theme and the chance to see vintage ham gear and real, glowing vacuum tubes on the big screen generated considerable interest within the community of "boatanchor" enthusiasts. ARRL worked with the film's producers.

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ARES Breakfast

Saturday April 9th
7:30AM
Perkins Restaurant
Savage, MN

NECOS Schedule March 2016

The first Monday or the month the net is held on the WB0RMK repeater, Carver. You will find WB0RMK here: 147.165/765 PL 107.2

March

Mar 14 KC0YHH Tony
Mar 21 KD0UWZ Chad
Mar 28 KB0FH Bob

April

Apr 4 WA0DGW John
Apr 11 KC0YHH Tony
Apr 18 KD0UWZ Chad
Apr 25 KB0FH Bob