



THE OHM TOWN NEWS

Voice of the Bridgerland Amateur Radio Club

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May 2014

Some Contents...

President's Message	2
Upcoming Activities	3
ARRL News and Information	5-10
Test Questions for General Class License	11
2014 Club Officers.....	12



ARRL Affiliated



PRESIDENT'S MESSAGE

The [American Radio Relay League \(ARRL\)](#) is celebrating its 100th birthday this month. Applications for ARRL membership were first solicited and accepted on May 18, 1914. Founded by Hiram Percy Maxim of Hartford, Connecticut, ARRL is a non-profit organization which represents the interests of amateur radio operators before federal regulatory bodies, provides technical advice and assistance to amateur radio enthusiasts, supports a number of educational programs and sponsors emergency communications service throughout the country.



In 1914, Hiram Percy Maxim of Hartford, Connecticut, was a prominent businessman, engineer, and inventor (notably of the Maxim Silencer). He was also an active radio amateur, with one of the best-equipped stations in the Hartford area. One night in April, he attempted to send a message to another ham in Springfield, Massachusetts. He had a one-kilowatt station (call 1WH), and Springfield was only 30 miles away, well within his normal range. He was unable to make contact, and remembering that he knew another ham in Windsor Locks, about halfway, he contacted the Windsor Locks ham, and asked him to relay the message, which was successfully done. This was not the first time a message had been relayed, but it set Maxim to thinking. At that time, a great deal, perhaps most of amateur radio activity consisted of sending and receiving messages, not only between amateurs, but involving the general public as well. But at that time the maximum reliable range of a station was a few hundred miles or less, and so Maxim realized that a formally organized relay system would be of tremendous use to amateurs. Thus, this was the beginning of the American Radio Relay League.

Today, with more the 160,000 member ARRL is the largest organization of radio amateurs in the world. The [core purpose](#) of the ARRL is "To promote and advance the art, science and enjoyment of Amateur Radio" where Amateur Radio will be recognized as a valuable, innovative, technical and public service avocation.

The ARRL is the primary representative organization of amateur radio operators to the US government. It performs this function by lobbying the US Congress and the Federal Communications Commission. The ARRL is also the international secretariat of the International Amateur Radio Union,



which performs a similar role internationally, advocating for amateur radio interests before the International Telecommunications Union and the World Administrative Radio Conferences.

The Bridgerland Amateur Radio Club is an ARRL-affiliated club and recommends [ARRL membership](#) highly. The ARRL is a strong organization and works diligently to promote and protect the rights of Amateurs. The ARRL sponsors numerous amateur radio contests throughout the year with the biggest of these being November Sweepstakes and the International DX Contest. Other contests and sponsored operating events include Straight Key Night, VHF Sweepstakes, UHF Contest, and 10 GHz and Up Contest. The ARRL also participates as a Head-

(Continued on page 4)

UPCOMING 2014 ACTIVITIES

10 May, 10:00 AM — BARC Club Meeting

14 May, 7:30 PM - ARRL Rocky Mountain Division Net IRLP Node: 9871

17 May, 8:00 AM — RACES HF Net 3920 KHz

16-18 May — [Dayton Hamvention](#) — National ARRL Centennial Event, Dayton, Ohio

19-20 May — Mountain Man Rendezvous ([more info](#)) (Dean & Tammy Stevens)

5 June, 7:00 PM — VE Test Session at the USU ASTE Bldg RM 108

7 June — Little Red Riding Hood ([more info](#)) (Russ Leikis)

14 June — Tour De Cure (Box Elder Co.) ([more info](#))

14 June, 7:30 PM - ARRL Rocky Mountain Division Net IRLP Node: 9871

19 June, 8:00 PM - RACES VHF Net 147.18 Snowbird 147.20 IRLP 146.72 Mt. Logan

26-28 June — Radio Rocket Recovery in Green River (Guy Hatch)

27 June — Wasatch Back Relay ([more info](#)) (Tyler Griffiths)

27-28 June — Field Day (in place of regular June club meeting) (Ted McArthur)

28-29 June — MS 150 ([more into](#))

Local Radio Nets:

The **Weekly BARC net** is for BARC members and anyone else that would like to check in, held **every Tuesday night at 9:00 p.m.** local time on the Mt Logan BARC Repeater and Linked Systems (146.720)

The **BARC Ladies Net** is every **2nd and 4th Tuesday at 8:00 p.m.** on the BARC Repeater and Linked Systems (146.720). All licensed lady amateur radio operators are welcome to check in.

BARC Club Meetings are normally on the 2nd Saturday of the month at 10:00 A.M. on the 3rd floor of the Cache County Sheriffs Complex on 200 North and 1225 West, Logan, Utah.

ARES Meetings are usually held on the Third Wednesday of each month at 7 P.M. at the Cache County Sheriffs Complex. Contact Tyler Griffiths for more information.

The Results of the One Day Ham Class!

To all in the BARC Club; We want to thank all who helped spread the word about the Ham Class on Saturday the 19th of April. To those who helped with arrangements and directly helping with the teaching and all who helped our VE organization with the massive job of testing and grading and getting proper certifications completed, we want to give a major THANK YOU!!! This was a very successful operation and I believe a pattern to follow for future classes.

We had around 30 participants in the class and some from another class joined our group for the test session.

37 individuals were tested and 35 passed their element for their license. I think two General Class license elements were completed successfully.

One more thanks for all who worked in any way to make this a successful activity.

Theo. K7TWT

The Rocky Mountain Emergency Communications Conference

The Rocky Mountain EmComm Conference in Roy was this past weekend and for those that helped with or those that attended it turned out well. It was well attended and the classes were good. Our club was well represented in helping to teach the classes and there were talks and question/answer sessions with several of the area ARRL leaders. Thanks to all who participated, we will try to include some more follow-up in the next newsletter.

(Presidents Message [Continued](#) from page 2)

quarters station for the IARU HF World Championship. ARRL also sponsors many of the best-known operating awards such as Worked All States (WAS) and DX Century Club (DXCC). Field Day is an annual event organized by the ARRL that includes both a competitive element as well as an emphasis on emergency communications readiness and the promotion of amateur radio. **Joining the ARRL will definitely help you realize your amateur radio goals with all of the benefits that ARRL membership brings.**

73,
Cordell
KE7IK

The ARRL Letter for April 24, 2014

Public Service: More Than 300 Amateur Radio Volunteers Support 2014 Boston Marathon

On a beautiful New England spring day, yet under an umbrella of heightened security, more than 300 Amateur Radio volunteers provided communication support on April 21 for the 118th running of the Boston Marathon -- a 26.2-mile race from Hopkinton to Boston, Massachusetts. In a show of solidarity following last year's tragic bombings close to the finish line, a near record number of runners -- upward of 36,000 -- turned out for the Patriot's Day event along with a huge outpouring of spectators.

The Boston Marathon is a major public service event for the region's Amateur Radio volunteers.



"We received a fantastic showing of volunteer support across the start, course, and finish line from the Amateur Radio community in the wake of the 2013 bombings," said Steve Schwarm, W3EVE, Boston Marathon Course Coordinator. The level of ham radio support for the 2014 event demonstrated that "Boston Strong" remains a rallying cry in the wake of last year's tragedy, he said.

Amateur Radio communication support [became critical](#) in the aftermath of the 2013 Boston Marathon bombings, when conventional telecommunications systems, such as cellular telephones, quickly became overloaded and confusion reigned.

The [Minuteman Repeater Association](#) coordinates Marathon Amateur Radio Communication, with assistance from the [Framingham Amateur Radio Association](#), the [Mohawk Amateur Radio Club](#), and the [Montachusett Amateur Radio Association](#). The race is sponsored by the [Boston Athletic Association](#) (BAA).

Amateur Radio had a larger presence this year at the Massachusetts Emergency Management Agency (MEMA) State Emergency Operations Center (SEOC), where a multi-agency coordination center was set up for the race. The SEOC worked closely with the Boston Marathon Amateur Net Control Center, the BAA Operations Center at Boston Public Library, and the Red Cross Disaster Operations Center in Cambridge.

ARRL Eastern Massachusetts ARES Section Emergency Coordinator Rob Macedo, KD1CY, has served in various capacities over the years as part of the Boston Marathon ham radio contingent. "This year, I was at the SEOC multi-agency coordination center with MEMA Region 1 Communications Officer Terry Stader, KA8SCP, where we provided assistance for the Amateur Radio operation and situational awareness and an alternate communication path to the marathon for MEMA Headquarters," he said.

Schwarm said that one unsung hero of the Boston Marathon Amateur Radio Communications Team is Bob DeMattia, K1IW, whom he called "the mastermind behind an elaborate net control setup" just off the race route with a line-of-sight shot to Boston. "Through a combiner and utilization of various frequencies across 2 meters, 1.25 meters, and 70 centimeters, up to 10 Amateur Radio setups were provided at the net control location with multiple antenna con-



Amateur Radio volunteers at the State Emergency Operations Center. [Bruce Tinkler, N9JBT, photo]

figurations," Schwarm explained. "Bob has done this set-up work for many years."



Upward of 36,000 runners turned out for the 2014 Boston Marathon. [Boston Athletic Association]

This year one of the 2 meter repeaters for the race course operation went down less than 24 hours before the start of the Boston Marathon. "Bob responded to the situation...and had the repeater back in operation just as the marathon was starting," Schwarm said.

Schwarm also expressed his appreciation to his assistant, Jim Palmer, KB1KQW, for his support as an assistant course coordinator, as well as to Paul Topolski, W1SEX, who handled finish-line operations, and to Kevin Paetzold, K1KWP, for supporting starting-line operations. Paetzold echoed Schwarm's praise of DeMattia. "It is immense; it has been happening for many years and seems mostly invisible," he said.

Paetzold said there were four ham radio teams -- 34 volunteers in all -- at the starting line. His primary assistant, Dave Wolfe, KG1H, oversaw the South Street parking operation, while Jonathan Allen, K2KKH, was responsible for the Hopkinton State Park parking operation, while Pi Pugh, K1RV, handled the Athlete's Village operation -- jobs both have done for many years.

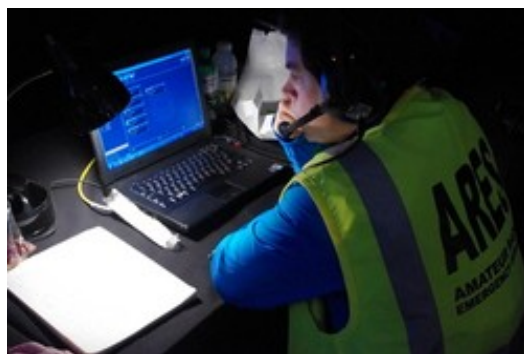
Topolski said hams anticipated security issues, but none arose. "Nobody had a hassle," he told ARRL. A new twist this year was that the operation went from the separate command trailers used in past races to an indoor command center. "I think the operations center is a definite plus, and I think we're going to go with that in the future," he said.

All public safety agencies were represented in the command center, and the net control received many ambulance calls -- about 70 all told -- in part owing to warmer weather this year, Topolski said. This year Amateur Radio volunteers relayed ambulance requests to the state EOC using a commercial UHF digital radio system, and hams spoke directly with MEMA dispatchers. Hams on the course

were issued UHF digital radios to request police, fire, and EMS. "It was an additional resource," he said. "That worked out well." Macedo said Amateur Radio operators very quickly had to learn the new UHF commercial system.

At the height of the Marathon, Macedo said, the finish line medical tents were near 80 percent capacity. Amateur Radio also backed up the commercial network for ambulance requests, he said, and volunteers continued to handle logistical supply and medical bus transports via Amateur Radio.

Topolski said ham radio came in handy after the Boston Fire Department was called to Boylston Street in downtown Boston following a report of a possible natural gas leak. "At almost the same time, one of the hams on the street was smelling natural gas coming from a manhole," he said. "The fire department was looking in one place, while the ham down the street was actually at the site of the leak."



ARES Volunteer Marek Kozubal, KB1NCG, in the indoor command center uses MotoBridge technology linked to remote radios that are tuned to ham repeaters. [Courtesy of Paul Topolski, W1SEX]

All marathon operations secured by about 8 PM, as the last course first aid and finish-line operations closed down.

Ham Radio in Space: KickSat Deployed in Low-Earth Orbit

Zac Manchester, KD2BHC, of the [KickSat](#) project, reports the satellite launched successfully April 18 at 1925 UTC and successfully attained low-Earth orbit.

"We at Cornell and several Amateur Radio operators around the world have made contact with the spacecraft, and it is alive and well," Manchester said.

The Cornell grad student has [announced](#) that he will offer prizes to the first several people who receive telemetry packets from KickSat as well as the first few who receive signals from the tiny Sprite satellites that KickSat will deploy in early May.

After a launch delay, KickSat went into space with the third SpaceX ISS resupply mission. Next month the 3U KickSat CubeSat will release more than 100 Sprite satellites -- each about the size of a small cracker -- into orbit. They will become the smallest Earth-orbiting satellites ever.

The KickSat beacon (437.505 MHz and 2401-2436.2 MHz) will transmit telemetry packets with information such as battery charge state, temperature, and Sprite deployment status. Packets will be transmitted every 30 seconds when the satellite is powered on, and every 250 seconds when it is in charging mode. All of the Sprites will be on the same frequency -- 437.240 MHz.



Launch of the SpaceX ISS resupply mission vehicle carrying KickSat and other satellites into orbit.

Feature: A Century of Amateur Radio and the ARRL

War is always terrible, and World War II was one of the worst. But, while war wreaks havoc and destruction on nations and people, it always brings about major advances in technology that can be transferred to peacetime use. Amateur Radio benefitted from many of those advances following World War II.

During the war years, reliable communication was essential. Studies of the characteristics of the ionosphere and how sunspots affect propagation tremendously enhanced our understanding of signal propagation. The upper limit of easily usable frequencies had been pushed much higher during the war. Through QST, the League made sure hams learned about such scientific progress.

Much military surplus equipment was not well suited for ham use, but many hams figured out how to convert those radios for the ham bands. Others recycled the components. The prices of parts, tubes, and coaxial cable were remarkably low.

During the war, the military or the federal government purchased virtually the entire production output of radio equipment manufacturers. Within months of the war's end, equipment manufacturers had switched to producing ham gear - - and it was far superior to what had been available before the war.

After World War II, the ARRL announced that hams -- whether seasoned old-timers or brand-new licensees -- would have to start from scratch to earn the postwar DXCC. That made for lots of excitement when the HF bands again were opened to ham radio.



An aerial view of the Project Diana site. [US Department of Defense photo]

In January 1946 Project Diana used a converted military transmitter to send a radio signal to the Moon, which bounced back to Earth and was detected by equipment at the Evans Signal Laboratory at New Jersey's Fort Monmouth. A 0.25 second pulse of 111.5 MHz energy was beamed at the Moon, and 2.5 seconds later a faint "beep" was heard by Herb Kauffman, W2OQU, one of several hams involved in the experiment.

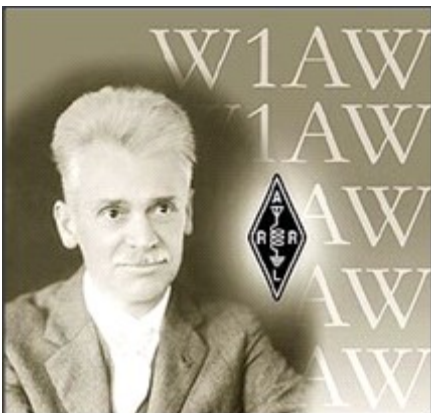
Hmmm...111.5 MHz. Perhaps hams could do that on 2 meters. -- Al Brogdon, W1AB

The ARRL Letter for May 1, 2014

W1AW Centennial Operations Shift States on May 7 (UTC)

The ARRL Centennial [W1AW WAS](#) operations taking place throughout 2014 from each of the 50 states now are in Connecticut (W1AW/1) and Nevada (W1AW/7). The W1AW portable operations will relocate at 0000 UTC on Wednesday, May 7 (the evening of May 6 in US time zones), to Nebraska (W1AW/0). There will be no "second" state that week. The Utah (W1AW/7) operation initially scheduled now will take place starting July 2 (UTC). This will be the second and *final* opportunity to work W1AW from Nebraska for the [ARRL Centennial QSO Party](#) and for the "Worked All States W1AW Award."

During 2014 W1AW will be on the air from every state (at least twice) and most US territories, and it will be easy to work all states solely by contacting W1AW portable operations.



In conjunction with the 100th anniversary of the ARRL, the [ARRL Centennial QSO Party](#) kicked off January 1 for a year-long operating event in which participants can accumulate points and win awards. The event is open to all, although only ARRL members and appointees, elected officials, HQ staff and W1AW are worth ARRL Centennial QSO Party [points](#).

Working W1AW/x from each state is worth 5 points per contact, even when working the same state during its second week of activity.

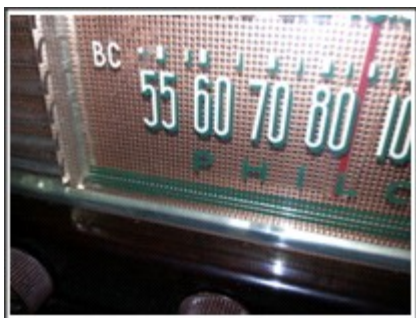
To earn the "Worked all States with W1AW Award," work W1AW operating portable from all 50 states. (Working W1AW or W100AW in Connecticut does *not* count for Connecticut, however. For award credit, participants must work W1AW/1 in Connecticut.) A W1AW WAS certificate and plaque will be available.

The ARRL has posted an ARRL Centennial QSO Party [leader board](#) that participants can use to determine how many points they have accumulated in the Centennial QSO Party and in the W1AW WAS operations. Log in using your Logbook of The World ([LoTW](#)) user name and password, and your position will appear at the top of the leader boards. Results are updated daily, based on contacts entered into LoTW.

Regulatory: AM Broadcasters, Hams Have Common Interest in Cleaning Up Noise Sources

Radio amateurs and AM broadcasters have some common ground in wanting to clean up "a worsening RF noise environment in the AM broadcast band," according to recent [comments](#) filed with the FCC by the Society of Broadcast Engineers ([SBE](#)) on the issue of [revitalizing AM broadcasting](#). ARRL General Counsel Chris Imlay, W3KD, who is also general counsel for the SBE, drafted the remarks.

"There are numerous complaints from Amateur Radio operators of severe interference from power line noise annually," said the SBE comments, filed earlier this year. "Power line radiation in the HF and MF Amateur allocations will in most cases directly translate to preclusive noise in the AM broadcast band. The Commission has relied completely on the good faith efforts of electric utilities to resolve these."



While that approach has succeeded in some cases, Imlay wrote, "more often, utilities do not have available to them -- and are not willing to retain -- persons skilled in RF interference resolution, and the cases at FCC are allowed to languish unresolved for years...without any enforcement action at all." The SBE noted that AM listeners often are in vehicles adjacent to power lines that "frequently radiate RF noise" at levels to make AM reception difficult or impossible.

The SBE comments also pointed to "substantial numbers of complaints of harmful interference to Amateur Radio stations" from LED lighting systems, noting that many RF light bulbs could be within range of a typical AM broadcast receiver in the typical residential neighborhood. Imlay used recent ARRL Laboratory RF lighting test results as one example to illustrate the problem.

The SBE comments cited an RF lighting ballast used for indoor gardening that generated excessive conducted emissions that could "preclude AM broadcast reception over entire residential subdivisions." The ARRL formally [complained](#) about the device to the FCC last month. The SBE also pointed the finger at radiation from unintentional emitters, such as plasma TV sets, and conducted emissions from devices such as pulse-width motor controllers.

"[T]he goal of AM revitalization will never be realized in the medium and long term in the face of the headwind of a worsening RF noise environment in the AM broadcast band," the SBE said, noting that the same concerns apply to all bands between 9 kHz and 30 MHz. "Some regulatory relief is absolutely necessary," the SBE concluded.

The situation may already be improving. Last month the FCC cited a Washington resident for operating an "incidental radiator" -- apparently some sort of lighting device -- that has been causing harmful interference on Amateur Radio frequencies. The Commission has ordered the individual to stop using the device. Read [more](#).



On the Air: Armed Forces Day 2014 Cross-Band Communications Test Set for May 10

The 2014 Armed Forces Day Cross-Band [Communications Test](#) will take place on Saturday, May 10. The US Army, Air Force, Navy, Marine Corps, and Coast Guard co-sponsor the annual Amateur Radio/US military communication test. The 64th Armed Forces Day officially takes place on May 17, but the Armed Forces Day radio event will take place a week earlier, on May 10, to avoid conflicting with [Dayton Hamvention](#)®. The on-the-air celebration features traditional military-to-Amateur Radio cross-band communication on both SSB and CW. Some activity will continue into the early hours of Sunday, May 11 (UTC). Most activity gets underway at 1200 UTC.

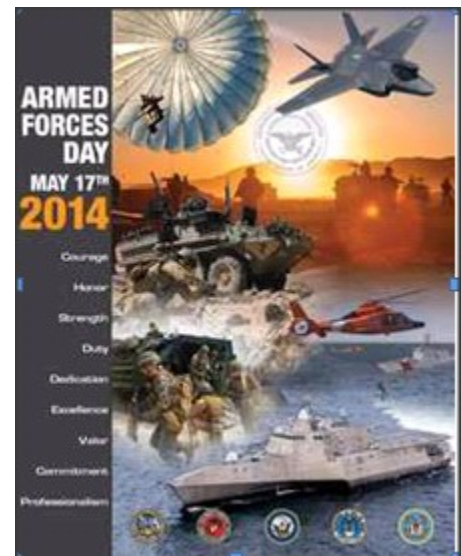
"These tests give Amateur Radio operators and Short Wave Listeners (SWLs) an opportunity to demonstrate their individual technical skills, and to receive recognition from the appropriate military radio station for their proven expertise," the Armed Forces Day Cross-Band Communication Test announcement said. "QSL cards will be provided to those stations making contact with the military stations."

More than 20 military stations representing all of the services and in various parts of the Continental US, as well Hawaii (ABH), Okinawa (ADB) and Guam (NRV) are expected to be on the air, transmitting on military frequencies outside the Amateur Radio bands and listening for calls within Amateur Radio bands. Some military stations may not be on the air for the entire event, depending on propagation and station staffing.

Participating military stations will transmit on selected Military Auxiliary Radio Service (MARS) frequencies and listen for Amateur Radio stations in certain bands and frequencies, depending on the station. The military stations have asked that radio amateurs limit voice contacts to no longer than a couple of minutes. Some military stations will use CW. Much of the activity will involve frequencies outside the 80, 40, and 20 meter bands.

Participating US Army Stations will include WAR at the Pentagon, as well as AAZ, AAC, ABH, ADB, and WUG-23; US Air Force stations AIR, AGA2SY, AGA4AR, AGA5SC, and ARA9TR, and US Navy-Marine Corps stations NBL, NMC1, NMN, NNN0ASF, NNN0CQQ, NPD, NRV, NUW, NWKJ, and NWVC.

The annual event also includes the US Secretary of Defense message test, which will be transmitted in various digital modes. Stations will use RTTY, CW, PSK31, PACTOR, AMTOR (FEC), MT63, and other digital modes to transmit the message. A certificate is available for stations correctly copying the message. Read [more](#).



Questions for Extra Class License

1. (E1A04) With your transceiver displaying the carrier frequency of phone signals, you hear a DX station calling CQ on 3.601 MHz LSB. Is it legal to return the call using lower sideband on the same frequency?
 - A. Yes, because the DX station initiated the contact
 - B. Yes, because the displayed frequency is within the 75 meter phone band segment
 - C. No, my sidebands will extend beyond the edge of the phone band segment
 - D. No, USA stations are not permitted to use phone emissions below 3.610 MH
2. (E2B12) How are analog SSTV images typically transmitted on the HF bands?
 - A. Video is converted to equivalent Baudot representation
 - B. Video is converted to equivalent ASCII representation
 - C. Varying tone frequencies representing the video are transmitted using PSK
 - D. Varying tone frequencies representing the video are transmitted using single sideband
3. (E3A09) Which of the following frequency ranges is well suited for meteor-scatter communications?
 - A. 1.8 - 1.9 MHz
 - B. 10 - 14 MHz
 - C. 28 - 148 MHz
 - D. 220 - 450 MHz
4. (E4B08) Which of the following is a characteristic of a good DC voltmeter?
 - A. High reluctance input
 - B. Low reluctance input
 - C. High impedance input
 - D. Low impedance input
5. (E5C11) What do the two numbers represent that are used to define a point on a graph using rectangular coordinates?
 - A. The magnitude and phase of the point
 - B. The sine and cosine values
 - C. The coordinate values along the horizontal and vertical axes
 - D. The tangent and cotangent values
6. (E6B12) What is one common use for PIN diodes?
 - A. As a constant current source
 - B. As a constant voltage source
 - C. As an RF switch
 - D. As a high voltage rectifier
7. (E7C07) What kind of filter would you use to attenuate an interfering carrier signal while receiving an SSB transmission?
 - A. A band-pass filter
 - B. A notch filter
 - C. A Pi-network filter
 - D. An all-pass filter
8. (E8B12) What is digital time division multiplexing?
 - A. Two or more data streams are assigned to discrete sub-carriers on an FM transmitter
 - B. Two or more signals are arranged to share discrete time slots of a data transmission
 - C. Two or more data streams share the same channel by transmitting time of transmission as the sub-carrier
 - D. Two or more signals are quadrature modulated to increase bandwidth efficiency
9. (E9F13) What impedance does a 1/4-wavelength transmission line present to a generator when the line is shorted at the far end?
 - A. Very high impedance
 - B. Very low impedance
 - C. The same as the characteristic impedance of the transmission line
 - D. The same as the generator output impedance
10. (E0A02) When evaluating RF exposure levels from your station at a neighbor's home, what must you do?
 - A. Make sure signals from your station are less than the controlled MPE limits
 - B. Make sure signals from your station are less than the uncontrolled MPE limits
 - C. You need only evaluate exposure levels on your own property
 - D. Advise your neighbors of the results of your tests

(For answers to test questions see page 12)

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Answers to questions on page 11: 1-C, 2-D, 3-C, 4-C, 5-C, 6-C, 7-B, 8-B 9-A, 10-B

