



ARES COMMUNICATOR

Information for Scott County Amateurs

Happy Easter!



April, 2007

Accurate, Reliable Emergency Communications

Volume 7, Number 4

Know Your Operating Privileges!

Misconceptions About Regarding Tech HF Privileges

Some Technician licensees who gained new privileges February 23 remain unaware or uninformed as to what they may and may not do on the HF bands, says ARRL Regulatory Information Specialist Dan Henderson, N1ND. In addition to all Amateur Radio operating privileges above 50 MHz, Technicians who never passed a Morse code test now have CW privileges on certain segments of 80, 40 and 15 meters plus CW, RTTY, data and SSB privileges on certain segments of 10 meters. And that's it. He says some Technicians apparently believe their new HF phone privileges go far beyond what they really have.

"Technicians have no phone privileges on any HF band other than 10 meters, period!" Henderson emphasizes. "That's the bottom line. If you want to operate phone on the other HF bands, you'll have to upgrade to General or Amateur Extra class."

A lot of Technician licensees appear to have done just that, according to statistics compiled by Joe Speroni, AH0A <<http://ah0a.org/FCC/Licenses.html>>. So far in March, the number of General class licensees is up by more than 2700 over the February figure to 134,173, after hitting a 5-year low of just under 131,000 in January. The number of Technicians dropped by 4655 in the same period to 318,838. Speroni notes, however, that his mid-month figures tend to underestimate actual totals.

Most Technician license holders face a learning curve to take advantage of their new CW privileges on HF, but they no longer have to pass a Morse code examination. Technicians also may use their new HF privileges without having to apply for them first. No other license class automatically

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Amateur Radio Activity Shut Down In Iraq

Iraq Amateur Radio Society (IARS) President Diya Sayah, Y11DZ, has informed ARRL, on March 14, 2007, that all Amateur Radio activity in Iraq has been suspended until the security situation there improves.

Sayah says the suspension affects both Iraqi citizens as well as any foreigners, including military personnel and contractors — who have been on the air from Iraq identifying with YI9-prefix call signs. It does not affect the operation of Military Affiliate Radio System (MARS) stations, however, since they operate on military frequencies, not amateur frequencies. The IARS is informing its member to stay off the air, although some Voice over Internet Protocol (VoIP) modes like IRLP and EchoLink still are okay to use, as long as they don't involve transmitting a signal over the air.

The request to halt all ham radio activity and the issuance of licenses in Iraq originated with a letter from the Iraqi Ministry of Defense to Iraqi Prime Minister Nouri al-Maliki as part of the new Baghdad security plan, Sayah said. He received subsequent confirmation via the Ministry of Higher Education and Scientific Research to shut down ham radio activity, although he allows for a possible misunderstanding on the part of government officials as to the nature and

Iraq Shutdown cont'd page 2

ARES Activities

**Weekly Net Monday 7 PM 146.535 mhz (s)
 Breakfast Saturday, April 14th**

SELECTED TRAFFIC NETS

Designator	Freq.	Local Times	
MN Phone	3.860Mhz	Noon, 5:30pm	Daily
MN CW	3.605Mhz	6:30pm, 9:50pm	Daily
ARES			
Scott ARES	146.535 S	7:00pm	Monday
Carver ARES	147.165+	8:30pm	Sunday
Neighboring Nets			
North Dakota	3.937Mhz	6:30pm	Daily
South Dakota	3.870Mhz	6:00pm	Daily
Wisconsin	3.985Mhz	5:30pm	Daily

Iraq Shutdown *cont'd from pg 1*

purpose of Amateur Radio.

"I'm waiting an answer from the Office of Prime Minister, because I requested a meeting with him through e-mail," Sayah told the League. He said the government expressed concerns over the difficulty of identifying "enemy" as opposed to "friendly" radio traffic, the potential for revealing military movements via radio and eavesdropping.

Sayah said the government also wanted radio amateurs in Iraq to send all ham radio equipment to the IARS until the security situation improved, but he's advising hams in Iraq to hang onto their gear. "Because we had the security plan going, no one can carry his equipment, and all checkpoints belongs to the Ministry of Defense," he said. "Besides, the location of our Society is not safe to keep members' equipment in one place."

Sayah also has reached out to the worldwide Amateur Radio community to use its influence to reverse the Iraqi government policy.

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Privileges *cont'd from pg 1*

acquired additional privileges February 23. The "omnibus" rule changes effective last December 15 did not give Technician licensees without Morse code credit any additional privileges either.

Henderson further warns new Techs not to extrapolate additional phone privileges by misconstruing the FCC Part 97 rules to mean something they don't.

"Calls I've been getting lately indicate that some misinformed individuals believe Technicians may operate 'digital voice' on 80, 40 and 15, where they have only CW privileges," he says. "Not true. Digital voice is really digitized voice, and it's not permitted in non-phone band segments."

Henderson reiterates that Technicians do not have FM voice privileges on 10 meters — or on any other HF band, for that matter.

The HF privileges all Technicians now have are equivalent to those that Novice licensees enjoy, Henderson notes. "This also means the 200 W maximum power limit still applies, regardless of where you operate in the HF bands," he says. Technicians may operate at up to the legal limit on VHF and UHF, however.

On 10 meters, Technician and Novice licensees have CW, RTTY and data privileges from 28.000 to 28.300 MHz, and CW and SSB privileges from 28.300 to 28.500 MHz. "We're sorry that the sunspots aren't favoring 10 meters at this point in the sunspot cycle, but they will in a few years," Henderson allowed.

In addition, Technicians and Novices have CW — and only CW — privileges on from 3.525 to 3.600 MHz on 80 meters, from 7.025 to 7.125 MHz on 40 meters and 21.025 to 21.200 MHz on 15 meters.

Henderson believes at least some of the confusion may have originated with a few brand-new or inexperienced Technician licensees who heard that the FCC deleted the Morse code requirement to obtain an Amateur Radio license, but paid little attention to the fine print.

"And we all know the devil's in the details," Henderson says. "Remember, the FCC requires you to know where you may and may not operate and with what modes. Stick to the privileges your license allows or risk hearing from the FCC."

To download a chart showing the revised privileges, go to <http://www.arrl.org/FandES/field/regulations/bands.html>.

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Solar Storm Warning

from Science@NASA.com

It's official: Solar minimum has arrived. Sunspots have all but vanished. Solar flares are nonexistent. The sun is utterly quiet. Like the quiet before a storm.

In early March researchers announced that a storm *is* coming—the most intense solar maximum in fifty years. The prediction comes from a team led by Mausumi Dikpati of the National Center for Atmospheric Research (NCAR). “The next sunspot cycle will be 30% to 50% stronger than the previous one,” she says. If correct, the years ahead could produce a burst of solar activity second only to the historic Solar Max of 1958.

That was a solar maximum. The Space Age was just beginning: Sputnik was launched in Oct. 1957 and Explorer 1 (the first US satellite) in Jan. 1958. In 1958 you couldn't tell that a solar storm was underway by looking at the bars on your cell phone; cell phones didn't exist. Even so, people knew something big was happening when Northern Lights were sighted three times *in Mexico*. A similar maximum now would be noticed by its effect on cell phones, GPS, weather satellites and many other modern technologies.

Dikpati's prediction is unprecedented. In nearly-two centuries since the 11-year sunspot cycle was discovered, scientists have struggled to predict the size of future maxima—and failed. Solar maxima can be intense, as in 1958, or barely detectable, as in 1805, obeying no obvious pattern.

The key to the mystery, Dikpati realized years ago, is a conveyor belt on the sun.

We have something similar here on Earth—the Great Ocean Conveyor Belt, popularized in the sci-fi movie *The Day After Tomorrow*. It is a network of currents that carry water and heat from ocean to ocean. In the movie, the Conveyor Belt stopped and threw the world's weather into chaos.

The sun's conveyor belt is a current, not of water, but of electrically-conducting gas. It flows in a loop from the sun's equator to the poles and back again. Just as the Great Ocean Conveyor Belt controls weather on Earth, this solar conveyor belt controls weather on the sun. Specifically, it controls the sunspot cycle.

Solar physicist David Hathaway of the National Space Science & Technology Center (NSSC) explains: “First, remember what sunspots are—tangled knots of magnetism generated by the sun's inner dynamo. A typical sunspot exists for just a few weeks. Then it decays, leaving behind a

‘corpse’ of weak magnetic fields.” Enter the conveyor belt.

“The top of the conveyor belt skims the surface of the sun, sweeping up the magnetic fields of old, dead sunspots. The ‘corpses’ are dragged down at the poles to a depth of 200,000 km where the sun's magnetic dynamo can amplify them. Once the corpses (magnetic knots) are reincarnated (amplified), they become buoyant and float back to the surface.” Presto—new sunspots!

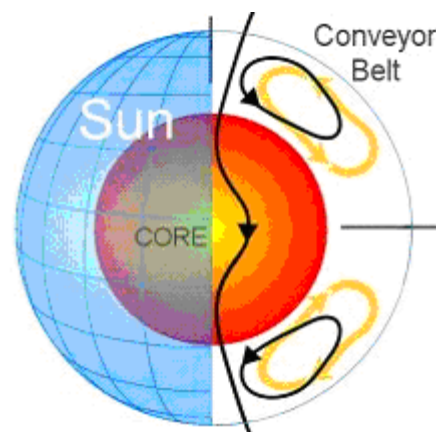
All this happens with massive slowness. “It takes about 40 years for the belt to complete one loop,” says Hathaway. The speed varies “anywhere from a 50-year pace (slow) to a 30-year pace (fast).”

When the belt is turning “fast,” it means that lots of magnetic fields are being swept up, and that a future sunspot cycle is going to be intense. This is a basis for forecasting: “The belt was turning fast in 1986-1996,” says Hathaway. “Old magnetic fields swept up then should re-appear as big sunspots in 2010-2011.”

Like most experts in the field, Hathaway has confidence in the conveyor belt model and agrees with Dikpati that the next solar maximum should be a doozy. But he disagrees with one point. Dikpati's forecast puts Solar Max at 2012. Hathaway believes it will arrive sooner, in 2010 or 2011.

“History shows that big sunspot cycles ‘ramp up’ faster than small ones,” he says. “I expect to see the first sunspots of the next cycle appear in late 2006 or 2007—and Solar Max to be underway by 2010 or 2011.”

Who's right? Time will tell. Either way, a storm is coming.



BREAK - OVER



500 KHZ EXPERIMENT LOGS THOUSANDS OF ACTIVITY HOURS

Possible New Regional Emergency Frequency

ARRL 500 kHz Experiment Fritz Raab, W1FR, reports that a total of 16 participating stations have been active on the air since the experiment got under way in late 2006. The FCC Office of Engineering and Technology granted the WD2XSH experimental license to the ARRL last September. Raab says the low-frequency investigation has demonstrated ground-wave communication at distances of 100 miles in New England, in the Gulf Coast states and in Colorado.

"This might not sound very dramatic, but it is very important, as no current amateur band has the capability for beyond-line-of-sight communication that does not depend upon the whims of the ionosphere," Raab told ARRL Headquarters. In his second quarterly Project Status Report, Raab noted that during the past three months, WD2XSH participants have racked up another 2250 hours of operation, bringing the total to 4629. As of the end of February, the project had recorded 75 two-way contacts and more than 3100 reception reports via its Web site.

Raab says most of the records for QSO and reception distances set in the experiment's first three months have not been broken. "The longest distance over which a QSO has been maintained is 884 miles — from New Hampshire to Tennessee," he notes. WD4XSH/10 (W4DEX operator) completed a crossband (500 kHz/137 kHz) QSO with WD2XNS (W1VD operator) in Connecticut. Stations have been using CW or very slow-speed CW (QRSs).

Even daylight contacts have been completed via ground wave. These include a 127-mile path between Massachusetts and Connecticut and an 87-mile path between Mississippi and Louisiana. "The Mississippi-Louisiana link has proven reliable multiple times at all times of the day or night," he commented. Daytime ground wave reception also has been reported over paths of 25 miles and 150 miles.

"These QSOs and reception reports provide preliminary verification of the capability for amateurs to use this band for regional emergency communication that does not depend upon the ionosphere," Raab said.

SM6BHZ in Sweden has been authorized to operate from 505.0 to 505.2 kHz. Two German experimental stations that had been operating in the vicinity of 400 kHz have shifted to 500 kHz too. "We moved our operations up 200 Hz to create a 'DX Window' for them," Raab said. "The UK is now issuing special permits for 501-504 kHz."

Raab says the WD2XSH participants plan to continue their current operating pattern through the end of May. "We are

trying designated QSO nights to increase the number of contacts," he pointed out. "Given successful completion of the third quarter, we would like to begin use of PSK/FSK/MSK31. Since these signals fit within the spectrum of the currently authorized CW signal, we should be able to use these digital modes by simply filing notice under Section 5.77 of the FCC rules."

Because a few of the original WD2XSH stations no longer are able to participate, Raab says he's looking into adding other stations to the list of those authorized to operate under the experimental license. "At present, nearly two dozen amateurs have submitted information forms with the hope of being added to the license," he notes. Criteria for additional participants include expansion of geographic coverage, expansion of ground wave tests, narrowband digital-mode capability and an on-going ability to contribute to the experiment.

The two-year WD2XSH authorization permits experimentation and research between 505 and 510 kHz using narrowband modes at power levels of up to 20 W effective radiated power (ERP).

Important WD2XSH Frequencies: CW beacons: 505.300-506.300 kHz; QRSs operation: 505.250-505.255 kHz, and calling frequency: 507.5 kHz (band center).

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Although the origin of playing practical jokes and pranks on this day is hazy, many folklorists believe that it may go back to 16th-century France. At that time, New Year's Day was March 25, with a full week of partying and exchanging gifts lasting until April 1. In 1582, the Gregorian calendar moved New Year's Day back to January 1. Those who forgot or refused to honor the new calendar were the butts of jokes and ridicule.

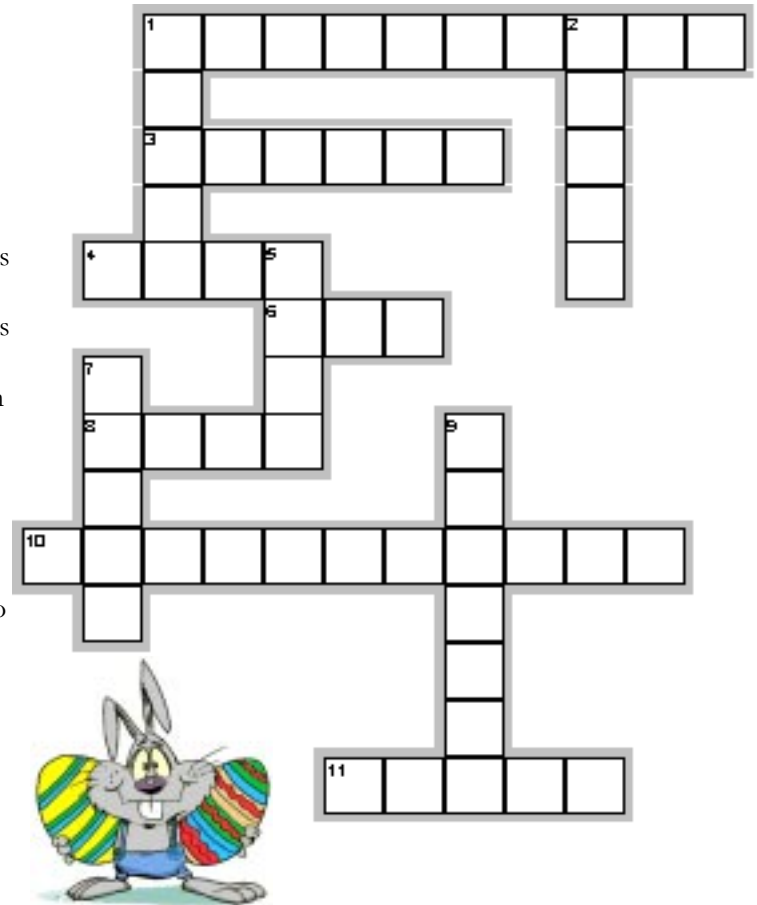
DIRECTED NET OPERATIONS

Across

1. The item in a message preamble that indicates the importance of the message.
3. A _____ is one item you should always have when participating in a directed net.
4. Proword used to indicate punctuation in a message text.
6. Proword used at the end of a transmission when a reply is not expected.
8. Proword used at the end of a transmission when a reply is expected.
10. In station to station contact in a directed net, the station _____ is the first to respond.
11. The item in the message preamble that indicates the number of items in the message text.

Down

1. Another item you should always have when checking into a directed net.
2. Station in charge of a directed net.
5. FCC rules only require you to identify this station: _____ station.
7. Proword indicating I understand your transmission.
9. A message dealing with the condition of Aunt Millie and Uncle Fred.



Oscilloscope Basics Solution

March Crossword Puzzle

Across

1. WAVEFORM—A graphic representation of a voltage varying over time.
5. OSCILLOSCOPE—An instrument used to make voltage changes visible over time.
7. PHASE—The amount of time that passes from the beginning of a cycle to the beginning of the next cycle, measured in degrees.
10. AMPLITUDE—The magnitude of a quantity or strength of a signal. Usually refers to voltage or power.
12. PULSE—A common waveform shape that has a fast rising edge, a width, and a fast falling edge.
15. RISETIME—The time taken for the leading edge of a pulse to rise from its low to its high values, typical measured from 10% to 90%.
16. DIGITAL—A type of 'scope that uses an ADC to convert the measured voltage into digital information.
17. GRATICULE—The grid lines on a screen for measuring oscilloscope traces.

Down

2. ANALOG—A type of oscilloscope that creates a waveform display by applying the input signal to the vertical axis of an electron beam moving across a CRT screen from left to right.
3. FOCUS—The 'scope control that adjusts the cathode ray tube electron beam to control the sharpness of the display.
4. FREQUENCY—The number of times a signal repeats in one second, measured in Hertz.
6. SWEEP—One horizontal pass of an o'scope's electron beam from the left to right across the CRT screen.
8. ALTERNATING—A signal in which the current and voltage vary in a repeating pattern over time.
9. TRIGGER—The circuit that references a horizontal sweep on an o'scope.
11. BANDWIDTH—A frequency range, usually limited by -3db.
13. LOADING—The unintentional interaction of the probe and 'scope with the circuit being tested, distorting the signal.
14. TRACE—The visible shapes drawn on a CRT by the movement of the electron beam.



New LED

Next generation of LEDs developed

U.S. government scientists are experimenting with polymers and organic molecules in projects designed to create more efficient light-emitting diodes. Researchers at the U.S. Department of Energy's Oak Ridge National Laboratory, in collaboration with the University of Tennessee, believe the thin films of polymers will improve the next generation of LED devices.

At ORNL, researchers are developing electrodes composed of carbon nanotubes and magnetic nanowires to enhance the light emission from polymer-based organic LEDs — those made from carbon-based molecules and not semiconductors. In early tests, carbon nanotubes improved the electroluminescence efficiency of polymer LEDs by a factor of four and reduced the energy required to operate them. Magnetic nanowires and dots have been shown to help control the spin of electrons injected into the LEDs to further improve efficiency and reliability.

The researchers hope to create a technology that consumes less than half the power of today's LEDs and opens the door for their practical use in household lighting.

BREAK - OVER

Forecasting the Weather?



Weather folklore often involves "reading" the sky, colors of clouds, and wind patterns. Here are a few examples.

The higher the clouds, the finer the weather.

If you spot wispy, thin clouds up where jet airplanes fly, expect a spell of pleasant weather.

When clouds appear like towers, the earth is refreshed by frequent showers.

When you see large, cauliflower-like clouds that look like castles in the sky, there is a lot of "dynamic" weather going on inside.

Smorgasbord of clouds. Expect rain or snow.

If you have what amounts to a hodgepodge of all different types of clouds before you, weather is arriving from all different directions. That chaotic sky usually signals rain or snow.

Ring around the Moon? Rain real soon.

A ring around the Moon usually indicates an advancing warm front, which means precipitation. Under those conditions, high, thin clouds get lower and thicker as they pass over the Moon. Ice crystals are reflected by the Moon's light, causing a halo to appear.

BREAK - OVER

World's Worst Communications Predictions?

* Theoretically, television may be feasible, but I consider it an impossibility - a development which we should waste little time dreaming about." Lee de Forest in 1926, inventor of the cathode ray tube.

* "I think there is a world market for maybe five computers ... " Thomas J. Watson in 1943, Chairman of the Board of IBM.

* "This 'telephone' has too many shortcomings to be seriously considered as a means of communication. The device is inherently of no value to us." Western Union internal memo in 1876.

* "640 Kilobytes ought to be enough (memory) for anybody." Bill Gates in 1981.

And then there's the thoughts of the perennial early 1920's radio amateurs whose names have long ago been forgotten but his words live on: "All a ham needs to work DX is a good rotary spark gap, a lively piece of Galena crystal for a receiver, some wire on the roof and a lot of luck."

BREAK - OVER

Mental Exercise March Solution

1. neon light (knee-on-light)
2. six feet underground
3. he's by himself
4. backward glance



ARES Breakfast

Saturday April 14th
7:30AM
Perkins Restaurant
Savage, MN

NECOS Schedule - April, 2007

2 Apr	K0KTW Pat
9 Apr	N0PI Dan
16 Apr	WONFE Bob
23 Apr	KB0FH Bob
30 Apr	K0KTW Pat
7 May	N0PI Dan