



ARES COMMUNICATOR

Information for Scott County Amateurs



August, 2010

Accurate, Reliable Emergency Communications

Volume 10, Number 8

BSA Jamboree on the Air

The National Scout Jamboree takes place July 26-August 4 at Fort AP Hill, Caroline County, Virginia. A myriad of exhibits and activities await the close to 40,000 Scouts, leaders and staff. Coming from all 50 states, territories and foreign countries, they will have the opportunity to live, work and play together in an atmosphere of Scouting fellowship. And just like the National Scout Jamborees in 1973, 1981, 1985, 1989, 1993, 1997, 2001 and 2005, the 2010 event will feature Amateur Radio.

A team of 17 Scouters and two Scouts will activate K2BSA as a demonstration station at the Jamboree. According to K2BSA Staff Member Larry Wolfgang, WR1B, they will be demonstrating various operating modes to the visiting Scouts, with activity primarily on HF, around the published Scout frequencies. Wolfgang is the ARRL Liaison to the National Scout Jamboree. Another group of 17 Scouters and one Scout will assist other Scouts in earning the Radio merit badge, while seven Scouters will be offering classes and will help administer Amateur Radio licensing exams.

K2BSA will also operate an EchoLink station at the Jamboree on 444.425 MHz simplex, with a CTCSS tone of 100 Hz on the Jamboree equipment. The EchoLink node number is 307770 and the IRLP node number is 3011.

"We will also be on the air via D-STAR from the Jamboree site," Wolfgang said. "We will be using the WS4VA 2 meter repeater (145.320 MHz, -600 kHz split), located 35 miles north of us in Stafford, Virginia, which in turn will be connected to D-STAR Reflector 30B." There will be a Jamboree Net at 1900 (local time) each evening. You can see the antenna set up at this site: <http://www.arrl.org/images/view/News/k2bsa-layout-ants.JPG>

BREAK - OVER

This is NOT a Drill!

Just two days before the start of Field Day, Amateur Radio operators in south central Pennsylvania were manning their positions for a regularly scheduled bi-annual exercise involving the Peach Bottom Atomic Power Station located on the Susquehanna River. The drill is required as part of the licensing process for the power plant.

"Nuclear power plants have got to do well in emergency planning as part of their licensing requirements", said Daniel Sullivan, Eastern Pennsylvania ARES Dist 5 Emergency Coordinator. "For hams to shine in that setting is more important than Field Day to show community or agency leaders within the public safety community what we can do when we apply ourselves."

Many of the Amateur Radio operators participating in the drill had been involved with previous drills and most thought they knew what to expect. However, Mother Nature injected severe weather along with National Weather Service issued tornado and severe thunderstorm warnings. Within 15 minutes of the warnings being issued, Lancaster County ARES EC Ron Small, and Lancaster County RACES Officer Chris Bunting, were reporting that commu-

NOT a Drill cont'd on page 3

ARES Activities

Weekly Net Monday 7 PM 146.535 mhz (s)

Breakfast Saturday, August 14th

Digital Monday August 16th

SELECTED TRAFFIC NETS

Designator	Freq.	Local Times	
MN Phone	3.860Mhz	Noon, 5:30pm	Daily
MNCW	3.605Mhz	6:30pm, 9:50pm	Daily

ARES

Scott ARES	146.535 S	7:00pm	Monday
Carver ARES	147.165+	8:30pm	Sunday
Bloomington	147.090+	9:00pm	Sunday

Neighboring Nets

North Dakota	3.937Mhz	6:30pm	Daily
South Dakota	3.870Mhz	6:00pm	Daily
Wisconsin	3.985Mhz	5:30pm	Daily

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

EDITOR: Bob Reid, Scott County Emergency Coordinator
 Snail Mail: 13600 Princeton Circle
 Savage, MN. 55378

E-Mail: N0BHC@aol.com

Phone: Home 952-894-5178 Portable 612-280-9328

Reader submissions encouraged!

Monster Ham

TNX N1UW

Most folks don't know it, but Herman Munster was a HAM RADIO OPERATOR! In episode number 18, which first aired on January 21, 1965 Herman is goofing around with his ham radio set (which is apparently a homebrew -naturally- transceiver with headphones, microphone, large horn style speaker, a large quantity of tubes, one HUGE tube and a bank of dry cell batteries) when he overhears some kids playing Martian with their walkie-talkies. Naturally the kids lead Herman and Grandpa into thinking there really ARE Martians on Earth, and being good citizens they notify the air force. Most significant trivia we learn from this episode is Herman's call: W6XRL4 Here is a rare copy of Herman's QSL card:



Scott County ARES Contacts

Emergency Coordinator
Bob Reid NOBHC
13600 Princeton Circle
Savage, MN 55378
952-894-5178
NOBHC@arrl.net

Asst. Emergency Coordinator
Bob Minor WONFE
5210 West 141st Street
Savage, MN 55378
952-894-2657
WONFE@arrl.net

Asst Emergency Coordinator
Daniel Vande Vusse NOPI
5722 West 141st Street
Savage, MN 55378
952-440-1878
NOPI@arrl.net



Test Your NIMS Knowledge

ARES members are familiar with the Incident Command System from their study of the FEMA Institute courses. Now it is time to see how much you remember from those courses! Each month you will have the opportunity to test your ICS knowledge on a questions dealing with one ICS area.

This month we will take a look at some of the concepts from the IS-100 course, Introduction to Incident Command System. This is the first of the FEMA courses all ARES members must complete before participating in any response activities. You can find the course materials at this site: <http://training.fema.gov/EMIWeb/IS/is100.asp>. Now, test your knowledge of the ICS.

Here is the question for this month:

After check-in, you should:

- A. Arrange personal items needed for your estimated length of stay
- B. Determine your return mode of transportation.
- C. Report to the command post
- D. Locate your incident supervisor and obtain your initial briefing

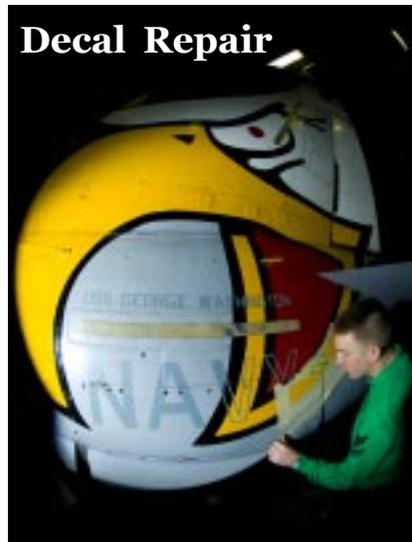
Check next month's ARES Communicator for the solution

July NIMS Knowledge Solution

There is no correlation between the ICS organization and the administrative structure of any single agency or jurisdiction. This is deliberate because:

- C. Confusion between agency position titles/organizational structures and the ICS structure needs to be avoided.

Decal Repair



PACIFIC OCEAN- Aviation Structural Mechanic 2nd Class Carl Service, from Long Beach, Calif., prepares for a decal repair on an F/A-18C Hornet assigned to the Dambusters of Strike Fighter Squadron (VFA) 195, embarked aboard the aircraft carrier USS George Washington (CVN 73).

This is NOT a Drill - cont'd from page 1

nications went down just before the drill began and remained out during the drill in some municipalities due to storm damage to the telecommunications infrastructure.

Amateur Radio operators who were pre-positioned to support the drill integrated SKYWARN operations into the drill's RACES net. In Drumore Township, Lancaster County, Small became the only reliable communications at the municipal EOC when commercial communications networks went down. He reported that fax and telephone were intermittent and other communications systems were not operational due to the storms.

Bunting said he heard the weather alert on the local repeater. "When I heard a tornado warning being broadcast for Southern Lancaster County, I decided that we must start a "hybrid net" and start SKYWARN operations while preparing for the Peach Bottom drill." When the first operator arrived at Lancaster County EOC, he set up net control, and began the SKYWARN net. Bunting announced that this would be a hybrid net, looking for weather reports from operators in the field. He immediately received a report of "golf ball sized" hail in the southern end of the county. This information was passed on to Randy Gockley, the Lancaster County Emergency Management Coordinator, who in turn contacted the National Weather Service. Meteorologists at the weather service indicated that there was a strong possibility of a tornado in the southern end of the county.

Acting quickly, Gockley decided to activate the emergency warning sirens in the southern part of Lancaster, to warn civilians of the impending danger. Net control immediately notified all stations that this would be occurring, and the RACES personnel at each municipal EOC notified the staff. For some EOCs, this was the only method of communication to let them know why the sirens were sounding, as there were power outages and telephony outages throughout the area. RACES operators continued to pass on vital storm information to net control until the storms had passed.

The NWS confirmed that an EF-0 tornado occurred near Hershey, home of Hershey chocolates and a large amusement park. Winds reached 80 miles per hour. Damage ranged from downed trees to roofs ripped off of several homes. The severe storm uprooted trees and knocked down power lines as it continued towards Philadelphia.

The Peach Bottom drill quickly started after the threat of severe weather passed; however, telecommunications and power outages were still affecting multiple EOCs. Part of Lancaster County's RACES pre-planning involved making sure all operators have battery power/generator, radios,

power supplies and antennas with them, and to be prepared to operate independently of any infrastructure in place. In this case, the pre-planning paid off, as all stations were operating regardless of the power outages at the municipal EOCs. Many locations were having problems sending or receiving faxes, phone calls, and power. RACES maintained the constant contact needed to play out the drill. Near the end of the drill, Randy Gockley, EMC Lancaster, stated that "RACES was a godsend tonight."

York County operators did not report any weather impact on their ARES/RACES and SKYWARN operations. They did suffer severe weather and at least one fire was reported during the storms, which did impact the drill. At one EOC almost everyone left to fight fires. The EOC was then staffed by four hams. Drill observers provided good feedback on the hams' ability to adapt to the situation. Alan Frame, said power went out at two local EOCs where hams were stationed.

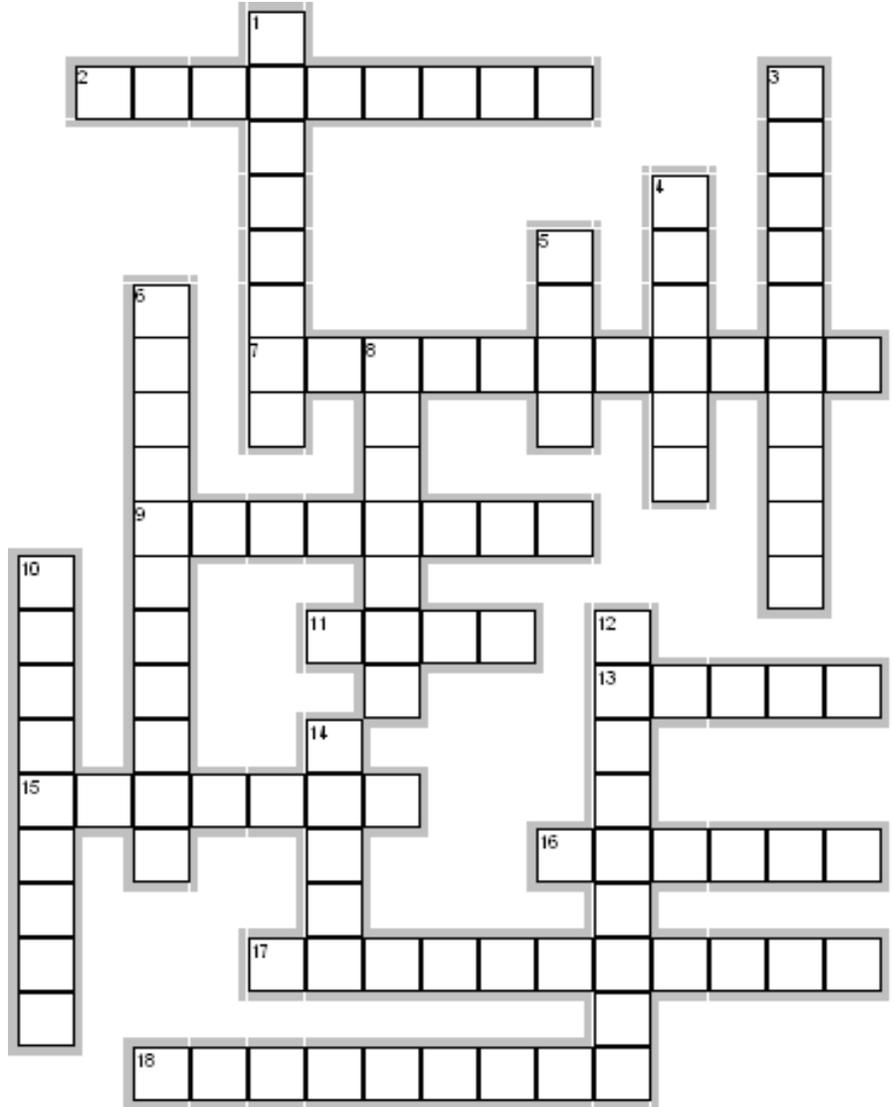
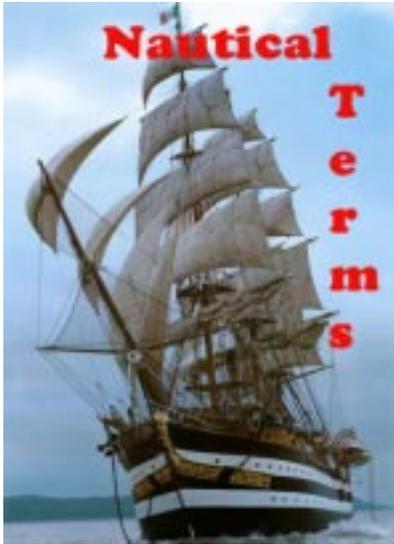
In Fawn Township, York County, EOC staff members commented that the drill seemed quiet and slow. It was brought to their attention that most of the communication was done by the radio amateurs (who were in another room) and via fax. The telephones were not ringing off the hook. Most of the Amateur Radio communications was sent/receive via FLDIGI using BPSK250. Jack Dellinger, explained "We would receive the message and cut/paste it into Notepad to print. We have also developed a program that allows text entry in the format used by York County ISC-213 format. We had 100% perfect copy on all messages. The County EOC and two local EOCs were active on digital modes."

Pennsylvania Emergency Management Agency (PEMA) officials thanked the radio amateurs for a job well done. "The professionalism and actions of all the volunteers involved," said Chris Snyder, Acting Commonwealth Auxiliary Communications Systems Coordinator, "clearly demonstrate the value they bring as a communications resource to the emergency management community."

Henry C. Tamanini, Chief, Technological Hazards Division, of PEMA's Bureau of Strategic and Operational Plans said "Your dedication to providing valuable emergency communications was certainly proven when Mother Nature transitioned the majority of the exercise area/Emergency Planning Zone from the exercise mode of the nuclear power plant to the real-world mode."

BREAK - OVER





Across

- 2. When a ship (while afloat) touches the bed of the sea.
- 7. An imperative to leave the vessel immediately, usually in the face of some imminent danger.
- 9. The part of the hull between the water-line and the deck.
- 11. The horizontal spar from which a square sail is suspended.
- 13. Stop! Cease or desist from whatever is being done.
- 15. The compartment reserved for medical purposes.
- 16. A unit of length, normally equal to three nautical miles.
- 17. A timekeeper accurate enough to be used to determine longitude by means of celestial navigation.
- 18. A vertical post near a deck's edge that supports life-lines. A timber fitted in between the frame heads on a wooden hull or a bracket on a steel vessel, approx one meter high, to support the bulwark plank or plating and the rail.

Down

- 1. An upright wall within the hull of a ship. Particularly a watertight, load-bearing wall.
- 3. A non-commissioned officer below the rank of Lieutenant. Usually regarded as being "in training" to some degree. Also known as 'Snotty'.

- 4. The person who buys, stores and sells all stores on board ships, including victuals, rum and tobacco.
- 5. A cry to draw attention. Term used to hail a boat or a ship.
- 6. The aftermost deck of a warship.
- 8. Senior naval officer of Flag rank. Derivation Arabic, from Amir al-Bahr ("Ruler of the sea").
- 10. A chunk of sandstone used to scrub the decks.
- 12. A sailor that was stationed in the crow's nest.
- 14. A period of time during which a part of the crew is on duty. Changes are marked by strokes on the ship's bell.

There are **10** types of people in this world:
those who understand binary, and those who don't.



FCC Okays Employee Participation in Drills

ARRL Letter 07/16/2010

In a *Report and Order* released Wednesday, July 14, the FCC amended Part 97.113 to allow amateurs to participate without an FCC waiver in government-sponsored disaster preparedness drills on behalf of their employers participating in the exercise. The FCC also has amended the rules to allow employees to participate in non-government drills and exercises up to one hour per week and up to two 72-hour periods during the year.

“Experience has shown that amateur operations can and have played an essential role in protecting the safety of life and property during emergency situations and disaster situations,” the FCC noted in the *Re&O*. “Moreover, the current Amateur Radio Service rules, which permit participation in such drills and tests by volunteers (*ie*, non-employees of participating entities), reflect the critical role Amateur Radio serves in such situations. However, as evidenced by recent waiver requests, state and local government public safety agencies, hospitals and other entities concerned with the health and safety of citizens appear to be limited in their ability to conduct disaster and emergency preparedness drills, because of the employee status of Amateur Radio licensees involved in the training exercises. We therefore amend our rules to permit amateur radio operators to participate in government-sponsored emergency and disaster preparedness drills and tests, regardless of whether the operators are employees of the entities participating in the drill or test. We find that extending authority to operate amateur stations during such drills will enhance emergency preparedness and response and thus serve the public interest.”

In order to allow participation in non-governmental disaster drills — such as those sponsored by ARES® or private hospitals — the FCC will now allow amateurs employed by an agency participating in such a drill to participate up to one hour per week. In addition, they may also participate in up to two exercises in any calendar year, each for a time period not to exceed 72 hours. “This time limitation, which is consistent with the timeframes contained in the waiver requests filed with the Commission, should serve to further ensure the use of Amateur Radio for bona fide emergency testing,” the *Re&O* stated. “We emphasize that the purpose for any drills we authorize herein must be related to emergency and disaster preparedness. By limiting the purpose in this manner, we further ensure that such drills will be appropriately limited.”

In amending the Amateur Radio rules, the FCC reiterated that it does not intend to disturb the core principle of the Amateur Radio Service “as a voluntary, non-commercial

cont'd col. 2

A New Crop ‘Duster’

Agricultural crop duster aviation is meeting military airborne close-air support and airborne surveillance at the Farnborough International Airshow, in Farnborough, England. Air Tractor Inc. in Olney, Texas, is showing an aircraft designed originally to drop chemical pesticides from the air converted to drop bombs, shoot bullets, and gather intelligence. The Air Tractor AT-802U single-engine turboprop, which has a .50 caliber machine gun and precision-guided weapons, is intended as a border surveillance aircraft able to operate from short, dirt air strips, if needed. The aircraft also is built especially rugged from the start to survive the rigors of agricultural aviation, which typically is subject to dirt, dust, insect and bird strikes, and hard landings on unimproved runways.



At the air show this year, Air Tractor is showing a new version of the AT-802U with a surveillance payload consisting of the L-3 Wescam MX-15Di sensor turret with electro-optical infrared target identification, laser target designator, and AeroComputers UC-500 moving map system for real-time targeting.

The aircraft’s flat-panel liquid crystal display cockpit screens enable both pilots to operate the sensor turret, as well as view imagery gathered from the sensor package. The rear cockpit has a 17-inch display with split-screen and picture-in-picture capability, and can show recorded imagery from the digital reorder.

Data from the aircraft also can be shared with units on the ground via a downlink. The converted crop duster also has a glass cockpit with.

Operators also can fit the AT-802U Hellfire/DAGR rockets, 2.75-inch rocket pods, and even with 500-pound laser-guided bombs.

BREAK - OVER

cont'd from col. 1

communication service carried out by duly authorized persons interested in radio technique with a personal aim and without pecuniary interest. Rather, we believe that the public interest will be served by establishing a narrow exception to the prohibition on transmitting amateur communications in which the station control operator has a pecuniary interest or employment relationship, and that such an exception is consistent with the intent of the Amateur Radio Service rules.”

The effective date of the *Re&O* is to be determined and will be at some time after its publication in the *Federal Register*. A more detailed story will be forthcoming from the ARRL.

BREAK - OVER

Number of Hams on the Rise

With more than 18,000 new Amateur Radio licenses issued in the first half of this year — 18,270 to be exact — 2010 is shaping up to be a banner year for Amateur Radio. So far, the number of new licenses issued by the FCC in 2010 is outpacing the January-June 2009 totals by almost 8.5 percent; at this time last year, the FCC had issued 16,844 new licenses.

In 2009, a total of 30,144 new licenses were granted, an increase of almost 7.5 percent from 2008. In 2005, 16,368 new hams joined Amateur Radio's ranks — just five years later, that number had increased by almost 14,000, a whopping 84 percent! The ARRL VEC is one of 14 VECs who administer Amateur Radio license exams.

Comparing 2010 to 2009, the only month that had higher license totals in 2009 was January: 1960 licenses were issued in January 2009, compared with 1726 in January 2010. Beginning in February, 2010 showed higher new license numbers: 2263 in February 2010 versus 2749 in February 2009; 3463 in March 2009 compared with 3734 in March 2010; 3430 in April 2009 compared with 3508 in April 2010; 2717 in May 2009 compared with 3136 in May 2010, and 3011 in June 2009 versus 3417 in June 2010.

As of June 30, 2010, there are 694,346 licensed Amateur Radio operators in the US, an almost 1 percent rise over all of 2009. In 2009, there were 682,500 licensed Amateur Radio operators in the US, an almost 3 percent rise over 2008. In 2008, there were 663,500 licensed amateurs; there were 655,800 in 2007. Broken down by license class at the end of June 2010, there were 16,299 Novices, 342,064 Technicians, 154,284 Generals, 60,059 Advanced and 121,640 Amateur Extra licensees.

"The ARRL VEC has been busy meeting the needs of the Amateur Radio community by helping people to become radio amateurs or upgrade their existing licenses," said ARRL VEC Manager Maria Somma, AB1FM. "So far in 2010, ARRL VEs have administered 20,929 exam elements at 3600 ARRL VEC-sponsored exam sessions. The number of amateurs who want to be Volunteer Examiners and who want to teach Amateur Radio classes is also going up — we've seen a spike in the number of applications from General and Extra class radio amateurs who want to give back to their community by serving as ARRL examiners and instructors."

BREAK - OVER

"When I hear somebody sigh, 'Life is hard,' I am always tempted to ask, 'Compared to what?'"

Sydney J. Harris

PSK – RTTY Grid Dip Shindig!

The Troy Amateur Radio Association (TARA) is pleased to announce the 8th annual running of its "Grid Dip PSK-RTTY Shindig" contest on 7 August 2010, from 00:00Z thru 24:00Z.

The contest is open to all hams. Technicians note that this contest includes 6M so fire up that soundcard interface and get on the air! You can use any of the 'PSK' modes and RTTY. Contest participants call "CQ Grid Dip" and the contest exchange consists of your name and your four character Maidenhead Grid Locator (EN34 covers much of Scott County). You can verify your Grid Locator at <http://www.arrl.org/locate/grid.html>.

Use the regular digital frequencies/mode on 160, 80, 40, 20, 15, 10 thru 6m. WARC band QSOs are NOT permitted in the spirit of the gentleman's agreement that there be no contesting on the WARC bands.

Rover stations will be participating which makes for interesting 'dupe' checking. Stations can be worked once on each band for QSO points. Each valid QSO per band counts as 1 QSO point and each different Grid Locator worked counts as one (1) multiplier, once per band. Your total Score = QSO Points x total different Grid Locators/Band.

You can find the detailed contest information at www.n2ty.org/seasons/tara_grid_rules.html. This is a unique HF (plus 6 meters) contest combining Grid Square multipliers and PSK-RTTY.

BREAK - OVER



ATLANTIC OCEAN - A shooter aboard the aircraft carrier USS George H.W. Bush (CVN 77) launches a T-45C Goshawk training aircraft assigned to Training Wing 1. The USS George H.W. Bush is conducting training in the Atlantic Ocean.

PATRIOTIC QUOTES

July Crossword Solution

Across

2. DANIELWEBSTER—"The contest for ages has been to rescue liberty from the grasp of executive power."
7. GEORGEWASHINGTON—"Associate yourself with men of good quality if you esteem your own reputation for 'tis better to be alone than in bad company."
8. JOHNADAMS—"Fear is the foundation of most governments."
10. BENFRANKLIN—"A great empire, like a great cake, is most easily diminished at the edges."
11. ISRAELPUTNAM—"Don't fire until you see the whites of their eyes! Then fire low!"
12. SAMUELADAMS—"The public cannot be too curious concerning the characters of public men."
13. THOMASJEFFERSON—"All tyranny needs to gain a foothold is for people of good conscience to remain silent."

Down

1. PATRICKHENRY—"I know not what course others may take; but as for me, give me liberty or give me death."
3. THOMASPAINE—"Lead, follow, or get out of the way."
4. JOHNHANCOCK—"There! His Majesty can now read my name without glasses. And he can double the reward on my head!"
5. JOHNPAULJONES—"I wish to have no connection with any ship that does not sail fast; for I intend to go in harm's way."
6. NATHANHALE—"I only regret that I have but one life to lose for my country."
8. JAMESMADISON—"The truth is that all men having power ought to be mistrusted."
9. BENJAMINRUSH—"Patriotism is as much a virtue as justice, and is as necessary for the support of societies as natural affection is for the support of families."

"A real leader faces the music, even when he doesn't like the tune."

A. Nony Moose

Hello, How's Your Energy Use?

"Rou too muchly ruse rectricity!"

Intel may have come up with a way to solve one of the most pressing problems with home energy management consoles, and the solution harks back to the early '80s. The company has developed a home energy management console that comes with 1) a household clock and 2) an answering machine that stores and plays back video messages. The console also sports an iPhone-like interface with apps for checking daily power consumption, historical power consumption and other data. Nonetheless, the answering machine, and to some degree the clock (with the hours corresponding to peak power periods painted in red), represent the real breakthroughs.

Home energy management companies admit that it has been tough to get consumers to interact with their consoles after the initial thrill wears off. By integrating an answering machine, consumers will inadvertently have to come in contact with their energy consumption all the time. "We realize energy can get boring," said Mary Murphy-Hoye at Intel Labs. "We've got to give people reasons to interact with it."

As part of its push into energy, Intel will make 1,000 of the units by the end of the year and conduct trials with various utilities. The company will then license the reference design — probably for free — to retail manufacturers. While Intel remains known primarily for its chip expertise, the company has over the last several years placed an increasing emphasis on human factors and interfaces.

Electronics manufacturers and utilities will have to move beyond simply appealing to pocketbooks to get consumers to adopt energy efficiency technologies, said Genevieve Bell, an anthropologist who has been at Intel for years. Convenience, as with the answering machine example, can help. So can social pressures. In some old buildings in China, elderly ladies are given the task of keeping an eye on utility meters. If they detect that a particular family is using more than their fair share, they make a point of berating the energy hogs. This form of social regulation helps make conservation a part of daily life. -Wired

BREAK - OVER



RMS Express with WINMOR for WL2K

The ARRL Letter 06/22/2010

The Amateur Radio Safety Foundation (ARSFI) has announced the availability of *RMS Express* user software with WINMOR, a new radio-email application for use with the Winlink 2000 network.

The WINMOR protocol was introduced at the 2008 ARRL/TAPR Digital Communications Conference in Chicago. The goal of the WINMOR development effort was to create a soundcard digital

mode that would provide an alternative to PACTOR for accessing the Winlink 2000 network. After two years of beta testing, WINMOR TNC, a software-based “helper application”, is now available as part of the new Winlink *RMS Express* user software suite.

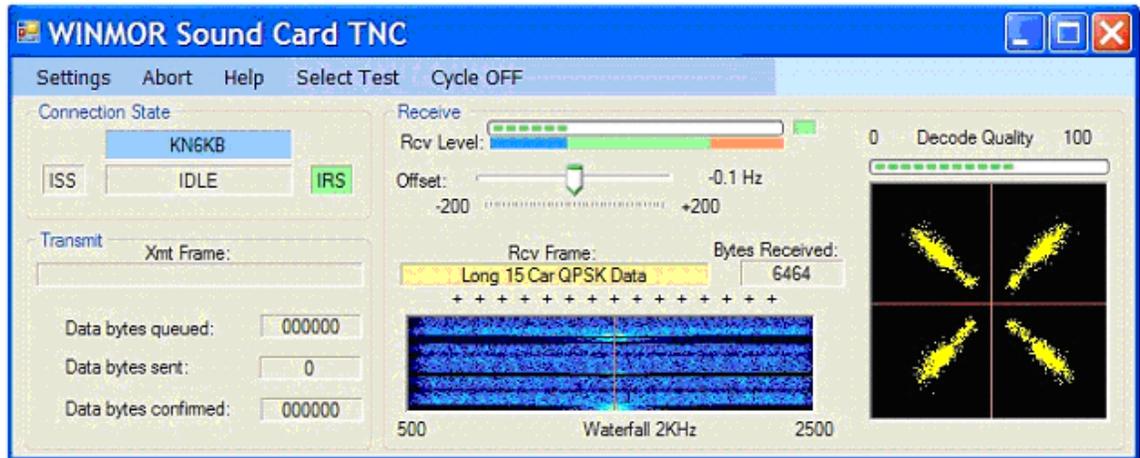
For a number of years hams who’ve accessed the Winlink network on the HF bands have used PACTOR, primarily PACTOR II or III. This required the purchase of an external hardware modem. With the advent of WINMOR, no external hardware is required other than the same type of interface used for other sound-card-based digital communication modes.

The WINMOR protocol and the *RMS Express* application were developed by Rick Muething, KN6KB and Vic Poor, W5SMM. It includes innovative features such as a “busy frequency” detector to reduce potential interference. A complete description of the WINMOR protocol is available on the Winlink website at <http://www.winlink.org/>

In addition to WINMOR, the *RMS Express* suite currently also supports Telnet for Internet, HSMM and D-Star connections, a wide selection of TNCs for packet radio, and SCS hardware modems for PACTOR II, and III. It also supports WINMOR peer-to-peer connections as well as connections with Winlink Radio Message Servers.

The WINMOR TNC helper application is also available separately to third party developers who wish to add the WINMOR protocol to their products.

The *RMS Express* suite for *Windows* is available free of charge. A \$39 donation to ARSFI, a non-profit 501C(3) charity, is suggested for use of the WINMOR component,



but payment is not mandatory. The *RMS Express* suite and WINMOR TNC helper application can both be downloaded from the Winlink Web site.

BREAK - OVER

“The Constitution only guarantees the American people the right to pursue happiness. You have to catch it yourself.”

Benjamin Franklin



ARES Breakfast

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

NECOS Schedule August 2010

- 2 Aug W0NFE Bob
- 9 Aug KB0FH Bob
- 16 Aug KC0YHH Tony
- 23 Aug N0PI Dan
- 30 Aug W0NFE Bob
- 6 Sep KB0FH Bob