



ARES COMMUNICATOR

Information for Scott County Amateurs



February, 2006

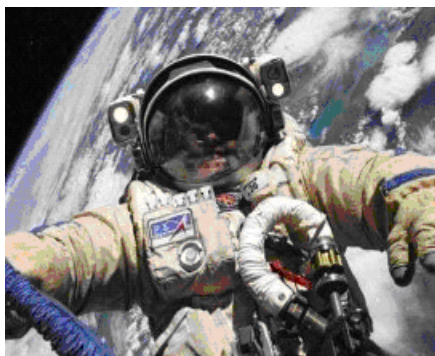
Accurate, Reliable Emergency Communications

Volume 6, Number 2

SuitSat

Dr. Tony Phillips,
SCIENCE@NASA

One of the strangest satellites in the history of the space age is about to go into orbit. Launch date: Feb. 3rd. That's when astronauts onboard the International Space Station (ISS) will hurl an empty spacesuit overboard. The spacesuit is the satellite — "SuitSat" for short.



ISS astronaut Mike Finke spacewalks in a Russian Orlon spacesuit in 2004. SuitSat will have no one inside.

"SuitSat is a Russian brainstorm," explains Frank Bauer of NASA's Goddard Space Flight Center. "Some of our Russian partners in the ISS program, mainly a group led by Sergey Samburov, had an idea: Maybe we can turn old spacesuits into useful satellites." SuitSat is a first test of that idea.

"We've equipped a Russian Orlon spacesuit with three batteries, a radio transmitter, and internal sensors to measure temperature and battery power," says Bauer. "As SuitSat circles Earth, it will transmit its condition to the ground." Unlike a normal spacewalk, with a human inside the suit, SuitSat's temperature controls will be turned off to conserve power. The suit, arms and legs akimbo, possibly spinning, will be exposed to the fierce rays of the sun with no way to regulate its internal temperature.

SuitSat *cont'd pg. 2*

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!

Minnesota QSO Party - 2006 February 4th, 2006

This is a contest where the world works Minnesota! The Minnesota Wireless Association is sponsoring the Minnesota QSO party again this year.

The action starts at 8am CST (1400 UTC) and runs for ten hours through 6pm

CST (2400 UTC) on Saturday, February 4, 2006. The goal is to work as many stations as possible sending your name and three-letter county designator as the contest exchange. The contest runs on the HF and VHF (6M and above) bands.

There have been several changes in the contest for 2006, including; Two MN Mobile Categories — Single Transmitter and Unlimited, Portable Stations Now Included in Single Operator Low Power Class, Additional W/VE Multi-Single Class, Spotting Networks Allowed But No Self-Spotting and, Revised Requirements for Log Submittal

Be sure to check the official rules and frequency details are available at http://www.w0aa.org/mnqp_2006.htm.



MN QSO Party *cont'd pg. 2*

ARES Activities

**Weekly Net Monday 7 PM 146.535 mhz (s)
Breakfast Saturday February 11th**

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

SuitSat *cont'd from pg. 1*

“Will the suit overheat? How long will the batteries last? Can we get a clear transmission if the suit tumbles?” wonders Bauer. These are some of the questions SuitSat will answer, laying the groundwork for SuitSats of the future.

SuitSat can be heard by anyone on the ground. “All you need is an antenna (the bigger the better) and a radio receiver that you can tune to 145.990 MHz FM,” says Bauer. “A police band scanner or a hand-talkie ham radio would work just fine.” He encourages students, scouts, teachers and ham radio operators to tune in.

For years, Bauer and colleagues at Goddard have been connecting kids on Earth with astronauts on the ISS through the ARISS program (Amateur Radio on International Space Station). “There’s a ham rig on the ISS, and the astronauts love talking to students when they pass over schools,” Bauer explains. ARISS is co-sponsoring SuitSat along with the Radio Amateur Satellite Corporation (AMSAT), the American Radio Relay League (ARRL), the Russian Space Agency and NASA.

When will SuitSat orbit over your home town? Use Science@NASA’s utility to find out. J-Pass is located at <http://science.nasa.gov/RealTime/JPass/25/JPass.asp>. The online program will ask for your zip code—that’s all. Then it will tell you when the ISS is going to orbit over your area. (Be sure to click the “options” button and select “all passes.”) Because the ISS and SuitSat share similar orbits, predictions for one will serve for the other. Observ-

MN QSO Party *cont'd from pg. 1*

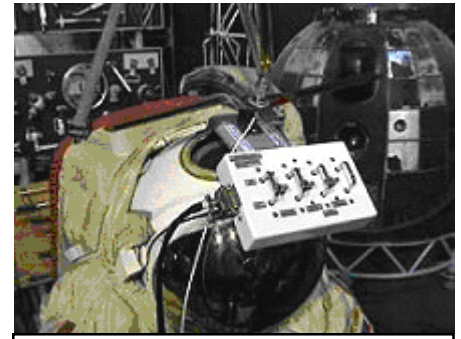
Listed here are the suggested operating frequencies for the MN QSO Party.

Band/Mode	Freq.	CST	GMT
10 CW	28050	Noon	1800
10 SSB	28450	2:00 PM	2000
15 CW	21050	11:00 AM	1700
15 SSB	21350	1:00 PM	1900
20 CW	14050	All Day!	All Day!
20 SSB	14270	All Day!	All Day!
40 CW	7050	All Day!	All Day!
40 SSB	7250	All Day!	All Day!
80 CW	3550	All Day!	All Day!
80 SSB	3850	All Day!	All Day!
160 CW	1850	5:30 PM	2330
160 SSB	1870	5:30 PM	2330

BREAK - OVER

ers in the United States will find that SuitSat passes overhead once or twice a day—usually between midnight and 4 o’clock in the morning. At that time of day, SuitSat and the ISS will be in Earth’s shadow and, thus, too dark to see with the naked eye. You’ll need a radio to detect them.

“Point your antenna to the sky during the 5-to-10 minute flyby,” advises Bauer, and this is what you’ll hear:



In a laboratory at Goddard, SuitSat bends over to display its antenna and control box.

SuitSat transmits for 30 seconds, pauses for 30 seconds, and then repeats. “This is SuitSat-1, RSORS,” the transmission begins, followed by a prerecorded greeting in five languages. The greeting contains “special words” in English, French, Japanese, Russian, German and Spanish for students to record and decipher.

Next comes telemetry: temperature, battery power, mission elapsed time. “The telemetry is stated in plain language—in English,” says Bauer. Everyone will be privy to SuitSat’s condition. Bauer adds, “Suitsat ‘talks’ using a voice synthesizer. It’s pretty amazing.”

The transmission ends with a Slow Scan TV picture. Of what? “We’re not telling,” laughs Bauer. “It’s a mystery picture.”

Students and teachers who want to try this, but have no clue how to begin, should contact their local ham radio club. There are thousands of them around the country. “Hams are notoriously outgoing; most would be delighted to help students tune in to SuitSat,” believes Bauer.

Bauer expects SuitSat’s batteries to last 2 to 4 days. “Although longer is possible,” he allows. After that, SuitSat will begin a slow silent spiral into Earth’s atmosphere. Weeks or months later, no one knows exactly when, it will become a brilliant fireball over some part of Earth—a fitting end for a trailblazer.

BREAK - OVER



“One Priority St. Francis Hospital”

Formal Message Format Review

Our role as ARES operators during an emergency is to pass information from one individual or location to another accurately and rapidly. Keep in mind that accuracy is always the most important objective.

The communications we provide fall in two general categories; tactical (often verbal) and formal (written) messages. The most accurate of the two is the formal message, often referred to as Record Traffic.

Record traffic follows a specific format that was developed to promote accuracy. The format also provides a means to track the movement of a message through the communications system.

The standard message consists of four main parts:

1. PREAMBLE: Information to track the message;
2. ADDRESS: Name and address of the intended recipient;
3. TEXT: The message information; and
4. SIGNATURE: The party for whom the message was originated.

THE PREAMBLE - All messages must have a preamble. The preamble of the message contains information about the message necessary to keep track of it as it passes through the amateur system.

The parts of the preamble, except for the check as noted later, are NOT changed by any station relaying or delivering the message. They are permanent parts of the message created by the station of origin and must remain with the message all the way to the delivery point. Preamble information is used to service undeliverable messages and to generate replies to specific handling instructions.

The message precedence is a key part of the preamble. The four precedence categories are as follows; **EMERGENCY** (always spelled out): Any message having life and death urgency to any person or group of persons, which is transmitted by Amateur Radio in the absence of regular commercial facilities. This includes official messages of welfare agencies during emergencies requesting supplies, materials or instructions vital to relief of stricken populace in emergency areas. During normal times, it will be very rare. This designation will always be spelled out. When in doubt, do not use it.

PRIORITY (P): This classification is for a) important messages having a specific time limit, b) official messages not covered in the emergency category, c) press dispatches and emergency related traffic not of the utmost urgency, d) notice of death or injury in a disaster area, personal or official. (Notices of death or injury are not handled via the

usual voice circuits.)

WELFARE (W): This classification, refers to either an inquiry as to the health and welfare of an individual in the disaster area or an advisory from the disaster area that indicates all is well. Welfare traffic is handled only after all emergency and priority traffic is cleared. The Red Cross equivalent to an incoming Welfare message is **DWI** (Disaster Welfare Inquiry).

ROUTINE (R): Most traffic in normal times will bear this designation. In disaster situations, traffic labeled Routine should be handled last, or not at all when circuits are busy with higher precedence traffic.

THE ADDRESS - The second section of the message is used to specify the name, address, city, state, zip, and telephone number of the addressee. Getting as much addressee information as possible is the responsibility of the operator originating the message. Stations relaying or delivering the message can not be in a position to do this as well. An originating operator should try to anticipate the problems the delivering operator might have, and try to help assure success by getting a complete address including telephone number while still in contact with the originator. **THE TEXT** - The text contains the actual message information authorized by the person for whom the message was originated. Note that the amateur does not originate messages for a person without permission from that person!

When transmitting a message, the text is separated from the preceding address, and the signature to follow, by the use of the proword “**BREAK**” on voice, to allow the receiving operator to know its beginning and end. The proword **BREAK** is not counted as part of the text.

The text is divided into word “groups”, five or ten to a line for easy counting, and is usually limited to 25 words or less.

The number value to be entered in the “**CHECK**” in the preamble of the message is the total number of groups in the text between the start and end prowords (**BREAK**) not counting the prowords.

An easy rule to remember about counting word groups: any group of one or more consecutive characters with no interrupting spaces, with a space before it and after it, is counted as one group.

Such a group may be all letters, all numbers, or any mix

DON'T THROW OUT YOUR OLD TELEPHONE

During power outages the landline telephone system usually will remain operational for an extended period. However, most cordless phones and many business telephone systems will not work without power. In a recent power outage, in California, amateur radio emergency communication was provided between post offices because all of their telephones required line power. (The electronic postage scales, computer cash register, and of course the lights were also out.) Keep an old-fashioned telephone instrument handy to plug in to the modular outlet. Chances are you will hear the friendly dial tone! This tip for everyone (not just radio operators). Pass it on to your family, friends and neighbors.



BREAK - OVER

Format Review *cont'd from pg. 3*

of numbers, letters, or slashes (/), so long as there are no spaces within the group. Each word, group of connected digits, connected mixed characters, spelled punctuation word, "X", or ARL constitutes one group for the purpose of calculating the total count to enter in the check section of the preamble.

THE SIGNATURE - The signature of the message is the name of the person for whom the message is created (not necessarily the station of origin), and any other information that person wishes to include (such as address, telephone number, title, etc.). The Place-of-Origin given in the Preamble is the location of this individual.

Addresses for the signing party are optionally included (upon request) on subsequent lines, exactly as done in the address section, but are included only if important to the originator, message purpose, or replying.

Messages for served agencies, particularly during disasters, generally require an authorizing signature in full. Messages without same may be refused.

It is important for originating stations to get full information about persons for whom messages are originated in order to be able to re-contact them should a problem arise in the delivery of their message, or if a reply is received.

BREAK - OVER

FCC ORDERS AMATEUR RULE CHANGES

CONFORM WITH WRC-03

The FCC has ordered several rule revisions to implement changes agreed to at the international level during World Radiocommunication Conference 2003 (WRC-03). Acting Wireless Telecommunications Bureau Chief Catherine W. Seidel signed the Order, released January 19. The changes affect 97.111, Authorized transmissions; 97.113, Prohibited transmissions; 97.115, Third party communications, and 97.117, International communications.

"These amendments will ensure that the Commission's Amateur Radio Service rules conform to Article 25 of the international Radio Regulations adopted at the 2003 World Radiocommunication Conference, and will further the Commission's ongoing efforts to streamline its Amateur Service Rules," the FCC said. "The overall effect of this action is to update the Part 97 Amateur Radio Service rules in the Code of Federal Regulations to conform to now-effective international agreements."

The rule changes will become effective upon publication in The Federal Register. The FCC Order revises: 97.111(a)(1) to permit "transmissions necessary to exchange messages with other stations in the Amateur Service, except those in any country whose administration has notified the ITU that it objects to such communications. The FCC will issue public notices of current arrangements for international communications." The FCC said the change does not prejudice its proposal to amend 97.111(a)(2) to clarify that amateur stations may, at all times and on all authorized channels, transmit communications necessary to meet essential needs and to facilitate relief actions.

97.115(a)(2) to facilitate the transmission of international communications on behalf of third parties in emergency or disaster-relief situations, whether or not a third-party agreement is in place between the US and the countries involved. The revision now permits communication with any non-US station "when transmitting emergency or disaster relief communications" as well as with any non-US station "whose administration has made arrangements with the United States to allow amateur stations to be used for transmitting international communications on behalf of third parties." The revised rule further provides that no station may transmit third-party traffic other than emergency or disaster relief communications to a station in a country lacking a third-party arrangement. Still excepted

FCC Changes *cont'd pg. 5*

Power To The Ham Shack

Testing the Branch Circuit

By Patrick C Elliott, IDEAL Industries, Inc

Branch circuit wiring practices are primarily code (National Electric Code) driven with little thought as to why such stringent requirements are necessary. But these practices are necessary to ensure safe and efficient branch circuits. Hidden problems within a branch circuit can result in fire, electrocutions and equipment failure.

What Are the Real Problems?

Most fixed wiring and receptacle hazards are hidden from inspection. A visual inspection in the rough-in stage of residential construction may identify obvious problems, such as a staple cutting through the conductors, but they may not identify a loose wiring connection or a bad splice. A simple static non-load test performed with a receptacle tester or digital voltage meter cannot identify hidden defects in a circuit that could be caused by a high resistance fault. Problems and hazards arise when current flows through these high impedance defects resulting in hot spots, leading to fires, breakdown in insulation and poor efficiency of the electrical system. The objective is to minimize high impedance in an electrical distribution system.

Simple receptacle testers are excellent for quick checks and general branch testing but are not suited as an analysis tool. However, testing under load and calculating the voltage drop can identify 90 percent of these hidden defects.

FCC Changes *cont'd from pg. 4*

from the prohibition is any third party eligible to be the control operator of an amateur station.

97.113(a)(4) to prohibit amateur stations exchanging messages with amateur stations in other countries from making transmissions that are encoded for the purpose of obscuring their meaning, except for control signals exchanged between Earth command stations and space stations in the Amateur-Satellite service, something Part 97 already provides for. The old rule referred to the use of "codes and ciphers." The same rule also already prohibits transmitting music, communications intended to facilitate a criminal act, obscene or indecent words or language and false or deceptive messages, signals or identification.

97.117 to state that amateur stations may transmit communications incidental to the purposes of the Amateur Service and to remarks of a personal character.

The FCC also revised 97.3 and 97.309 to update the definition of International Morse code and of various digital codes in the amateur rules to reflect changes in the international Radio Regulations.

How Can We Locate a Fault? - Voltage Drop or Percent of Voltage Drop is a measure of how much a circuit's voltage is influenced by circuit impedance once a load is applied. On a single-phase branch circuit we have two methods, Calculated or Measured, using a meter with load or circuit analyzers.

How Much Voltage Drop is Acceptable? - The National Electrical Code (NEC) recommends that the combined voltage drop of the electrical system (circuit breaker to receptacle) not exceed five percent for optimum efficiency. This recommendation not only can improve safety but can insure proper equipment operation and power efficiency. (It is important to note that this is only a recommendation and that local governing bodies may use their own judgment on what is an acceptable level of voltage drop.)

For example, the Philadelphia Housing Development Corp. (PHDC) requires contractors to calculate the voltage drop prior to installing blown insulation in existing homes. If the voltage drop is 10 percent or higher, the contractor must replace/repair the circuit prior to proceeding with the insulation.

Prior to instituting this requirement, half a dozen smoldering fires resulted from the insulation installations. In the 2,500 homes insulated in the two-years after this electrical integrity test was instituted, there were no fires reported. At least 15 other municipalities have followed the PHDC's lead in requiring the electrical load test as part of their winterization programs.

Measured Voltage Drop & Percent of Voltage Drop Method - When using a digital multimeter to calculate voltage drop, all loads for the circuit must be removed for the no-load measurement. Next, find a load that will draw 60 to 80 percent of the maximum rating of the circuit. In this example we have a 15-amp circuit, so a 1400-watt load should do the trick.

Now take your first reading with no loads on the circuit at the last device or receptacle. Apply your 1400-watt to the circuit and measure the loaded RMS voltage reading. Now make the calculations; Voltage Drop = (no-load voltage-loaded voltage), Percentage of Voltage Drop = (Voltage drop/no-loaded voltage) x 100

The total impedance of the circuit can be calculated if you know the current: Total resistance = Voltage Drop/Current ($R=E/I$)

As an example, if the voltage drop on a circuit was 3 volts and the load drew 12 amperes then the impedance of both conductors would be 0.25 ohms. (3volts/12amp)

Remember that voltage drop and impedance of the circuit

Circuit Testing *cont'd pg. 6*

Circuit Testing *cont'd from pg. 5*

are based on the load. So if you use an 800-watt hair dryer you are only drawing a little over 6 amperes. The voltage drop on a 120V circuit at 6 amperes would be about half compared with a 12 amperes load.

Calculated Voltage Drop & Percent of Voltage Drop Method - This calculation is for a single-phase branch circuit only. In this example, the branch circuit is 100 feet of 12-gauge wire at a temperature of 72 degrees Fahrenheit. The Load current is 16 amperes. So what is the total Voltage Drop and Percentage of Voltage Drop?

First, let's look at the wire and wire size. The resistance of 12-gauge wire is 2 ohms per 1000 feet "R" (Resistance of the wire) is equal to 0.4 ohms. (We find the

resistance of wire per 1000 feet in Chapter 9, Table 9 of the NEC codebook.) $(2 \text{ ohms}/1000) \times 200 \text{ feet} = 0.4 \text{ ohms}$ Where did the 200 feet come from? Remember you have two conductors at 100 feet each, Line and Neutral.

Voltage Drop = Load Current X Circuit Resistance or
Voltage Drop = 16 amperes x 0.4 ohms Voltage Drop = 6.4 volts

Percentage of Voltage Drop = $(\text{Voltage Drop}/\text{No-load Voltage}) \times 100$ Percentage of Voltage Drop = $(6.4\text{volts}/120\text{volts}) \times 100$ Percentage of Voltage Drop = 5.3 percent

Operating Voltage = 120 volts - 6.4 volts Operating Voltage = 113.6

Troubleshooting Standard Circuits. - Troubleshooting to identify the cause of high impedance within the electrical system is actually quite simple. First measure the voltage drop at the furthest receptacle from the panel on the branch circuit under test. If the voltage drop is high, then further investigation is necessary.

Test the remaining receptacles in sequence, from next furthest from the panel to the closest to the panel. This will help you identify where and what is causing the problem.

If the voltage drop reading changes significantly from one receptacle to the next, then the problem is likely between the two. It is usually located at a termination point, such as a bad splice or loose wire connection, but it might also be a bad receptacle.

If the reading steadily decreases, as you get closer to the panel, with no significant decreases between receptacles, then the wire may be undersized for the length of run, or rated load for the circuit. Check at the panel to see if the wire is sized per code, for the circuit.

Some residential homes are wired with 14-gauge wire with running in excess of 60 feet or more. Although this may not meet the NEC recommendation of five percent or less voltage drop, it may meet local code requirement and are acceptable runs.

The reading may not decrease at all from the last receptacle to the first. This would indicate that the problem is someplace between the first device and the panel itself. Check the wiring and connections at the panel. Most poor panel connections show up

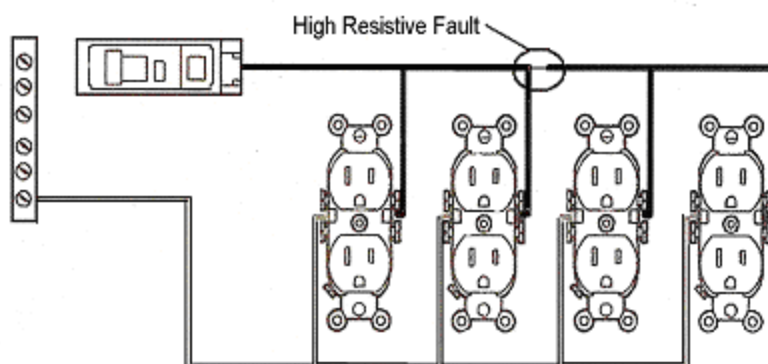
as hot spots. These can be checked quickly with an infrared temperature meter.

Testing the integrity of the branch circuit under load can have a dramatic effect on the ability to positively identify hidden defects within the branch circuit.

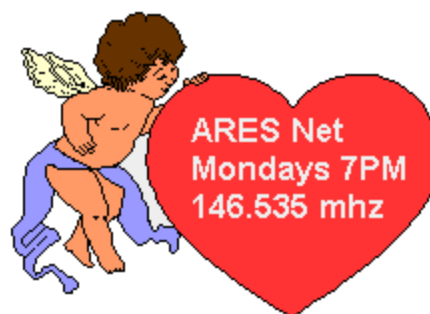
Summary

The dangers associated with branch circuit wiring are serious, but the precautions are straightforward. We can protect ourselves and equipment by using certified devices and testing equipment from reputable manufacturers and implement policies on branch circuit testing. These policies should include verifying proper wiring, testing devices, checking the integrity of the branch circuit, and measuring the integrity of the grounding system.

BREAK - OVER



In this example, there is a High Resistive Fault between the 2nd and 3rd receptacle. The Voltage drop increased from the 2nd to the 3rd. The high resistance was identified as a poor connection between the two devices.



Presidential Trivia

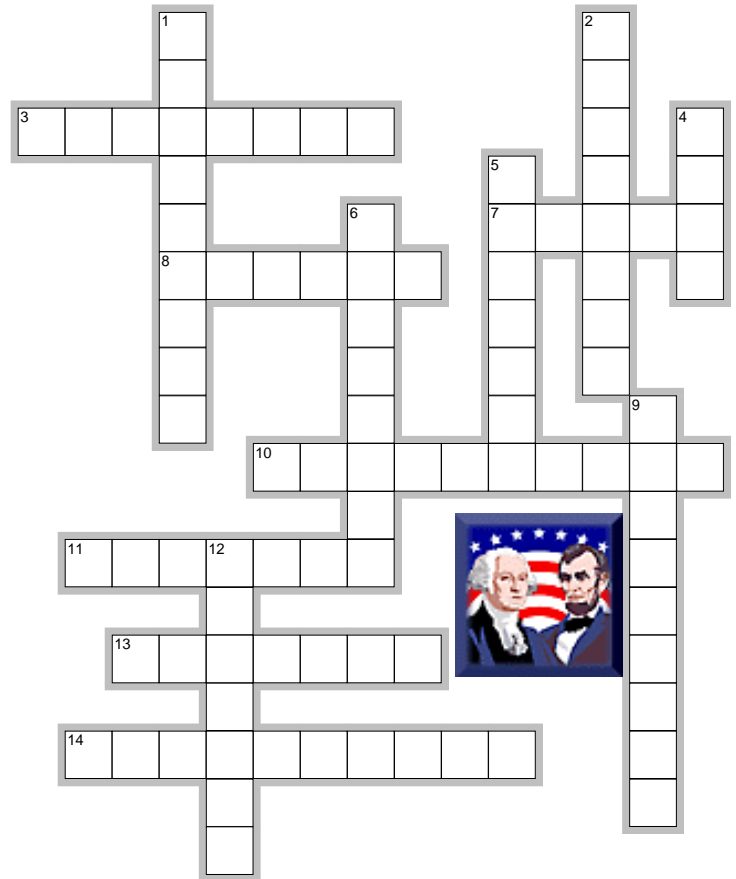
Across

3. Second president to be assassinated in office
7. Reportedly kept an alligator and silk worms as pets
8. Oldest president and successful Hollywood actor.
10. Portrait on the ONE dollar bill
11. Portrait on the TWENTY dollar bill
13. Tallest president
14. Supreme Commander, Allied Forces in Europe during WW I I

Down

1. Considered the author of the Declaration of Independence
2. Only bachelor president
4. Pets include Barney and Miss Beazley
5. Shortest president
6. First president to die in office
9. Leader of the Rough Riders in the Spanish-American War.
12. Youngest elected president

President's Day



Created with EclipseCrossword — www.eclipsecrossword.com

January Crosword Solution

Across

2. APPARENTPOWER—The product of the RMS current and voltage values in a circuit without consideration of the phase angle between them.
3. BASELOADING—The technique of inserting a coil at the bottom of an electrically short vertical antenna in order to cancel the capacitive resistance of the antenna producing a resonant antenna system.
7. ISOTROPIC—An imaginary radiator in free space that radiates equally in all directions. It is used as a reference to compare the gain of various real antennas.
10. PEAK—A measure of voltage on an AC wave form taken from the centerline and the maximum positive or negative level.
12. EARTHSTATION—An amateur station located on, or within 50 km of the earth's surface intended for communications with space stations.
14. DIPOLE—An antenna with two elements in a straight line that are fed in the center. Usually operated at half-wave resonance.
15. ADCOCKARRAY—A radio direction finding antenna consisting of two vertical elements fed 180 degrees apart and capable of being rotated.
16. NOISEFLOOR—The smallest input signal that can be just detected above the receiver internal noise.

Down

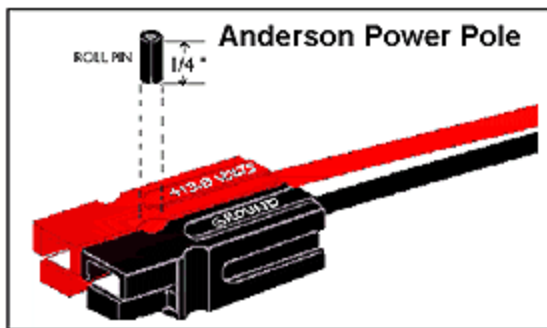
1. LOGICPROBE—A simple piece of test equipment used to indicate high or low logic states (voltage levels) in digital-electronic circuits.
4. GAIN—An increase in the effective power radiated by an antenna in a certain desired direction. This is at the expense of power radiated in other directions.
5. FORWARD—A bias voltage applied across a semiconductor junction so that it will tend to produce current.
6. ACCREDITATION—The process by which the Volunteer Examiner Coordinator certifies that their Volunteer Examiners are qualified to administer Amateur Radio license exams.
8. VERTICAL—Describes the polarization of an electromagnetic wave in which the electric field is perpendicular to the Earth's surface.
9. ANODE—The terminal that connects to the positive supply lead for current to flow through a device.
11. ANTENNA—An electric circuit designed specifically to radiate the energy applied to it in the form of electromagnetic waves.
13. SPURIOUS—Emissions that are not a part of the desired signal and occur on frequencies outside the necessary bandwidth of a transmission, the level of which may be reduced without affecting the information being transmitted.

Standard Power Connectors

Two key factors we bring to the emergency as trained ARES communicators are adaptability and professionalism. We are professional in our serious, deliberate, approach to communications and we are adaptable to allow us to react to changing conditions. One key to adaptability is a standard power connector for our equipment. During an emergency we can easily mix and match power sources to take advantage of particular situation.

We realize there won't be a whole lot of communications without power to the radio! This is where the 30 Amp Powerpole connector comes in.

The Powerpoles have highly conductive silver-plated



copper contacts that are self-wiping on make and break. This keeps conducting surfaces clean. Contact dents keep connectors mated in high-vibration applications and provide quick-break, snap action upon disconnect.

The connector halves are genderless—making assembly quick and easy and reducing the number of parts stocked. Molded-in dovetails allow for customized harness in a variety of configurations.

The 30-ampere contacts are designed for 12-16 AWG wire. The contacts can be soldered or crimped to wires. After a contact has been attached to a wire, it should be installed into the housing so that the housing spring mates with the underside of the contact. When you slide it completely in the housing you should hear a click when it passes the spring detent.

One source for the connectors is www.powerwerx.com. Currently they list a package of twenty five sets of 30 Amp connectors for \$16.96.

Next month we'll take a look at some power source adapters that will be useful during an emergency activation.

BREAK - OVER

Happy Valentine's Day

Quick Training Tips

Traffic Handling Prowords

We all recognize that prowords are essential to accurate, rapid communications. The proper use of prowords is even more important in handling formal written traffic.

Let's take a quick look at the movement of a message from station to station on a directed net. When the net control station (NECOS) directs the traffic he may say, "N0AAA call KA0WXT and pass one priority, OUT" The station being called answers, "This is KA0WXT Ready To Copy OVER."

Now N0AAA knows that KA0WXT can hear his station and is prepared to copy the message. The sending station begins by saying, "Message follows" and begins sending the preamble and the addressee information. The sending station uses the proword BREAK before and after the message text. When the message signature has been sent the sending station says, "BREAK No More OVER" if this is the only message or "BREAK one to follow OVER" if there is another message for the same station.

If the receiving station has correctly copied all the information, they respond by saying, "This is KA0WXT ROGER, OUT." If the receiving station missed a word in the message they would ask for a fill by saying, "Say Again, all after dynamite and before orphanage, OVER." The sending station would reply, "I Say Again all after dynamite and before orphanage" and then fill in the missing word. The receiving station may then ask for another fill or ROGER the message.

We have only used four prowords words other than the actual message itself; OVER, BREAK, ROGER, OUT assuming there are no fills needed. Prowords really are the key to accurate rapid communications

BREAK - OVER



Breakfast

Saturday February 11th
7:30AM
Perkins Restaurant
Savage, MN

NECOS Schedule - February 2006

6 Feb	KB0FH Bob
13 Feb	AB0YQ Steve
20 Feb	K0KTW Pat
27 Feb	W0NFE Bob
6 Mar	KB0FH Bob