MINNESOTA MARSGRAM

Information for Minnesota Navy-Marine Corps. MARS Members

April, 2007 **Volume11, Number 4**

NNN0ALL Minnesota

by NNN0GAZ Tim

Greetings to all, March has proved once again to be a very interesting month. We started out the month with two huge snowstorms – the kind we probably should have gotten in December. As I write this, the end of the month is in sight and the temperature is close to 80 degrees, we've had our first brush with severe weather and the baseball opener roughly a week away. Oh yes, a true sign of spring, the annual schedule of Skywarn classes.

A reminder, Severe Weather Awareness Week is April 9-13, 2007. The statewide Tornado Drill will take place on Thursday, April 12 and we end the week on of all days Friday, April 13. We've included a schedule for the week along with a web address if you are interested in getting more details about some of the events.

We are in the process of doing some layout changes at the Community Zero intranet site. Our Webmaster has created a link from our mnmars.org website to the community zero site – you'll find this under Members Only on the mnmars.org website. This link will take you to the welcome/login screen of the community zero site. Once inside the community zero site, under file sharing we've created a folder for all that helpful stuff for members. Be patient, we're still working on it. A complete diagram of the reorganized site will be provided in the May issue.

Don't forget to set aside May 12 to participate in the annual Armed Forces Day celebration. Once again NAV FOUR will be on the air with a number of stations. We will publish the station list and schedule in the May MARSGRAM. As usual the stations at NAV FOUR will be working towards that magic, yet elusive goal of 1000 contacts.

As we go to press, Al, NNN0KZC, is in the early planning stages for the MN area conference. If you have a date preference, a location preference or items for the agenda, please forward them to Al with a copy to the State Director. We're working to see if we can get Dave Ouellette, NNN0ASG ONE (acting Area Director) to attend the MN state conference – so a date has not been set yet. The Region Five conference is tentatively scheduled (and I mean that in every sense of the word) for August 18, 2007. Our new Area Director, NNN0ASG, is not expected to arrive until at least October. However he has completed his member training (we won't be able to refer to him as a Tango) and is participating in MARS with the program in Virginia.

Enjoy this issue of the Minnesota MARSGRAM

- BT OVER

The MINNESOTA MARSGRAM is published for the benefit of Amateur Radio Operators in Minnesota and other interested individuals.
The contents DO NOT reflect official Navy positions.
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Content Contributions Welcomed and Encouraged

MINNESOTA TRAFFIC NETS

Designator	Frequency		Local Times
5G1B	Pri.	NCE	18:30 Daily
	Sec.	NBG	
	Ter.	NAR	

MINNESOTA ADMIN. NET

5G4A	Pri.	NCE	19:00 2nd Sunday

MARS DATA SYSTEM

NN0DVD Freq. NCO AFSK/USB

Website http://www.mnmars.org
Intranet site http://www.communityzero.com/mnmars

Severe Weather Awareness Week

April 9-13, 2007

Monday, April 9

THUNDERSTORMS, HAIL, STRAIGHT-LINE WINDS, LIGHTNING

Thunderstorms, hail, straight line winds and heat waves cause extensive damage in Minnesota every year. Nationally, the annual toll from hail alone is about $1 billion. High temperatures can quickly cause heat exhaustion, especially in children and elderly persons. In 2004, 90 Minnesotans lost buildings and belongings because of lightning fires. Sixty-two lightning fires took place in homes and business structures, resulting in damages of $2.7 million. Lightning kills and injures more people than any other summer weather threat.

Tuesday, April 10

SEVERE WEATHER WARNINGS

Severe weather warnings are prepared and issued to the public by the National Weather Service. Highlights include the Emergency Alert System (EAS) and NOAA all-hazards weather radio.

Wednesday, April 11

FLOODS, FLASH FLOODS

This year marks the 10th anniversary of the 1997 floods in the Red River and the Minnesota River valleys. There were 58 Minnesota counties included in the largest Presidential disaster declaration ever in Minnesota. The total estimated cost for response and recovery by communities and individuals affected by this disaster was $545 million dollars.

Thursday, April 12

TORNADO DRILL DAY

The statewide tornado drill is held on Thursday April 12th. The National Weather Service will simulate a tornado watch beginning at 9 a.m. Two tornado drills are planned. The first will take place statewide at 1:45 p.m.; all jurisdictions will activate their warning systems. This first drill allows schools, businesses, and hospitals to practice their sheltering plans. The second drill, at 6:55 p.m., is voluntary. The evening drill will allow families and second-shift workers an opportunity to practice their sheltering plans.

Friday, April 13

HEAT WAVES

Heat related deaths outpace fatalities in several severe weather categories. Based on a 10 year average from 1992-2001, excessive heat claimed 219 lives each year. By contrast, floods killed 88, tornadoes 57, lightning 52 and hurricanes 15.

BT OVER

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.

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NNN0GAZ FOUR
Robert King - NNN0SXU

Training Corner

Service Messages

by: Bob, NNN0GAZ FOUR

When you have receipted for a message you have assumed responsibility for delivery of that message. What do you do if the message is undeliverable? You cannot ignore it or cancel it. Only the originating station can cancel a message. When this occurs we must generate a Service Message. Service messages are used in situations when the normal flow of communications has been disrupted, or to address errors that have occurred in communication, and are exchanged only between MARS stations to obtain information regarding the handling of such communication matters. They should never be used to communicate with nor should they be discussed with third party senders or the addees of messages. They are for internal communications only.

A service message is a short concise message. Prosigns and Operating signals will be used to the maximum extent. The list of MARS Operating Signals consists of military Z-Codes and selected amateur Q-Codes. NTP-8(D) Annex C contains a complete listing of these codes. Only a few of these operating signals are relevant to our discussion of service messages. The following is sample, and the meaning, of Operating Signals that are frequently used in service messages:

ZUI - directs attention to the dtg of the original message.
ZDE- followed by numbers to indicate the reason the message is undelivered.
ZEQ – followed by numbers to indicate message missent or misrouted.

You will, from time to time, need to use NTP-8(D) Annex C to help you in either preparing service messages or in responding appropriately to service messages you receive.

Assume you have accepted a message for delivery addressed to a third party, a Minnesota resident. You have tried to telephone the message to the addressee, but the telephone number doesn't work. You then printed or wrote a copy of the MARSGRAM onto a MARSGRAM form and mailed a copy of it to the address listed on the message. The MARSGRAM form was returned to you as 'UNDELIVERABLE. ADDRESSEE UNKNOWN'. Since you have tried to deliver it to the addressee by both telephone and U.S. Mail to no avail a service message is needed. First, you need to establish the precedence of your service message. Service messages are assigned the same precedence as the original, undeliverable message. In this case, that precedence is "routine". The action addressee of your service message is the mars station originating the message, not the third party sending the message. The heading includes the precedence, the dtg, the FM line, the TO line, etc. with the addition of the word SVC following UNCLAS. Some service messages require INFO addees. See NTP-8(D) paragraph 611 and paragraphs 620 – 624 for specifics. If INFO addees are required, you'll find call signs of all the Region and State directors in NTP-8 (D) Annex K.

You would tell the originating station something about why the message could not be delivered. Put that in plain language by saying 'ADDEE MOVED NO FORWARDING ADDRESS.' Now, add another operating code: "ZDE THREE". This operating code means "message undelivered". By adding 'THREE' or 'FOUR' to this operating signal, you can tell the originating station either to: "cancel the message, or provide more complete address", respectively. In this case, the addee has, apparently, moved and left no forwarding address, so you would request cancellation of the message by using the 'THREE' suffix for the operating Code. Our Service Message is now complete. It would look like this:

R (DTG)
FM (your call and state)
TO (originating station and state)
BT
UNCLAS SVC
ZUI UR (dtg of original msg)
ADDEE MOVED NO FORWARDING
ADDRESS ZDE3
BT

Of course other reasons can exist for your inability to deliver a message. Message contents can sometimes be garbled by the digital systems we use to move traffic, or may be inaccurately copied by voice. In those cases, other Operating Codes may be used to facilitate communication of the problem. NTP8(D) Par. 611, and Annex C.

BT OVER

"Don't worry about avoiding temptation . . . as you grow older, it will avoid you."

Winston Churchill

Test Your NIMS Knowledge

Every incident must have a verbal or written Incident Action Plan. The purpose of this plan is to provide all supervisory personnel with direction for:
A. Taking actions based on the objectives identified in the plan during the operational period.
B. Maintaining documentation and tracking resources assigned to the incident.
C. Monitoring the number of resources that report to any one supervisor.
D. Obtaining and maintaining essential personnel, equipment, and supplies.

Check for the answer in next month's MARSGRAM

March NIMS Solution

Designers of the system recognized early that ICS must:
* Meet the needs of incidents of any kind or size.
* Provide logistical and administrative support to ensure that operation staff can meet tactical objectives.
* Be cost effective by avoiding duplication of efforts.
* ???
C. Allow personnel from a variety of agencies to meld rapidly into a common management structure.

Get Your NIMS Answers Here

Training requirement for emergency communications volunteers are constantly changing. The following FEMA on-line courses are required for MARS members working with any government served agency.

The four on-line self-study courses are;
IS-100 Introduction to Incident Command System,
IS-200.FW Basic Incident Command System
IS-700 National Incident Management System (NIMS)
IS-800.A National Response Plan (NRP)

The address for the FEMA courses is: http://training.fema.gov/EMIWeb/IS/crslist.asp. When you complete the course, send the documentation to NNN0GAZ.

FCC Announcement

by: A. Nony Moose, Correspondent-at-Large

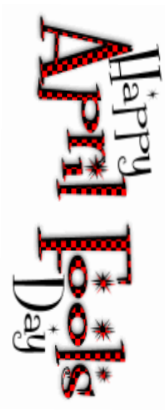
April 1, 2007 Washington D.C. - It was announced today that Kellogg's and the Federal Communications Commission have signed a pact to issue Amateur Radio Licenses on specially marked boxes of Corn Flakes. In this unprecedented move the FCC believes this will not hurt amateur radio but allow all individuals to receive an amateur radio license without having to demonstrate any skills with the exception of being able to use a pair of scissors to cut out their operating permit from the breakfast cereal box.

Kellogg's spokesperson commented that they were proud to have been selected by the government to be the issuer of licenses for amateur radio in the US and hope to soon make an agreement with other cereal loving countries. They also expect that will be issuing certificates of achievement for DXCF for confirmed contacts with 100 corn flakers.

Following the announcement that new amateur radio licensees will be able to operate in the HF spectrum without knowledge of Morse Code, the 2- meter handi-talki manufacturers have responded to what they view as a threat to their business. Said Hiram Bumble, CEO of whatawaste.com, the number one HT maker in the world, "We are not pleased at all about the new FCC rule. Our business has depended upon the rapid entry of no-code technicians who buy an HT, use it a couple of times, and then quit the hobby. Now, with the prospect of HF operation, a lot of these techies will forego their HTs."

The HT manufacturers have decided to imitate Kodak's defense against electronic photography. They will begin making cardboard HTs that cost only $19.99. Once the battery is depleted, they are meant to be tossed away. It is hoped that the low price tag will make these disposable HTs a more compelling purchase than the more costly HF gear. The HT manufacturers all also lobbying the Federal government to adopt national CC&Rs which will prevent most people from erecting any sort of antenna that is more than one meter in length.

BT OVER



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.

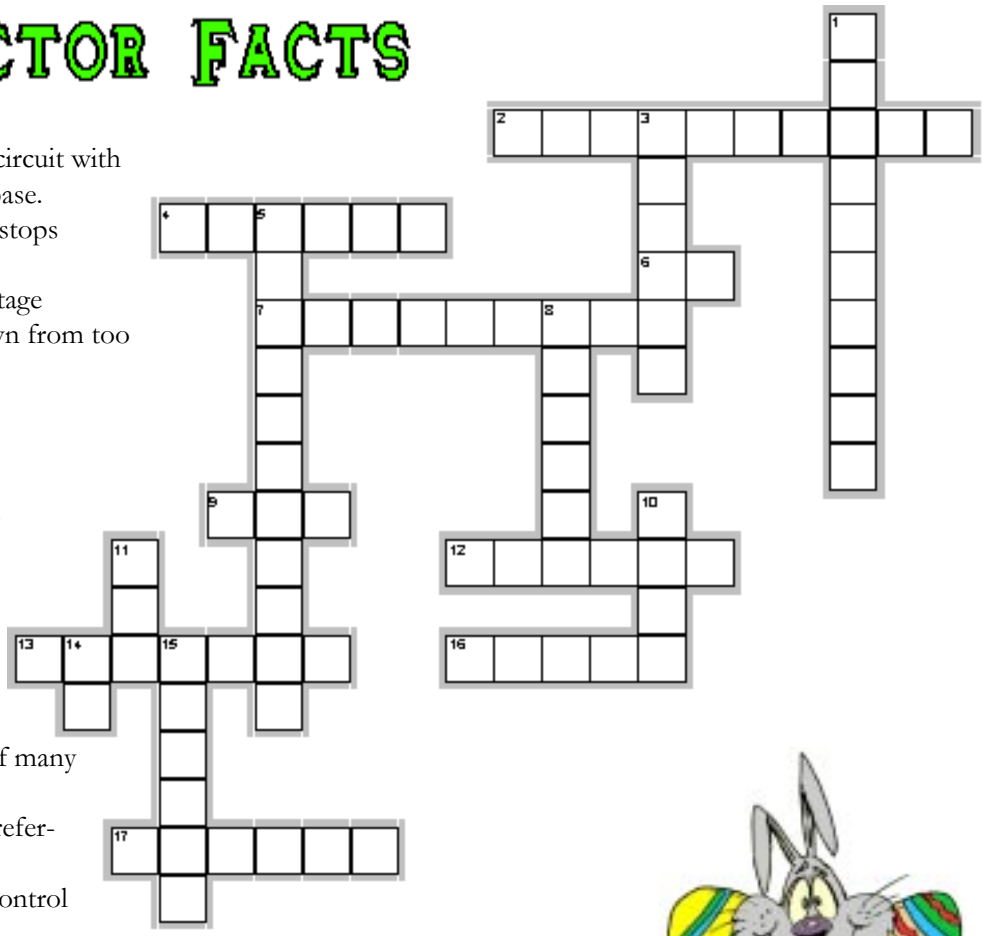
Semiconductor Facts

Across

2. A small town in southern WI or a circuit with two transistors connected emitter to base.
4. Operating region in which current stops flowing
6. Abbreviation for a unit of high voltage
7. Dangerous snow slide or breakdown from too much voltage
9. Internet Service Provider
12. Reproduces signals accurately
13. Supplies DC voltage
16. This component has one junction
17. Turn upside down

Down

1. When the transistor is fully on
3. When operating properly the PLL is said to be
5. An Integrated Circuit is made up of many of these.
8. The terminal of a transistor at the reference voltage
10. Used to keep the cows in or the control terminal for FETs
11. Field Effect Transistor
14. If its not DC current then its...
15. A circuit block provides this reference



Power Supply Basics

March crossword Solution

Across

2. VARISTOR—A surge suppression device used to absorb transients and spikes occurring on the power lines.
4. SPIKE—An extremely short perturbation on a powerline, usually lasting for hundreds of milliseconds to several seconds.
7. FOLDBACK—A type of current limiting which reduces the current through the regulator to a low value under a short circuit condition.
8. REGULATOR—A device or circuitry for maintaining a constant output voltage over a range of load currents and input voltages.
10. BIPOLAR—A term used to denote the common two junction transistor types (NPN or PNP) as opposed to the FET devices.
11. ROOTMEANSQUARE—Refers to the effective value of an alternating voltage or current corresponding to the dc voltage or current that would have the same heating effect.
12. TRANSIENT—A short perturbation on a powerline, usually lasting for microseconds to tens of milliseconds.
13. PASSTRANSISTOR—The transistor that controls the passage of power between the unregulated dc source and the load in a regulator.

Down

1. BLEEDER—A resistive load across the output of a supply to quickly discharge the stored energy once the supply is turned off.
3. RIPPLE—The residual ac left after rectification, filtration, and regulation of the input power.
5. VOLTAMPS—The product obtained by multiplying the current times the voltage in an ac circuit without regard for the phase angel between the two.
6. CROWBAR—A last-ditch protection circuit which senses an overvoltage condition and fires an SCR to short circuit the supply and protect the load.
9. INVERTER—A circuit for producing ac power from a dc source.

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.

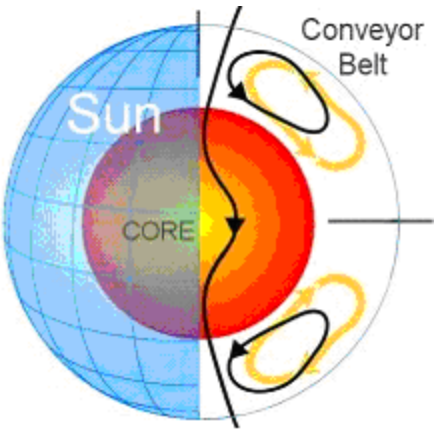
We have something similar here on Earth—the Great Ocean Conveyor Belt, popularized in the sci-fi movie The Day After Tomorrow. It is a network of currents that carry water and heat from ocean to ocean. In the movie, the Conveyor Belt stopped and threw the world's weather into chaos.

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 (NSSTC) 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.

BT OVER

500 KHZ EXPERIMENT LOGS THOUSANDS OF ACTIVITY HOURS

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).

- BT 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."

BT OVER

5G1B Net Schedule

6:30PM 4007 kHz USB

Day	NECOS	Tfc Rep
Sun.	XYA	XEE
Mon.	XEE	XEE
Tue.	BQH	BQH
Wed.	KZC	KZC
Thu.	SXU	SXU
Fri.	AVS	OCF
Sat.	Rotating Duty (see below)	

Don't be bashful, if the net has not been called by the net control station within 2 minutes, jump in and start things rolling.

Saturday NECOS / TREP Schedule

	NECOS	TREP
Apr 7	BQH	BQH
Apr 14	KZC	KZC
Apr 21	SXU	SXU
Apr 28	AVS	OCF
May 5	XYA	XEE
May 12	XEE	XEE

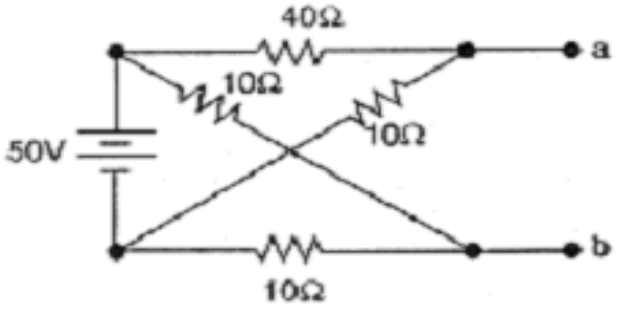
Riddle Me This!

You're driving a bus... at the first stop 4 people get on. At the second stop 8 people get on... at the third stop 2 people get off and... at the forth stop everyone gets off. The question is — what color are the bus drivers eyes?

Answer: Take a look in the mirror! I said "YOU'RE driving a bus"!

Test Your Analytical Skills

How much current?



This time, let's stick with simple Ohms Law. In the circuit above, if we had a short between points a and b, how much current would flow between these two points?

Answer in the next issue of the Minnesota MARSGRAM

HAPPY BIRTHDAY

NNN0XYA Bob Reid 4/18
NNN0KWS Bill Strong 4/25
NNN0KZC Al Doree 4/27

Service Recognition

NNN0XYA	Robert Reid	26 yrs
NNN0YWH	Robert Olson	23 yrs
NNN0AFU	Michael Cherney	4 yrs
NNN0AXK	David Donaldson	1 yr

Don't forget your paperwork!

POHANG, Republic of Korea – A CH-46E Sea Knight helicopter with Marine Medium Helicopter Squadron 265 flies at a low elevation during a low-altitude terrain flying exercise here, March 9. Terrain flying or masking is generally used in aerial combat, when aircraft fly at extremely low altitudes upon approaching hilly or mountainous terrain to minimize exposure time to anti-air weaponry or enemy personnel.

Solution for March QRP Trip

Courtesy of QST

Packing up for that mountaintop QRP trip, it's time to choose the batteries and the packs are almost full. From prior experience, you know you'll need 18 A/h of capacity. You have gel-cell packs that are rated at 5 A/h and alkaline batteries that are rated at 1.5 A/h and require a set of four in series to run the radio. The gel-cells weigh 12 ounces each and the alkaline cells 2 ounces each. Which type of battery will do the job with the least pack weight?

Answer: You'll need four gel-cell packs to satisfy the 18A/h requirement for a total of 48 ounces. Using alkaline cells in groups of four requires (18/1.5) = 12 packs each weighing 4 x 2 = 8 ounces per pack for a total of 96 ounces. Clearly, the gel-cells are the easier haul.