



MINNESOTA MARSGRAM

Information for Minnesota Navy-Marine Corps. MARS Members



February, 2011

Volume 16, Number 2

NNN0ALL Minnesota

by NNN0GAZ Tim

Greetings. This afternoon I participated in the Spring Flood outlook webinar hosted by the National Weather Service in Chanhassen. With our surplus of snow, two months of winter yet to go, and the fact that we went into the fall with excess moisture there is little doubt that flooding will be a major issue as the weather warms.

The forecasts already show that rivers across the state will experience levels not seen in a number of years. To further complicate matters – the fact that winter arrived before much of southern part of the state dried out from the fall floods means in some area the risk of high water/flooding events may exist well past the traditional spring thaw – right into early summer.

With the Memorandum of Understanding between the Navy-Marine Corps MARS and Coast Guard Auxiliary, it is entirely possible that we will see increased traffic and involvement in emergency communications this spring. Prepare yourselves; this doesn't appear to be an "if", but a "when".

February marks the halfway point of the first quarter. Al Doree, NNN0GAZ TWO, is preparing for our first quarter exercise. Please make

time in your schedule to participate. This exercise promises to be fun.

Remember the 5G1B meets every evening at 2330Z. Don't miss the opportunity to participate in an evening net, an ecom exercise, or just a friendly round of comments and conversation with your fellow MARS members.

As always, thank you for your participation and support of MARS program in Minnesota. Enjoy this issue of the Minnesota MARSGRAM.

BTOVER



The Minnesota QSO Party

Saturday Feb 5th 8AM – 6PM

The time has come! The first weekend in February bring the Minnesota QSO Party to the airwaves. This one time of the year when everyone is looking to make contact with a Minnesota station.

The contest runs from 8:00AM to 6:00PM (CST) on Saturday, February 5th. You will find activity on the usual five HF bands plus 6M and above. You will find 80M,40M,and 20M good pretty much all day long. Check the chart for specific frequencies.

Don't hesitate to put out a call of "CQ MN QSO Party". There are stations out there looking for a Minnesota contact. The information exchange for the contest consists of your first name and your three character county designator, i.e. "Sylvester, SCO".

Be sure to visit the MN Wireless Assn. website for more information on the

MN QSO Party *cont'd on pg. 2*



MINNESOTA TRAFFIC NETS

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

MINNESOTA ADMIN. NET

5G4A	Pri. NCE	19:00 2nd Sunday
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Website <http://www.mnmars.org>

Intranet site <http://www.communityzero.com/mnmars>

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

Test Your NIMS Knowledge

Each month we take a look at a topic covered in the FEMA on-line courses required of all emergency communications volunteers. See how much you recall from the course.

At which incident facility are primary logistics and administrative functions coordinated and administered?

- A. Base
- B. Camp
- C. Incident Command Post
- D. Staging Area

Check in next month's MARSGRAM for the answer.

BTOVER

January NIMS Solution

At which incident facility are resources kept to support incident operations if a base is not accessible to all resources?

- B. Camp

BTOVER



In what game is a Serum halfback a key player?

Check for the answer elsewhere in this issue.

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

2011 MN QSO Party. You will find links to logging software and rover maps and schedules. You will find information here: www.w0aa.org/

This is a fun operating event with opportunities for everyone to participate. You can operate voice, sideband and FM, or digital, CW, PSK, RTTY, etc. Let's put Minnesota on the air on Feb 5th.

Band	Freq.	CST	GMT
10 SSB	28450	2:00 PM	2000
15 SSB	21350	1:00 PM	1900
20 SSB	14270	All Day!	All Day!
40 SSB	7250	All Day!	All Day!
80 SSB	3850	All Day!	All Day!
160 SSB	1870	5:30 PM	2330

Band	Freq.	CST	GMT
10 CW	28050	Noon	1800
15 CW	21050	11:00 AM	1700
20 CW	14050	All Day!	All Day!
40 CW	7050	All Day!	All Day!
80 CW	3550	All Day!	All Day!
160 CW	1850	5:30 PM	2330

NOTE: Times are recommendations based on propagation estimates and past year's activity. Tune around and take advantage of what propagation is available.

BTOVER



Tin Men

ATLANTIC OCEAN Sailors survey damage and search for survivors on the scene of a staged helicopter fire while participating in a mass casualty fire drill aboard the aircraft carrier USS Enterprise (CVN 65)

Training Corner

WHAT DO I DO ?

by: Bob, NNN0GAZ FOUR

This is the first of a series of articles about Emergency Communications in the event an actual disaster.

Assume you are a resident of a small Minnesota city. A tornado has caused many injuries and extensive property damage. You, as a member of MARS, are faced with the question – what do I do?

Sending an EEI report of the disaster would be the first step. You alone determine whether the “disaster may be of interest at the national level”. If in doubt, send the report. The precedence is “immediate”.

You have composed exercise EEIs and are familiar with the format and required contents set forth in NTP8 (D) ANNEX D, Para. D900, and in the Minnesota Area Emergency Communications Plan.

Send the EEI message by commercial email marked as urgent addressed to:

AAN3EEI (AT) WINLINK.ORG
 NNN0ASA (AT) WINLINK.ORG
 NNN0ASZ (AT) WINLINK.ORG

These are the only addressees. The email subject line must read:

//MARS O/ ACTUAL EEI

Follow up with transmission by Winlink if possible. If not send your EEI message by any means available including, but not limited to, traffic or ecom nets, or the National Emergency Communication Frequencies.

If the EEI report has been emailed it should be edited before a follow up transmission so as to read:

ZEN/AAN3EEI.

Do not ZEN the other two addressees. The EEI report, after being edited, would be addressed as follows:

ZEN/AAN3EEI
 INFO NNN0ASA VA
 NNN0ASZ GA
 NNN0ASG MI
 NNN0ASG ONE IL
 NNN0ASG TWO SC
 NNN0AS5 MN
 NNN0AS5 ONE MN
 NNN0AS5 TWO OH
 NNN0GAZ MN
 NNN0GAZ ONE MN
 NNN0GAZ TWO MN

If you follow up the transmitting the report on Winlink the Winlink address would be as follows:

TO AAN3EEI
 CC NNN0ASA,NNN0ASZ, NNN0ASG, NNN0LBZ,
 NNN4BS, NNN0AS5, NNN0XEE, NNN0KZC,
 NNN0EVQ
 SUBJ //MARS O/ACTUAL EEI

The city manager asks you if Navy Marine Corp MARS can render communication assistance.

Your answer is that there must be a report of the request to the Chief Of Navy-Marine MARS.

The next article will deal with this report-the Implementation Report.

Note: The wording of the subject lines is currently under review. The wording stated in this article is specified in CHNAVMARCORMARS BCST 10-08 cited in 01 JAN 2011 message of NNN0ASZ.

-BT OVER

February Contests



2011 Valentine Sprint

Sponsored by the Penn-Ohio DX Society (PODXS)
<http://www.podxs070.com/valentine-sprint>

Work as many stations on 40/80/160 meters as possible in a maximum of six (6) hours using PSK31 mode. This event is open to all amateur radio operators licensed to operate on the HF bands. Contest runs Friday, 11 February 2011, 2000 - 0200 (YOUR LOCAL TIME - NOT UTC!). This event features a “rolling start” based on your local time to help equalize band conditions for all contest participants. (Note: this Sprint is not actually on Valentine’s Day - we figured that wouldn’t go over too well.)

Contest exchange: Callsign, Name, either “OM” or “YL” and your State/Province/Country (SPC).

Examples: “W4KRN Karen YL VA” and “N3DQU Jay OM PA”.

NA Sprint - Phone

The objective for North American stations to contact as many licensed radio amateurs as possible. For non-North American stations to contact as many North American stations as possible.

Contest operation is limited to three bands: 80, 40 and 20 meters. Suggested frequencies on Phone are around; and 3580, 7080 and 14080 kHz.

The contest exchange differs from the usual “599”. To have a valid exchange, you must send all of the following information: the other station’s call, your call, your serial number, your name and your location (state, province or country). You may send this information in any order.

You can check the NCJ web site for more information:
<http://www.ncjweb.com/sprintrules.php>

BT OVER

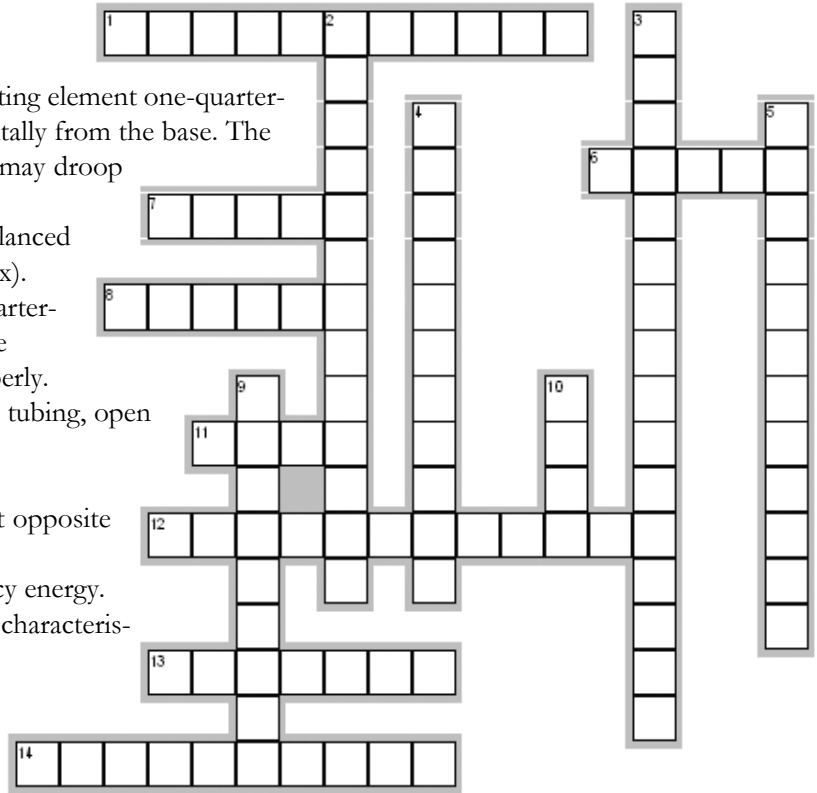


Across

1. A vertical antenna built with the central radiating element one-quarter-wavelength long and several radials extending horizontally from the base. The radials are slightly longer than one-quarter wave, and may droop toward the ground.
6. Balance to unbalance, a device used to couple a balanced antenna to an unbalanced feed line (e.g., dipole to coax).
7. Consists of a half-wavelength radiator fed by a quarter-wave matching stub. This antenna does not require the ground plane that 1/4-wave antennas do to work properly.
8. The basic antenna consisting of a length of wire or tubing, open and fed at the center.
11. An antenna that gives a directional beam pattern.
12. A feed line with two conductors having equal but opposite voltages, with neither conductor at ground potential.
13. A device that intercepts or radiates radio frequency energy.
14. An open wire transmission line — 600, 450 ohm characteristic impedances are typical.

Down

2. Antenna element that connects directly to the feed line.
3. Part of a directive antenna that derives energy from mutual coupling with the driven element, not connected directly to the feed line.
4. An antenna which radiates most of the transmitted energy nearly straight up.
5. Impedance-matching device that matches the antenna system input impedance to the transmitter, receiver, or



- transceiver output impedance.
9. An element behind the driven element in an Yagi and some other directional antennas.
10. A directional antenna consisting of a dipole and two additional elements, a slightly longer reflector and a slightly shorter director.



January Crossword Solution

Across

4. WARC—World Administrative Radio Conference at which frequency allocations are determined.
6. QRP—Very low-power operating (less than 5 watts on CW and 10 watts (peak) on phone).
8. WHIP—Antenna made from a long, thin metal rod.
9. ATTENUATE—Reduce in strength
14. OVERLOAD—A signal so strong that circuits begin to operate improperly.
15. FEEDLINE—Cable used to transfer radio-frequency energy (between Xcvr and antenna).
17. DATAINTERFACE—A device for connecting a computer to a radio.
18. SENSITIVITY—The receiver’s ability to detect weak signals.

Down

1. SCANNING—Monitor a range of frequencies or a set of memory channels for activity.

2. DIGITALMODE—Communication method that exchanges characters instead of voice or Morse Code.
3. SELECTIVITY—A receiver’s ability to receive only the desired signal and reject all others.
5. BALUN—Stands for “balanced-to-unbalanced”, provides a transition from parallel wire feed lines or antennas to coaxial feed lines.
7. POWERSUPPLY—A device that changes ac power into dc power.
10. ALLMODE—A radio that can operate on AM, SSB, CW, Digital, and FM.
11. DIPOLE—A simple wire antenna 1/2-wavelength long with feed line attached in the middle.
12. IMPEDANCE—A measure of how easily power can be transferred into a load or through a feed line.
13. GAIN—Antenna’s ability to receive or transmit energy in a preferred direction.
16. KEYER—Electronic device that generates Morse code elements.

Worm Killer: Conficker Stopped

Conficker Group Offers Roadmap For Stopping Worm

How do you nuke a worm? That was the question posed by the Conficker Working Group, which from late 2008 until mid-2009 explored a variety of techniques for stopping the Conficker worm, which by some estimates infected 15 million computers at its peak.

The Rendon Group recently released their report, funded by the Department of Homeland Security, rounding up the 15-person-strong working group's "lessons learned." The report highlighted the group's biggest achievement: "preventing the author of Conficker from gaining control of the botnet." Doing so, however, required coordinating with organizations in more than 100 countries to block the more than 50,000 domains per day generated by the Conficker C worm.

The group's legacy includes processes for coordinating with the Internet Corporation for Assigned Names and Numbers (ICANN) and country code top-level domains (ccTLDs), the report said. "Without these organizations, the group would have been able to do little to scale the registration of international domains to block Conficker C from using domains to update."

That level of coordination was created by security researchers needing a more long-term approach to containing the worm, as well as preventing similar such outbreaks in the future. Initially, for example, "several researchers were paying for and registering the vulnerable domains by hand, one by one," said the report. That was made possible by reverse-engineering Conficker's domain creation algorithm, including the dates that the malware would begin attempting to contact specific domains. Other researchers, meanwhile, accessed botnet data and created "sinkholes" for studying the malware's spread and scope.

While some security industry watchers predicted that Conficker would cause massive damage, in fact the botnet never appeared to do anything more than serve scareware. Why is that? "It is likely that the Conficker Working Group effort to counter the spread did make it more difficult for the author to act with impunity, but the author did not seem to have tried his or her hardest," said the report. "It is possible the level of attention given to the malware scared off the author. It is also possible the author is waiting for a later date or is waiting for someone to pay for the use of the botnet."

While the Conficker Working Group doesn't plan to tackle any new worms, its members "continue to block

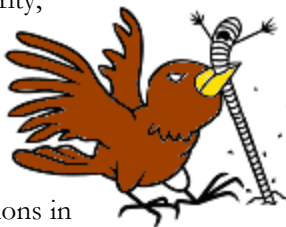
tens of thousands of domains per day," said the report.

The Conficker worm exploited a Microsoft vulnerability that was patched in October 2008. Conficker evolved with the help of its creator or creators. After its fourth iteration, it had developed multiple avenues of infection, including USB devices. It also used a variety of sophisticated techniques to evade detection and to maintain its command-and-control channel, including a pseudo-random algorithm for generating the domains it uses to receive commands.

The worm previously polled 250 domains daily for updates. On April 1 2009, security researchers who analyzed its code say it will start scanning 500 out of 50,000 domains for updates.

The worm has some peer-to-peer functionality which means that infected computers can communicate with each other without the need for a server. This enables the worm to update itself without the need for any of the 250 or 50,000 domains.

BTOVER



N6R Special Event

President Ronald Reagan's 100th Birthday

To celebrate President Ronald Reagan's 100th Birthday, the Ventura Co. (CA) Amateur Radio Society (VCARS) will activate Special Events Station N6R from Thousand Oaks, CA during the period February 05, 2011 through February 07, 2011. Operation is planned continuously from 0800 PST – 1800PST, Sunday, February 06, 2011 and intermittently at other times Saturday through Monday. Further details will be available at www.qrz.com/db/n6r Requests for schedules may be sent to n6rn6r@aol.com. QSL info: SASE to Peter Heins, N6ZE; No e-QSL or LOTW, please.



Probable frequencies for "N6R" Special Events Station: President Ronald Reagan's 100th Birthday: SSB: 3820, 7260, 14255, 21320, 28490 KHz (+/- as needed for QRM) 20M will be the workhorse CW: 3545, 7045, 14045, 21045, 28045 KHz (+/- as needed for QRM)

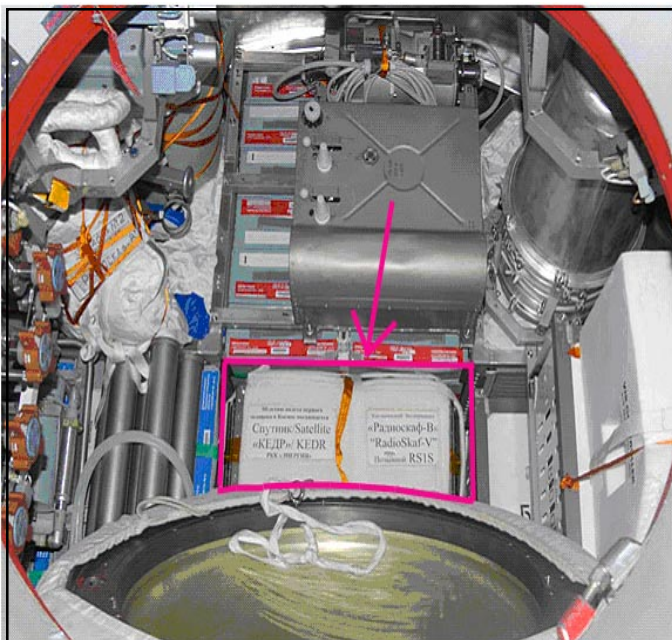
BTOVER

ARISSat-1 Blasts Off

At 0132 UTC January 28, a Soyuz-U rocket lifted off from the Baikonur Space Center in Kazakhstan carrying the Russian Progress M-09M cargo vehicle to orbit for a rendezvous with the International Space Station (ISS).

In addition to delivering fuel, oxygen, food and other supplies, the Progress contains the new AMSAT ARISSat-1 Amateur Radio satellite. Progress is scheduled to dock with the space station on January 30 at 0240 UTC.

ARISSat-1 will be manually jettisoned from the ISS during a spacewalk on February 16. The satellite features a new software defined transponder that will provide simultaneous 2-meter FM, CW, BPSK transmissions, as well as a Mode U/V (70 cm uplink, 2 meter downlink) transponder. The ARISSat-1 telemetry (145.920MHz) will use a new mode, 1kBPSK mode which incorporates forward error correction (FEC) and it should be very interesting to see how it performs under adverse SSB conditions from a weak satellite signal. The receive only 1kBPSK software should be available for free download prior to satellite deployment. Check the AMSAT website for latest info: www.amsat.org



Satellite Kedr was accommodated in the vehicle cargo compartment on January 18. The satellite is designed to carry out space experiment RadioSkaf: development, preparation and launch of supersmall spacecraft during extravehicular activity (EVA). The experiment is scheduled to be performed on January 28 at 04:31 Moscow Time.” (www.spaceref.com)

What is the Incident Command System?

The *Incident Command System* (ICS) is a standardized approach to incident management that:

- Enables a coordinated response among various jurisdictions and agencies.
- Establishes common processes for planning and managing resources.
- Allows for the integration of facilities, equipment, personnel, procedures, and communications operating within a common organizational structure.

The *National Incident Management System* (NIMS) provides a systematic, proactive approach to guide departments and agencies at all levels of government, nongovernmental organizations, and the private sector to work seamlessly to prevent, protect against, respond to, recover from, and mitigate the effects of incidents, regardless of cause, size, location, or complexity, in order to reduce the loss of life and property and harm to the environment.

The *National Response Framework* (NRF) is a guide to how the Nation conducts all-hazards response - from the smallest incident to the largest catastrophe. This key document establishes a comprehensive, national, all-hazards approach to domestic incident response. The Framework identifies the key response principles, roles, and structures that organize national response. It describes how communities, States, the Federal Government, and private-sector and nongovernmental partners apply these principles for a coordinated, effective national response.



There are a number of on-line education courses, available at no cost, that provide a great background on the ICS. Emergency communicators are generally expected to complete the courses: IS-100b, 200b, 700.a, and 800.b. The courses are available at: <http://training.fema.gov/IS/NIMS.asp>

“There are two ways to live your life. One is as though nothing is a miracle. The other is as though everything is a miracle.”

Albert Einstein

NBEMS - Doing It The Ham Radio Way

by Charles Brabham, N5PVL

<http://uspacket.org/network/index.php/topic,44.0.html>

NBEMS (Narrow-Band Emergency Message System) is perhaps the best solution available for moving eMail and other text-based information over amateur radio frequencies, to handle emergency communications. Here I will outline the reasons that I have come to this conclusion after reviewing the available amateur radio messaging systems.

Mission: Our mission is simple. - To provide an alternate means of moving messages into and out of a disaster area where regular internet access has become compromised, is limited or nonexistent. For this purpose, it is seldom necessary to transport messages or eMail via amateur radio any farther than 100 miles or so, or to move any great volume of data. It is important however that the messages get through with 100% accuracy, and in a timely manner. In most cases, this service will be needed for anywhere from a few hours up to several days.

Considerations: For amateur radio operators, the best method is to utilize the radios, software and equipment that we use every day for ham radio, and so are already familiar and comfortable with. It ideally should be inexpensive, simple and familiar so that all amateurs may utilize the system, are not faced with a steep learning curve during an emergency, and are not required to do extensive training and drilling in order to function well when needed. There also should be some flexibility to handle different needs of the situations that may be encountered.

I have reviewed the amateur radio eMail and messaging systems in current use, and have found that NBEMS best covers the mission parameters and the considerations for amateur radio operators outlined above.

NBEMS was developed as a collaborative effort between Dave Freese W1HKJ and Skip Teller KH6TY, the developer of the popular DIGIPAN PSK31 software. It consists of a suite of programs that send text, images and email files error-free. The two main programs, FLDIGI and FLARQ are designed to run under Linux, Free-BSD, Windows XP, Win2000, Vista and Windows7.

The NBEMS system is designed to operate on all amateur bands, but is optimized for short to medium range communications such as SSB VHF, or HF with an NVIS antenna can provide. It can however be utilized on VHF FM, and even operated through a FM voice repeater at need.

Digital modes currently recommended for HF NBEMS operations are: DominoEx11, DominoEx22, MFSK-16, MFSK32, BPSK-125 and BPSK250. For VHF use on simplex or through a repeater, MT63 2k is recommended

and can be used to good effect without a soundcard interface. The free FLDIGI multimode soundcard software offers many digital modes, but these are the modes associated with NBEMS. Amateurs who use FLDIGI for everyday QSOs in PSK31, Hell, Olivia, MT63 etc. will be familiar with the software when occasion calls for the NBEMS system to be called up.

The second major part of NBEMS is the FLARQ software, which provides the interface to your email program, and which also provides the ARQ feature for NBEMS which gives you 100% accurate transmissions of the messages and images you transmit. In addition to email, you can send comma delimited spread sheets/data bases, text, and many ICS form-based messages.

The WRAP add-on program allows you to transmit a bulletin to an unlimited number of stations simultaneously. Each recipient can confirm individually whether they have received the data with 100% accuracy, as WRAP generates a checksum for each message.

The FLMSG program makes authoring, sending and receiving text, ICS-205, ICS-206, ICS-213, ICS-214, and ICS-216 forms in addition to ARRL Radiograms a simple point and click proposition.

NBEMS Features:

- Inexpensive (free soundcard software)
- Simple to use, reducing training requirements
- Effective, perfectly tailored to the EMS mission
- Narrowband modes conserve spectrum
- A live operator on each end, eliminating interference potential
- Flexible enough for use with most equipment under most conditions
- The software is great for everyday use, again reducing training requirements
- Specialized add-on software for net control, rig control, callbook data, logging etc. are available

BTOVER

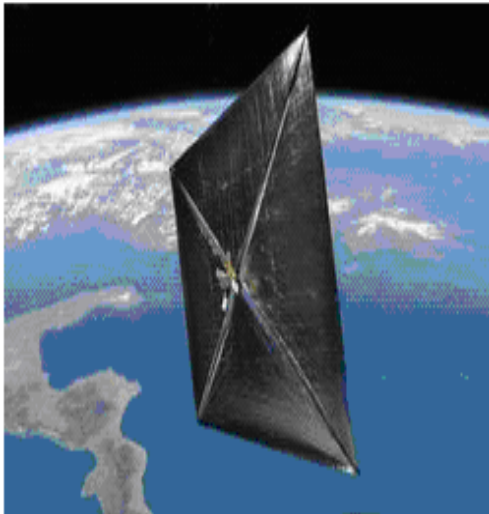
“Last night I lay in bed looking up at the stars in the sky and I thought to myself, “Where the heck is the ceiling?”

Esau Jabberjaw

NanoSail-D – Lost in Space!

When a NASA nanosatellite — NanoSail-D — ejected unexpectedly on January 17 from the Fast Affordable Scientific and Technology Satellite (FASTSAT), the agency called upon Amateur Radio operators to help track it. NASA asked radio amateurs to listen on 437.270 MHz for the signal and verify that NanoSail-D was operating. NASA received

almost 470 telemetry packets from 11 countries. The NanoSail-D beacon sent an AX.25 packet every 10 seconds; the packet contained data about the spacecraft's systems operation. You can watch a YouTube video



An artist's conception of NanoSail-D. [Image courtesy of NASA]

of the nanosatellite's beacon, made by Hank Hamoen, PA3GUO, on January 21st at www.youtube.com/watch?v=s1vZfm500hE

Once the NanoSail-D team received confirmation that the nanosatellite did indeed eject, NanoSail-D principal investigator Dean Alhorn quickly enlisted Alan Sieg, WB5RMG, and Stan Sims, N4PMF, to try to pick up NanoSail-D's radio beacon. Both hams work at the Marshall Space Flight Center in Huntsville, Alabama.

"The timing could not have been better," Sieg said. "NanoSail-D was going to track right over Huntsville, and the chance to be the first ones to hear and decode the signal was irresistible." Right before 2300 UTC on January 17, they heard a faint signal. As the spacecraft soared overhead, the signal grew stronger and the operators were able to decode the first packet: NanoSail-D was alive and well. "You could have scraped Dean off the ceiling. He was bouncing around like a new father," Sieg recalled.

According to NASA, the nanosatellite was last heard at 1354 UTC on January 21. Telemetry indicates that the sail deployed on schedule and the satellite is now believed to be out of power, which NASA said was to be expected. NASA is now asking for visual tracking and sighting reports

of NanoSail-D, which is about 650 km above the Earth.

According to the agency, when the nanosatellite's sail reflects off the Sun, it could be up to 10 times as bright as the planet Venus — especially later in the mission when the sail descends to lower orbits. You can track NanoSail-D on the web at: <http://spaceweather.com/flybys/> or <http://heavens-above.com/>.

NASA estimates that NanoSail-D will remain in low Earth orbit (LEO) between 70 and 120 days, depending on atmospheric conditions.

BTOVER



Remember our
Presidents



JACKSONVILLE, Fla. - Crewmembers from Coast Guard Station Mayport, Fla., prepare to moor up to a pier in Jacksonville aboard their new 45-foot Response Boat-Medium. Replacing the Coast Guard's 41-foot Utility Boats (UTB), the 45-foot RB-M's improved design, new ergonomics, and enhanced safety features will make Station Mayport boatcrews more effective in performing their multiple missions.

5G1B Net Schedule

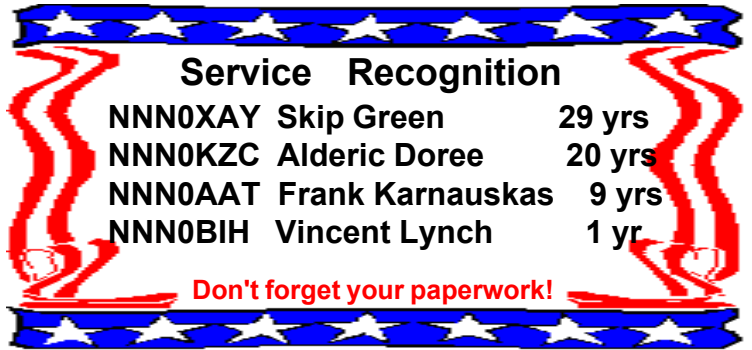
6:30PM 4007 kHz USB

Day	NECOS	Tfc Rep
Sun.	XYA	XEE
Mon.	XEE	XEE
Tue.	BQH	BQH
Wed.	KZC	KZC
Thu.	SXU	SXU
Fri.	???	???
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.



NNN0XEE Tim Isom 2/18
 NNN0APD Bob Ross 2/28



Service Recognition

NNN0XAY Skip Green 29 yrs
 NNN0KZC Alderic Doree 20 yrs
 NNN0AAT Frank Karnauskas 9 yrs
 NNN0BIH Vincent Lynch 1 yr

Don't forget your paperwork!

Saturday NECOS / TREP Schedule

NECOS TREP

Feb 5	KZC	KZC
Feb 12	SXU	SXU
Feb 19	XYA	XEE
Feb 26	XEE	XEE
Mar 5	BQH	BQH
Mar 12	KZC	KZC

Test Your Analytical Skills

The Correct Letter

Choose the correct letter for each clue in the rhyme below. When put in order, the four letters will spell the answer to the riddle.

My first is the some but not all.
 My second in into but not in tall
 My third in the little but not in the big
 My fourth in pork but not in pig
 My Whole is made in nature's way
 For clothing, rugs used every day.

Answer in the next issue of the Minnesota MARSGRAM



Rugby

Solution for January Skills Test

Grazing Time

Marilyn, Parade Magazine

Say that 70 cows take 24 days to eat all the grass in a pasture. The same pasture sustains 30 cows for 60 days. How many cows would take 96 days to eat all the grass?

Puzzle fans and math students can start with the following hints.

(Assume that all grass grows at the same rate and that all cows eat grass at the same rate.) Construct equations with four elements: 1) the amount (inches) of grass in the pasture at first; 2) the rate at which it grows in inches per day; 3) the rate at which a cow eats grass in inches per day; and 4) the number of cows that would take 96 days to eat all the grass.

Answer:

a = length of the grass at first

b = rate at which grass grows

c = rate at which a cow eats grass

d = number of cows that would take 96 days to eat all the grass

"Never take life seriously. Nobody gets out alive, anyway."

Earl Lee Bird

$70 \times 24c = a + 24b$, so $1680c = a + 24b$ (first fact given)
 $30 \times 60c = a + 60b$, so $1800c = a + 60b$ (second fact given)
 which means $120c = 36b$

$70 \times 24c = a + 24b$, so $1680c = a + 24b$ (first fact given)
 $d \times 96c = a + 96b$, so $96cd = a + 96b$ (third fact given)
 so $96cd - 1680c = 72b$

As $120c = 36b$, and $96cd - 1680c = 72b$, then $2(120c) = 96cd - 1680c$.

So $240c = 96cd - 1680c$. Factor out c, and we're left with $96d - 1680 = 240$.

Which means $96d = 1920$, so d (the number of cows) equals 20.