The MARA-VARA *Monitor*

NOVEMBER 1996 -- Volume 96:11

VARA President's Message

Hello to all, and I was glad to see everyone at the last meeting. We had several report's given as to the Committees we have formed of late. Looks like the 1996 Christmas Party is all set to go and remember to get your money to Charlie (WA4ITY) by the cut off date of November 25th. 1996. Checks can be made out to V.A.R.A. at P.O. Box 666 - Staunton, Virginia - 24402 (yes 24402) as said before the Party will be held on December 12, 1996 at the School House Restaurant in Stuarts Draft, Va. Meal time is 7:00 P.M. but come around 6:30 P.M. and get settled in and ready for a good meal. The five Meat buffet is $9.75 each and the Seafood buffet is $16.00 each (mix or match just let Charlie know) this includes drinks, tips, etc: Remember all are WELCOME, you do not have to be a Club Member, just show an interest in Amateur Radio and bring a friend along.

The By-Laws Committee gave some very good suggestions at the meeting and will be voted on at the next meeting. There was quite a bit of discussion, in reference to some issues, but I believe all has been worked out.

The Committee for the 1997 Club Officer's will have a report at the next meeting and we will vote on the Officer's at that time, so all plan to be there and get your vote in for the 1997 Officer's. Well I stated last month that I "MIGHT" have a new Club Roster made up, but I had some computer problems and just flat ran out of time but, I promise I will have one for the next NewsLetter.

Well Bike Virginia will be over with before this Newsletter is received and I would like to thank everyone that took part in this event. Not only does it bring some money to the two Club's Treasure but it is a time that we can help out and show the public how we can operate and provide a good service.

Well that's about all for now and I am looking forward to seeing everyone at the Bike Virginia Event, the next club meeting and the Christmas Party. Also remember that the Christmas Party will take place of the December Meeting.

73 for now:
Ken - KE4GKD

Important Information

This month's Monitor contains some VERY important inserts. Of primary importance is the Christmas Banquet Reservation Form!

BE SURE YOU MAIL YOUR FORM TO THE PROPER TREASURER!

Also included is a survey form to assist your club's officers.

Additionally, club dues will be due soon. If you want to save a stamp, you can enclose your 1997 club dues in the same envelope with your survey and your Christmas Banquet reservation form.

But the most important thing is the reservation for the Christmas Banquet. This will be the LAST newsletter you will receive before the reservation deadline! Get your spot lined up now while you are thinking about it!

New Officers for MARA

Congratulations to the new officers of the Massanutten Amateur Radio Association, Inc. Elected at the October 3 meeting were the new president, David Tanks (AD4TJ), vice-president Walt Lam (KF4BFB), secretary Wilton Thomas (KF4BFL), treasurer Dick Weaver (W3HXH, formerly W4JZC), and the board member-at-large for 1998, Sandy Mullins (KE4PZC). These hams, along with Bill Edmundson (W4IMS), board member-at-large for 1997, will comprise the MARA Executive Committee with full authority to act (as a group) as the official decision-making body for the corporation.

Quick: how many orbiting satellites carry ham radio?

Would you believe -- twenty (20)! See the listing in this issue of the Monitor!

MARA Christmas Banquet: December 5, 1996

Mark your calendars! The Massanutten Amateur Radio Association will hold its annual Christmas Banquet at Pano's Restaurant on South Main Street in Harrisonburg on Thursday evening, December 5th. The Banquet will replace the normal December club meeting.

The event will begin with an informal fellowship time starting at 6:30, followed by the meal served at 7:00 pm. The meal will feature Pano's famous three-meat buffet, all-you-can-eat, including a wide variety of vegetables, breads, desserts, and tea or soft drinks. The price set by the club is $15.00 per person, or $30 per couple. The price includes the entire meal plus gratuity for the waitresses, and even has some left over for entertainment, if the club so desires.

David, KD9LA, has made the reservation for the meal, and will need to contact the restaurant manager no later than November 25th with the exact count of people to be served. There is a minimum of 40 persons, so the club will have to pay for 40 people even if only 39 (or a lesser number!) show up.

So make your reservation today! Use the enclosed form to send in your payment and reserve your spot! Make checks payable to MARA, and send them to Dick Weaver, W3HXH, at RR1 Box 125, Harrisonburg, VA 22801. Be sure to print the words "Christmas Banquet" on the check!

If you have any ideas for entertainment, contact the new club president, David Tanks, AD4TJ, or vice president, Walt Lam, KF4BFB.

Thanks to VE's for Service

A special thanks goes to those hams who take time out of their busy Saturday schedule to participate as a volunteer examiners October 12th:

- Randy Smith, KN4KB
- Mike Dillon, KO4EA
- Eugene Sullivan, WA4NUF
- Joe Moomaw, W4XD
- Hardy Forman, AD4IZ
- Terry Henderson, KT4UO
- Doug Zirk, KE4RMD

Public Event Reports

Hams in the Valley have been donating much time to public service events this fall, over and above the time spent in emergency communication related to storms, search-and-rescue, and other activities. Next month's Monitor will have details on several of these events, including recognition of the hams who have been giving of their time and talents.

Call for Papers!

The Monitor editor needs your stories! This newsletter is your newsletter! Get your articles, stories, tidbits, for-sale items, public requests, jokes, and other material to David by November 19th for the December issue of the newsletter. Don't have time to write it up? Call him at 540-234-0448 and give him the details on the phone! Or call during the day at 540-568-3024. Or catch him on the air in the mornings (8:45-ish) on 146.625. Give him a call on Tuesday afternoons at 4:45 pm on 146.625 or at 5:00 pm on 147.075. Or mail it to him at RR1 Box 615, Weyers Cave, VA 24486 in time to reach him by November 19th.

VARA Treasurer's Report

Beginning Balance (July) -- $1,209.17

August Donation -- $3.00

August 50/50 -- $14.00
September Dues -- $5.00
September 50/50 -- $13.50
Septmber Hamfest Raffle -- $13.00
October 50/50 -- $13.50
October Donation -- $0.50
October Dinner Reservations -- $71.50

Subtotal -- $1,343.17

Aug/Sep/Oct Newsletter -- $205.95
Dillon Flowers -- $26.13
Pitsenbarger/Fielding Flowers -- $59.48
FCC Club Call -- $30.00
FCC Club Call Replacement -- $30.00
Ending Balance (October) -- $991.61

Regarding the $30.00 checks to the FCC, the first one accompanied an application for a club callsign, but the form was received too early. The FCC returned the form, but kept the money. The second application accompanied the second check. A request for refund has been filed with the FCC for the first check.

Charlie Garner, WA4ITY
VARA Treasurer

FREE REFERENCE LIBRARY!

Ham radio operators do more than just talk to the South Pole using morse code. For more than 75 years, hams have been leaders and innovators in all kinds of communication technologies, from the use of Single-Side-Band, popularizing FM repeaters, introducing packet radio, designing GPS-based systems for mobile location, RDF finding, orbital mechanics on a PC - if it is an innovative communications technology, hams have their finger in the pie.

The latest technical communications innovation has been the Internet, a world-wide network utilizing packet switching technology. More and more hams are "connected" to this land-line based system, and are using it to exchange information on the hobby. Perhaps the most useful aspect of the Internet is its ability to serve as an online reference library. Hams on the Internet can connect to literally thousands of computers containing hundreds of thousands of files containing reference data on the hobby. Everything from satellite operating schedules, the lastest vanity callsign issuances, ham TV schedules, QSL routes, all can be had free for the asking, and usually within 10-20 seconds of the asking.

Below is a collection of URL (uniform resource locator) addresses at which can be found a plethora of information covering almost every aspect of the hobby. And the primary benefit of the Internet is that each URL below contains links to dozens or even hundreds of other sources containing even more reference material. Happy hunting!

A DIE-HARD DX-ER'S DELIGHT: http://www.dxer.org. Also try: http://www.netcom.com/~ac6v/

PRACTICE EXAMS FOR HAM RADIO LICENSES: Contains practice exams. You can register at this site and receive a password, after which you can save the results of your personal practice exams and the software will generate new ones concentrating on the areas you missed. This site is invaluable for hams

wishing to upgrade, or computer users wishing to become hams.
http://www.biochem.mcw.edu/Postdocs/Simon/radio/exam.html

ON-LINE HAMFEST: Buy, sell, or trade ham radio gear. http://www.primenet.com/~ke7gh

SLOW-SCAN TELEVISION: Includes information on getting started, an on-line SSTV handbook, as well as an archive containing hundreds of images. http://www.ultranet.com/~sstv/

POTOMAC VALLEY RADIO CLUB: http://www.access.digex.net/~k3sa/pvrc.html

ON-LINE CALLSIGN LOOKUPS: http://www.qrz.com/cgi-bin/webcall

BUCKMASTER PUBLISHING'S HAMCALL: http://www.buck.com/cgi-bin/do_hamcall

WEATHER SATELLITES: http://www.sr.se/rs/english/media/galaxy8.htm

FCC'S RECENT ANTENNA RULING: the FCC's web page covering the recent report and order pre-empting real-estate covenants and homeowners association rules prohibiting television receiving antennas. http://www.fcc.gov/Bureaus/International/Orders/fcc96078.txt

Also try: http://hamradio-online.com/1996/aug/fccanten.html -

ON-LINE CATALOGS: http://www.downeastmicrowave.com/Catalog.html -- DownEast Microwave

http://207.22.155.2/paccomm/pchome.htm -- PacComm products

Also try: http://www.kenwood.com, and http://www.yaesu.com and http://www.tentec.com

and http://www.alinco.com and http://www.hamradio.com

MICROWAVE OPERATION: European Microwave News: http://www.pacsat.demon.co.uk

SOLAR FLUX, PROPAGATION GRAPHS: http://www.trsc.com/propgrap.htm

NOAA'S STERLING (VA) WEATHER STATION: http://www.nws.noaa.gov/er/lwx/

GENERAL PURPOSE HAM RADIO SITES: What one ham called the "mother of all ham radio sites".http://uhavax.hartford.edu/disk$userdata/faculty/newsvhf/www/ham-www.html

http://www.uvm.edu/~swarley/ham.htm

http://www.arrl.org/

VANITY CALLSIGN SITES: http://www.mindspring.com/~ki4hn - The new KI4HN website listing the latest vanity callsign assignments

http://gullfoss.fcc.gov/vanity.prod/vanity.htm - the FCC's official vanity callsign page, including electronic filing for a vanity callsign.

http://www.arrl.org/fcc.vanity.html - the latest information on the vanity callsign program from the ARRL.

http://www.lantz.com/htbin/cbs_today - lists ALL of the FCC transactions which result in callsign changes.

SPACE-BASED GLOBAL POSITIONING SYSTEM APPLICATIONS: For those interested in GPS-based satellite tracking system and the APRS packet-radio location systems. This site includes the recent space shuttle GANE radio-location results and the upcoming REXII mission.
http://gauss.gge.unb.ca/grads/sunil/sgps.htm

HAM RADIO (OSCAR) SATELLITE-RELATED HOME PAGES:

http://www.ee.surrey.ac.uk/EE/CSER/UOSAT/SSHP/list.gps.html - The small-satellite home page at the University of Surrey lists details of the microsats carrying amateur radio, and links to related radio sites.

http://www.amsat.org/amsat/news - Location of the North American Ham Radio Satellite Corporation, carrying all news and releases about world-wide ham satellite operation. Also contains back issues of amsat bulletins and publications.

http://www.technion.ac.il/~asronen/techsat - information on Israel's upcoming ham radio satellite project.

http://www.wwnet.com/~jsmyth/index.html - If your browser software supports speech synthesis, you will enjoy the echospeech audio files from this source. This site includes lots of reference material on the digital and analog ham radio satellites, including the newest bird, FO-29.

http://www.geocities.com/SiliconValley/7100/index.html - complete information and guidance on satellite tracking, including software.

http://www.sat-net.com/winorbit/help/idxsatellites.html

HAM RADIO ABOARD THE SPACE SHUTTLE FLEET: http://www.nasa.gov/sarex/sarex.html

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ACTIVE SATELLITE SUMMARY

Orbiting Satellites Carrying Amateur Radio

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Voice/CW Satellites:

Satellite          Uplink                Downlink                 Type          .
AO-10              435.030-435.180LSB/CW  145.975-145.825 USB/CW   Mode B Analog
AO-13              435.423-435.573LSB/CW  145.975-145.825 USB/CW   Mode B Analog
AO-13              435.603-435.639USB/CW  2400.71-2400.74 USB/CW   Mode S Analog
FO-20              145.900-146.000LSB/CW  435.900-435.800 USB/CW   Mode J Analog
AO-27              145.850 FM             436.80                   P/T Repeater
RS-10              145.865-145.905USB/CW  29.360-29.400            Mode A Analog
RS-12              21.21-21.25 USB/CW     29.41-29.4               Mode K Analog
RS-15              145.858-145.898USB/CW  29.354-29.394            Mode A Analog
FO-29              145.900-146.0 USB/CW   435.800-435.900          Mode J Analog

Digital Satellites:

Satellite Callsign Uplink                      Downlink             Type          .
DO-17                                          145.825   FM         1200B AFSK
UO-11                                          145.826   FM         1200B ASCII

WO-18                                          437.104   SSB        1200B PSK
LO-19     LUSAT    145.84/.86/.88/.90   FM     437.1258  SSB        1200B PSK
FO-20     8J1JBS   145.85/.87/.89/.91   FM     435.91    SSB        1200B PSK
AO-16     PACSAT   145.90/.92/.94/.96   FM     437.0513  SSB        1200B PSK
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IO-26     ITMSAT   145.875/.90/.925/.95 FM   435.822  SSB          1200B PSK
FO-29     8J1JCS   145.85/.89/.91        FM   435.91   FM           1200B PSK

UO-22     UOSAT5   145.9/.975            FM   435.12   FM           9600B FSK
KO-23     HL01     145.85/.90            FM   435.175  FM           9600B FSK
KO-25     HL02     145.87               FM   436.5    FM           9600B FSK
POSAT     POSAT1   145.975              FM   435.2777 FM           9600B FSK
FO-29     8J1JCS   145.87               FM   435.91   FM           9600B FSK
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Notes:

1. DO-17 (DOVE) only transmits downlink information that contains the status of the satellite. The packets may be received and decoded using a normal terrestrial style TNC and handheld radio. Many hams receive the information without an outside antenna.
2. UO-11 (UoSAT) is performing well with a narrowband FM telemetry downlink on 145.826 MHz. A 1200 bps synchronous AFSK demodulator can be used to copy OSCAR-11 along with an ASCII communications program using 7 data bits, even parity, and one stop bit.
3. WO-18 (WEBERSAT) transmits experimental and image data and can be captured in KISS mode via PB or TLMDC. The image data is a video shot of the Earth.
4. Except for FO-20, the digital satellites use a program suite containing PB/PG/PFHADD/PHS or WiSP. The broadcast callsign (in PB.CFG) is the satellites callsign with an SSID of -11. The connect mode callsign (in PG.CFG) is the satellites callsign with an SSID of -12.
5. When FO-20 is in Mode JD, this satellite can be worked with any packet program. Connect to 8J1JBS. FO-20 currently alternates between Modes JA and JD on a weekly basis. Consult ANS for schedule.
6. AO-10 is no longer controllable (It has exhausted it's propellent supply) but the transponder works when the satellite is in sunlight.
7. For AO-10, AO-13, and FO-29 ground stations should transmit on LSB, and receive USB. As transmitted frequency increases the received frequency will decrease (all three birds have an inverting transponder).
8. According the AMSAT, AO-13 will crash back into the Earth sometime in December of 1996. Work it while you can.
9. When a new digital satellite appears for which you don't know the call sign, you can turn on the "Print Headers" option in the MSPE General Setup Window and look at the displayed headers in the downlink data. You will see the satellite call signs in the headers.

HOW DOES THE GLOBAL POSITIONING SYSTEM WORK?

Have you ever wondered how the Global Positioning System actually works? Most hams know that the GPS system is made up of a constellation of orbiting satellites. They know that each satellite transmits a signal, and a hand-held GPS receiver receives the signals from several of these satellites and translates them into latitude and longitude. Advanced GPS receivers also have a computer inside that can store several coordinates (taken at different times), and then calculate direction and velocity. The big question is, how does all this work?

In a nutshell, they use a technique called "Doppler Frequency Shift Determination". Doppler was the scientist who "discovered" that signals emanating from a moving platform (e.g., the sound of a train whistle on a moving locomotive) arrives at stationery point at a different frequency from the one at which they were transmitted. By knowing the original transmitted frequency, and then measuring the amount of frequency variation, a computer can determine the relative speed at which the source the moving.

GPS satellites are really just clocks in orbit. All the coded signals and the RF carriers are derived from an atomic clock (mostly Cesium, Rubidium as a backup) on each satellite. All GPS signals are multiples or sub-multiples of 10.23 MHz. These clocks are on orbital platforms moving at orbital velocities of approximately 7 km/second. On the ground, we see projected velocities of ~ +/- 5 km/second. Thus, every GPS receiver is tracking and decoding signals sent from a moving platform. At the GPS L1 frequency (1575.42 MHz), this amounts to a Doppler tracking range ~ +/- 25 kHz just for the orbital velocity.

When you are at a "fixed" location on the ground, you are actually moving with respect to the satellites because the earth rotates. If you are at the equator, you have a westerly speed of 460 meters/sec (circumference of the earth = 40,000 km, and the earth rotates once/day = 86400 seconds). This "fixed QTH" speed decreases as cosine(latitude) to zero at the poles and is around 300 meters/sec at mid-latitudes. This gives rise to a few hundred Hz of additional Doppler shift. When you operate your GPS receiver to show your velocity, it is derived from the excess Doppler seen on number of GPS satellites. If you are speeding along at 160 km/hr (100 MPH), a satellite at the horizon in the direction you are moving has an extra Doppler shift of ~222 Hz. In a jet airplane, Doppler rates of ~1 kHz have to be accommodated.

A GPS receiver has a phase-locked loop (PLL) tracking the carrier frequency of each GPS satellite it is observing. The receiver acquires and decodes a signal from several satellites. Each signal carries with it the timing pulses, along with the identification of which satellite it came from. The receiver uses the timing pulse to determine the base frequency (transmitted frequency) for each satellite. By comparing the received signal frequency to this base, the computer can determine the amount of Doppler shift, and thus the relative speed of the satellite with respect to the receiver. By comparing this data for several satellites, the computer can determine the relative motion of the receiver with respect to several of the satellites. By comparing the relative motion with the known values of motion for the earth (with respect to the satellites) the computer can determine the receiver's exact location. The computer then translates that into latitude, longitude, and altitude (for surface locations), or some other coordinate system (for spacecraft and space-based locations).

From the numbers given above we can see that the PLLs have to have a total tracking range of 50-60 kHz, corresponding to total velocities of 5-6 km/second. The PLLs in a GPS receiver are typically implemented in custom VLSI DSP (Very Large Scale Integrated Digital Signal Processor, a fancy term for a very complicated but tiny microchip). The VLSI chips and the associated DSP code are highly proprietary for each receiver manufacturer. The associated microprocessor works together with the receiver/decoder to calculate directions, velocities, and store your locations. The various receiver manufacturers have targeted a particular niche and have cost-engineered their receivers for that market (and they have little interest in doing "special adaptations" unless there is a market for 10,000+ units). Therefore the "typical" innards of a cheap GPS receiver like you can buy at "K-Mart" or "Boats 'R Us" are great for terrestrial, slow-moving applications (such as APRS, fishing, hunting, field day use, mountaintopping, etc.) but won't work in high-velocity applications, such as aircraft, spacecraft, or missiles.

The Department of Defense has deliberately withheld critical decoding information and degraded the effectiveness of the GPS system so as to thwart evil doers (who might use the system to steer SCUD missiles, for example). However, due to the positive economic impact of the GPS system, the DoD has announced it will cease the degradation and will allow private, industrial, and commercial users to determine location to with 3 feet by the turn of the century.

From Tom, W3IWI

Yes, Virginia, You CAN TALK to the Soviet Space Station

Have you ever talked to an astronaut? Or a cosmonaut? Live and in-person? The orbiting space station MIR

has a collection of ham radio equipment on board. Every day, ordinary amateur operators talk to the spacemen (and spacewomen!). Although a steerable beam increases your signal strength, all of the operations can be (and have been!) worked with an omnidirectional antenna. Some hams have even worked MIR with a handy-talkie! You can use 2-meter FM voice or 2-meter packet to talk directly to the astronauts. Or you can use the space station as a voice repeater, or as a standard 1200 baud 2-meter BBS packet relay station, or a 9600 baud UHF packet relay station.

MIR PACKET MESSAGE SYSTEM

Many amateur radio stations have learned the correct procedure for connecting to the Mir PMS (Packet Messaging System, or BBS). Unfortunately, there are many others who do not understand procedure for connection to Mir. The PMS on Mir can only connect to one (1) station at a time, and it only takes one station operating improperly to ruin a whole pass for everyone in North America. If you happen to find one of these stations please pass on the correct information or direct them to back issues of SpaceNews or QST.

The Keyboard port (R0MIR) is not used often. Unless there is a crew member actively typing on this port, you should NOT connect to the Keyboard port. Don't be fooled by the CQ message coming from the R0MIR port R0MIR>CQ :

Anything you send to the R0MIR port is not saved and just causes interference to people using the Mail port (R0MIR-1). Stations attempting to connect to Mir should make sure the TNC parameter MCON is turned ON. Look for the packet message: R0MIR-1>CQ : before you call Mir! If you do not know how to read a packet string, then maybe should not try to call Mir until you study a little more. If you see a string with an Index number: R0MIR-1>xx1xxx : then you should immediately abort any attempt to connect the Mir PMS, and wait until you see the packet.

MIR BBS COMMANDS

The Commands for the PMS are:

(CMD): (B/H/J/K/KM/L/M/R/S/SR/V/?)>

- B(ye) B (Enter) disconnects you from PMS.
- H(elp) H (Enter) or ? (Enter) displays this help file
- J(log) J (Enter) displays a list of callsigns heard (optional date/time)
- K(ill) K n (Enter) deletes message number n (only to/from your callsign).
- KM(ine) KM (Enter) deletes all READ messages addressed to your callsign.
- L(ist) L (Enter) lists the 10 latest messages.
- M(ine) M (Enter) lists the 10 latest messages to/from your callsign.
- R(ead) R n (Enter) reads message number n.
- S(end) S (callsign) (Enter) begins a message addressed to (callsign).
  - Subject: ending with (Enter)
  - Text: End each line with (Enter). End message by typing /ex (Enter) or CTRL-Z (Enter) at the beginning of a new line.
- SR(eply) SR n (Enter) Sends a reply to message n prompting only for text.
- V(ersion) V (Enter) displays the software version of the PMS system.

VOICE OPERATIONS BY THE COSMONAUTS

MIR cosmonauts operate on Decreed Moscow Time (DMT) which is GMT + 3 hours. Unlike normal Moscow time, DMT does not add an hour for daylight savings during the summer. The MIR crews sleep

from 10 p.m. to 8 am DMT, so you can calculate what that corresponds to for your time zone. (Roughly, it is 3 pm to 1 am EDT, or 2 pm to midnight EST.) It's important to note that this is their "scheduled" sleep time - many cosmonauts have been heard on the radio when they're scheduled to be sleeping. So it's worth listening just in case somebody's up late.

Under normal circumstances Sunday is a rest day, for the cosmonauts to do whatever they want. And ham radio is certainly one of the key activities for many (not all) cosmonauts. So it's certainly the most likely day to find them on the radio.

Each of the upcoming U.S. astronauts who will be spending time on MIR has earned a U.S. amateur call sign - John Blaha, Jerry Linenger, Mike Foale, Wendy Lawrence, and Dave Wolf. Some had earned their licenses for previous shuttle missions, others had exposure to SAREX on their previous flights, but got their licenses specifically for their stays aboard MIR. None of these folks includes amateur radio in their list of hobbies in their official biographies, so it's logical to assume that they aren't 'die-hard hams', but are more interested in using the radio aboard MIR for unofficial communications with family, friends, etc.

During passes of the MIR-station during working hours you might be able to copy U.S. astronaut John Blaha using the official space communications channel (not a ham frequency!) of 130.165 MHz while his Russian colleagues use 143.625 MHz. The arrangement for the use of 130.165 MHz will be made on 143.625 MHz. If they speak about UKW-DVA (VHF-2), they mean 130.165 MHz. Of course, these frequencies are official business, and you can listen but you can't transmit on them.

Radio-amateur traffic: The 145.550 MHz channel is fully in use for Packet radio and often Cosmonaut Korzun can be heard in conversations on phone with amateurs on earth. Korzun is a skilled and enthusiastic radio-amateur. It is also worth while to monitor the 437.925 and 437.950 MHz for traffic via the SAFEX installation in the Priroda supply module.

VOICE REPEATER: S.A.F.E.X.

SAFEX operates an open 440 MHz repeater for use by all hams. Its primary use is as a simply, space-based voice FM repeater, just like your local mountaintop repeater, but with about 180 miles of altitude! The repeater operates under the call sign RR0DL. CTCSS tones are required to communicate through the SAFEX II experiment. After the repeater has been activated by someone with CTCSS, other stations without CTCSS can also work through the repeater. It is even possible to use the repeater to contact the MIR crew if one of them is at the microphone.

In order to involve the largest numbers of amateurs, SAFEX contacts should be kept as short as possible. Operators should adjust their frequency to account for the plus/minus 10 KHz Doppler shift. The following are the SAFEX 70 cm frequencies for the three SAVEX operating Modes.

Mode 1: FM repeater with CTCSS sub-tone 141.3 Hz. Downlink 437.950 MHz, Uplink 435.750 MHz, CTCSS 141.3 Hz

Mode 2: 9600 Baud (G3RUH compatible) Packet Operation. Downlink 437.975 MHz, Uplink 435.775 MHz, No CTCSS

Mode 3: Pre-recorded digital voice beacon, and may be used for contacts with the MIR crew. Downlink 437.925, Uplink 435.725, CTCSS 141.3 Hz

PRIMARY MIR CONTACT FREQUENCIES

The 2-meter frequencies used for MIR (preferably in split-mode operation) are 145.800 MHz (uplink),

145.200 MHz (downlink), and 145.550 MHz (up/downlink). These frequencies were adopted for MIR and Shuttle activities at the IARU session of the 1995 AMSAT-UK Colloquium.

The SAFEX II team is very interested in reception reports, and any technical measurements or oscilloscope plots of the repeater's signals. Send reports to Joerg, DL3LUM, joerg.hahn@dlr.de on email or use packet radio by sending it to DL3LUM@DB0AAB.#BAY.DEU.EU.

MIR QSL CARDS

Dave Larsen, N6JLH, is the US MIR QSL manager for contacts made with MIR crew members. QSL cards must include date, time, and mode of contact. Cards for SWL reports will not be handled by Dave. If a contact is made with the MIR packet radio personal message system (PMS), then the message number issued by the PMS should be included on the QSL card. QSLs must be sent along with a business-sized self-addressed stamped envelope (the card will not fit in a regular-sized envelope). QSLs should be sent to: David G. Larsen, N6JLH, PO Box 1501, Pine Grove, CA 95665 USA

BRIEFS...

- Automated ListServer For Specialized Ham Radio Techniques: For those of you who do not have a World-Wide-Web browser, but do have e-mail, BitBucket is a newly created mailing list reflector devoted to specialized amateur radio communication techniques. This includes SSTV, ATV, FAX, Packet, Pactor, G-TOR, Clover and much more. To subscribe, send e-mail with body of message "subscribe bitbucket" to majordomo@primenet.com
  From Amateur Radio Newsline

- DX News: Hong Kong Prefixes: Brett Graham, VR96BG, reports that hams in Hong Kong will be allowed to use several prefixes to commemorate the transfer of sovereignty over the territory from the United Kingdom to the People's Republic of China on July 1, 1997. At the request of the Hong Kong Amateur Radio Transmitting Society, Hong Kong amateurs will be allowed to change the numeral in their call sign to 96 during 1996, to 97 during 1997, and to 98 during 1998. Graham says that Hong Kong Amateurs began to use these new prefixes on September 10th with a contact between VS96BG and VR96GO. The Hong Kong club says it will announce later the details of a new award to be offered to amateurs for contacting stations using these special prefixes. All Hong Kong amateurs have held licenses with call signs using the prefix VR2 for several years. Those previously holding VS6 calls are allowed to continue to use the VS prefix through July 1st of 1997. The VRA to VRZ block allocated by the ITU to the United Kingdom will be transferred to the Peoples Republic of China at that time. The only other use of that block at present by amateurs is on Pitcairn Island, where VR6 calls are still in use.
  From Amateur Radio Newsline

- Sun Spotless! Propagation guru Tad Cook, KT7H, of Seattle, Washington, reports that on October 9, we completed the third full week of no visible sunspots. Average solar flux was about the same as the previous week, and was below the average for the past 90-day average, which is 71. "It looks like conditions related to the next cycle are not about to turn up yet," he said. Over the month of October solar flux is expected to hover around 70 or below, as solar activity continues to stay very low. The geomagnetic field is expected to become unsettled to active due to recurring coronal holes during the periods October 7-9, 17-20 and 23-25.
  From the Oct 11 ARRL Letter

- ARRL No Longer On Prodigy or Genie: ARRL drops two on-line accounts: Because of a precipitous

drop in use by our members, ARRL will close its accounts on GEnie and Prodigy as of November 1. Pointers to sites still offering our services--such as ARRLWeb, InfoServer, CompuServe and America Online--will be posted on both Prodigy and GEnie, including instructions on how to subscribe to W1AW bulletins. For more information, contact Mary Carcia, N7IAL, 860-594-0230; e-mail mcarcia@arrl.org
From Oct 11 ARRL Letter

• No More Morse? MARS drops CW: All CW nets and other CW activity in the Military Affiliate Radio System (MARS) were ordered to cease operation effective October 1, 1996. After that time, no CW nets or other CW activity will be allowed on any DOD MARS frequencies. A final MARS CW message was transmitted simultaneously on Army, Navy and Air Force MARS frequencies on September 30.
From Oct 4 ARRL Letter

• Terrestrial Distance Calculation Program: Looking for a program that will calculate the distance between two sites if the GPS lat/long or gridsquare is given? See the June 1993 QST article for a write-up on a nifty program. Not only has Michael (of NOVA fame) done the program for you but he has taken in to account the irregularities of the earth's shape to provide a very accurate distance between two locations. ARRL is using the program for the VHF distance records. "The ARRL World Grid Locator Atlas" contains all 32,400 Maidenhead Locator Squares but it can be difficult to accurately find a grid for some locations. Program: bd.exe, 30k "W9IP's JUN-93 QST Bearings/Grids". Its a plain ol'DOS program that only takes 30K; the user interface is a bit dated by todays standards (sorry Mike) but it does what it suppose to do. It can be found from the ARRL or many of the shareware ftp sites.

• New Indiana 6-Meter Beacon: Brian Bell, N9XDW reports that a new six meter beacon is on the air from Mooresville, Indiana. Its call sign is KG9AE and it can be found on 50.065 MHZ transmitting in CW. Its purpose is to draw attention is to draw attention to the 53.450 MHz and 444.575 MHZ linked repeaters that serve central Indiana.

MARA SECRETARY'S REPORT

October 3, 1996 Meeting

The MARA club held its October meeting on the 3rd at the Golden Corral Restaurant in Harrisonburg. 24 hams attended.

Dick, W3HXH, gave the Treasurer's Report. The balance on this day is $1272.97.

Dave, KD9LA, reported on the Christmas Banquet information. After hearing the various possibilities, the members decided to go with Pano's, on December 5th, Thursday night, with the three-meat buffet meal, at a cost of $15 per person which includes meal, tax, tips, and the remainder would go into club funds. The entertainment question was up in the air, with not much direction or input given.

Norman, KA4EEN, ARES net coordinator, said that all of October's net control positions had been taken care of except for October 28th. Then the rest of the year (except for a couple of nights) had been filled.

Dale, KD4DDI, reported on upcoming hamfests: Howard County November 13, Westminster towards the end of October. Contests: November, first weekend is the CW Sweepstakes. November 16-18 is the phone

Sweepstakes. December 6-8 is the ARRL 160m CW Contest. December 14-15 is the ARRL 10-meter contest.

Ray, KD4OXU, reminded everyone of the MS walk on October 12th, at JMU's Duke Hall. Hams be there at 7:30 am.

Dale said for those who weren't aware of it that the ARES was called out to help provide communications during a search for a lost hiker the weekend before the club meeting. The command bus was set up at Massanutten Village, and hams were at the base of the mountain.

Jeff, WB4PJW, gave details on the Bike Virginia preparations. The even will be in the eastern part of Augusta County this year instead of the western part. The dates are October 26 and 27.

Ray said that Paul, KD4DDI, was getting an order together for magnetic signs for the sides of vehicles to help identify hams as ARRL Amateur Radio Emergency Communications Providers. The cost will be about $9.50 each sign.

Dale and Colin, N4ZFQ, had talked about things that can be done (or obtained) to help hams do even better at providing emergency communications, such as an information folder, etc. FEMA (Federal Emergency Management Agency) can provide funds for equipment for the fire stations and rescue squads, Rusty (N4YET) said. Gene, WA4NUF, said that there are several hams now on rescue squad rolls and fire department rolls so ham radio awareness is greater. Also, Dale said that maybe some in those two groups would also have some interest in taking Novice/Tech classes so it may be a good idea to move the class to a FD station. It was recommended that ARES have a budget each year, and the amount of $200 was voted to be allowed to handle expenditures to the end of this year, and that the ARES budget committee (Dale and Marshall, N4ZKH), review the needs for 1997 and report back to the club on what they see will be a good budget for next year. Voted and Accepted.

The 50/50 drawing was won by Al, N3JB. His share was $13.00.

Chip Mullins, KF4LGT, was accepted as a new member of the club. With no nominations from the floor, the slate of officers recommended by the nominating committee for the new year was accepted. They are:

- President: David Tanks, AD4TJ
- Vice President: Walt Lam, KF4BFB
- Secretary: Wilton Thomas, KF4BFL
- Treasurer: Dick Weaver, W3HXH
- Board Member at Large: Sandy Mullins, KE4PZC

The meeting officially adjourned at 8:36 pm.

Dale presented the program, which was on the book that he and Colin are putting together for the hams to use in emergencies. It will include Harrinsonburg and Rockingham County maps, important phone numbers, directions to each fire and rescue station, contact person at each station, etc. A discussion ensued about out-of-band operation, whether it was legal or not in time of emergency. 155.205 MHz was recognized as the national search and rescue frequency (simplex). Everyone was reminded by Claude, N4QLV, that there are lots of people (the public) with scanners listening to ham radio nets and operations, and that their opinion of ham radio can be turned very negative by sloppy or improper or immature operating and conversations. Right now, we are held in fairly high esteem by government officials, emergency personnel, etc. so try hard to maintain that level of respect that we have earned. Dale noted that several new hams were involved in emergency operations, and they performed very well.

Respectfully Submitted,
David Tanks, AD4TJ
MARA Secretary

THE VARA MEETING MINUTES WERE NOT SUBMITTED IN TIME FOR THE NEWSLETTER DUE TO TECHNICAL DIFFICULTIES WITH THE VOICE TAPE RECORDER AT THE MEETING. DOUG IS TRYING TO RECONSTRUCT THE MINUTES AND HOPES TO HAVE A ROUGH DRAFT AVAILABLE AT THE NOVEMBER VARA MEETING.

End of this month's issue.

MASSANUTTEN ARA

President: Dale Showalter, KD4DAI
Vice-President: Vic Alger, KE4LKQ
Secretary: David Tanks, AD4TJ
Treasurer: Richard Weaver, W4JZC
Board (exp 96): John Nelson, WA4KQX
Board (exp 97): Bill Edmundson, W4IMS

THE VALLEY ARA

President: Kenny Harris, KE4GKD
Vice-President: Jeff Rinehart, WB4PJW
Secretary: June Waldmuller, KC4PKJ
Treasurer: Christy Osterloh, KC4PKK

This web page was prepared from
an ASCII version of the Monitor,
by David R. Fordham, KD9LA

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