

W6VIO

MAY

CALLING



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Jet Propulsion Laboratory
W6VIO CALLING M/S 264-419
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Club Meetings:

Everyone is welcome - Bring your lunch.
12 Noon in 238-543
Second Wednesday of month (Program)
Fourth Wednesday of month (Business)

Newsletter Article Deadline: The 5th. day of each month. If the 5th. falls on a weekend, the following Monday will be the deadline.

Your articles, ads, photos, diagrams, Letters to the Editor, or technical instructions should be submitted to Editor at address above.

EXCHANGE CLUBS: PLEASE NOTE ADDRESS ABOVE

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PRESIDENT'S MESSAGE by Mark M. Schaefer WB6CIA

April 25, 1990 was Earthquake Preparedness Day at JPL. There were displays by several manufacturers of Survival gear. The JPLARC also had a booth. The club gave out flyers to explain what ham radio is and the vital role it plays during an emergency. Also on display was a van equipped with ham radios for HF, 2mtr, and 70cm bands capable of running off batteries and solar power. Also in the vehicle was a refrigerator which also ran off of 12 volts.

Not everyone has a vehicle with the storage capacity of a van or Winnebago, but some sort of emergency kit should be in the trunk of even the smallest compact car. There are a number of scenarios which could render you stranded in your vehicle for several hours, by simply running out of gas, or several days if your house is levelled in an earthquake. You may not be in any trouble but may find yourself on the scene of an accident or disaster where the contents of your trunk could mean the difference between life and death for several people including yourself! There are many places to find information on what to carry but I will list some basics here anyway. Jumper cables, Flares, basic tool kit, first aid kit, drinking water, snack food, flashlight and extra batteries, wash rag, quart of oil, empty gas can, and blanket. You know what to do to keep your Ham Radio running. Periodically this kit needs to be maintained just like the engine. Check the air in your spare tire, whether the jack still works, the voltage of anything with a battery, is the food still good, does the water container leak and so forth. Remember when your car breaks down you may not be the one driving.

WE ARE STILL LOOKING FOR A FIELD DAY CHAIRMAN Field Day is the best way to find out how prepared you are for an emergency. It's very popular for improving your radio operating skills and Murphy always shows up where you least expect him just in case you think you're too prepared.

DX NEWS By Bob Polansky, N6ET

A few are saying that the peak of the sunspot cycle actually occurred last November, but based on the conditions prevailing on the HF bands, I'm not so sure. I've been up around 1330Z most mornings and have found a wealth of rare dx there for the working! The S2, A5, KH5/Jarvis, FT5, VU, and other great catches are active and there for the working. A sampling from the last two issues of "The DX Bulletin" follows:

Conway Reef - 3D??? will operate from this new country between 16 and 23 May. This will be the first operation from here since the Reef was given "country status".

Franz Josef Land - 4K2OT is a frequent occupant on the low end of 20 meters. Look for him around 14012 kHz from 1300Z. He's also quite active on both 15 meter cw and ssb around 1700Z and later.

India - There's a lot of Indian activity from 1230Z on the long path

on 20 meters. I counted three VU's this morning from 14010 to 14020 kHz.

Jan Mayen - JX7DFA started activity around the first of the month and will be there through 27 July. He's been worked at 14010 kHz at 1800Z.

Nepal - 9N5CW and 9N5DX plan activity from 10 to 31 May. Don't miss them.

Rodriguez Island - 3B9FR is often QSOable on 14165 kHz at about 1400Z.

Spratley - Rumors persist that there is a group of Russian hams that have permission to operate from Spratley about now. This is a seldom activated country and should produce some wild pile-ups if the operation materializes.

Sudan - There are lots of reports of Sudan activity from 1300Z through 2000Z on 20, 15, and 10 meter cw. ST2/PA0GAM, ST2/G4WYG, and ST4/WZ6C are all active. Sure would like to find one!

Turkey - Need a Turkish QSO? Look for TA3D around 0200Z at 14012 kHz.

Walvis Bay - ZS9A has been active on 7002 kHz at 0330Z. This is the first appearance of this country known, at least to me, on cw.

Enough for now. You'll have to find the others for yourself. Turn on the ole rig and come join the pile-ups!

73,
Bob, N6ET

SATELLITE NEWS by Courtney Duncan, N5BF

MICROSAT CHECKOUT CONTINUES

HR AMSAT NEWS SERVICE BULLETIN 104.01
FROM AMSAT HQ SILVER SPRING, MD APRIL 14, 1990
Engineering Team Testing New Software to Gain Operating Efficiencies

The AMSAT Satellite Factory continues to make progress in characterizing the Microsats and they move closer to full commissioning. Over the past few weeks Bob McGwler, N4HY and Harold Price, NK6K, have been working on new data formats for Whole Orbit Data (WOD) dumps. These new formats present data in Binary form, saving about 10,000 bytes of code in the operating system. This latest software load allows the operating system to run faster.

In the WOD collection environment, every ten seconds the on-board housekeeping computer samples several channels and continues this throughout an entire orbit. Once data for a number of orbits have been stored in on-board memory, Bob and Harold can command the microsats to downlink the information stored. Using this technique, they have determined that AO-16 has achieved magnetic lock (with the earth). This results in the +Z surface pointing toward the earth when over the south pole and away from the earth when over the north pole. They feel that there is still

some residual wobble, but for the most part, the satellite has stabilized.

As Bob and Harold continue to test this software, the digpeating function of AO-16 will be disabled. To determine if the digpeater is active, check the LSTAT telemetry line. If you see "d:0" this means the digpeater is off, "d:1" means the digpeater is on. Telemetry normally comes down once every 10 seconds. When a packet is digpeated, the time interval switches to 30 seconds. If telemetry is coming down each 10 seconds, look at the LSTAT line. If d=0, DON'T TRANSMIT. If you see other digpeat activity, the digpeater is on, and it is OK to transmit. You must specify the spacecraft callsign as a digpeater to get digpeated, e.g., PACSAT-1. This is because there are multiple spacecraft on various uplink frequencies.

MORE SUCCESS ON UO-14 HIGH SPEED PACKETS

HR AMSAT NEWS SERVICE BULLETIN 104.02
FROM AMSAT HQ SILVER SPRING, MD APRIL 14, 1990
Multiple Stations Successfully Communicating at 9600 Baud

AMSAT-UK reports that after just one week of operation, numerous stations have been successful in modifying their equipment to run 9600 baud packets through UO-14. ON6UG, DF3ZL, DF5DU, I2KBD and IW2ECL connected to stations other than themselves (usually the third or fourth step in becoming Packet-active and usually considered to be a BIG step!). Alberto, I2KBD, reports that the modifications to his FT-736R were very easy and the whole setup was "plug and play" (Why does plug and play always happen to "other" people?).

As is the case with the Microsats, you can digpeat through UoSAT-OSCAR-14 any time you see d:1 at the end of the LSTAT message. For example:

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UOSAT3-1>LSTAT I P:0x3000 o:0 l:13037 f:13037 d:1
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The uplink is 145.975 MHz, and UO-14 has AFC on the uplink, so doppler tracking is not too critical. AMSAT-UK is anxious to get reports from anyone successfully monitoring or digpeating through UoSAT-OSCAR-14.

HR AMSAT NEWS SERVICE BULLETIN 104.04
FROM AMSAT HQ SILVER SPRING, MD APRIL 14, 1990
AMSAT-NA Plans For Dayton Hamvention '90

AMSAT-NA Vice President of Field Operations, Jack Crabtree (AA0P) invites all radio amateurs to join AMSAT this year at the Dayton Hamvention on April 27-29, 1990. As has been the tradition for many years, AMSAT will have a booth and will be sponsoring Symposiums on Friday and Saturday. The Symposia will focus on the Shuttle Amateur Radio Experiment-2 (SAREX-2) mission with speakers Roy Neal (N6DUE) and Bill Tynan (W3XO). They will be discussing the upcoming STS-35 mission with Ron Parise (WA4SIR) who will operate both 2M voice and packet radio. AMSAT-NA President and General Manager Doug Loughmiller (K05I) will be the speaker for a talk titled "1990: The Year of The Amateur Radio Satellite." This discussion will give a complete run down of all the amateur satellites launched so far this year and what is being planned for the future. Also, Bob McGwler (N4HY) and Jan King (W3GEY) will give a summary of the MICROSAT program. Before and after these Symposia, all radio amateurs are invited to come by the AMSAT booth to "talk to the experts." Many of the AMSAT-NA Officers and Board of Directors will be present throughout the

Dayton Hamvention.

Bob McGwiler, N4HY has been chosen to receive the Technical Excellence Award at the 1990 Hamvention. The nomination, submitted by Dave Bern, N2AER, cites Bob's extensive work on the Microsat and DSP projects, Qulkrak, and management of amateur radio's two major technical organizations, AMSAT and TAPR. Congratulations Bob!

HR AMSAT NEWS SERVICE BULLETIN 104.05
FROM AMSAT HQ SILVER SPRING, MD APRIL 14, 1990
AO-13 Transponder Schedule to 09May90

Mode-B : MA 000 to MA 165
Mode-JL : MA 165 to MA 195
Mode-S : MA 195 to MA 200
Mode-BS : MA 200 to MA 205
Mode-B : MA 205 to MA 256
Omni : MA 240 to MA 060

BLON = 207.8 and BLAT = 0.6 for 16Apr90

The Mode-B beacon will be ON from MA 195 to MA 200. Only the Mode-S transponder and the Mode-B beacon will be ON from MA 195 to MA 200. Beginning 07May90 there will be a transponder and attitude change on AO-13. During magnetorquing to BLON/BLAT 180/0 the transponders will be switched off from MA200 to MA060. After 09May90 a new schedule will be announced.

AO-10 is currently experiencing poor solar panel illumination angles and until further notice its transponder is not available for use. It is expected that this will continue for another 4 to 6 weeks minimum.

HR AMSAT NEWS SERVICE BULLETIN 104.06
FROM AMSAT HQ SILVER SPRING, MD APRIL 14, 1990
AMSAT-NA Operations Net Schedule Announced

AMSAT Operations Nets are planned for the following times. Mode B nets are conducted on an AO-13 downlink frequency of 145.950. Mode J/L nets are conducted on an AO-13 downlink frequency of 435.970. All nets in the current cycle occur on Saturday U. S. time. A new AMSAT Operations Net schedule will be posted immediately after, magnetorquing of AO-13 has been completed and a new transponder schedule has been determined.

Date UTC Time Phs Mode NCS

15 Apr 90 0210 168 J/L N5BF
22 Apr 90 0400 127 B N5BF
28 Apr 90 1300 221 B N5BF
06 May 90 0145 168 J/L N5BF

For information on the amateur satellite program and how you can participate, contact AMSAT-NA at P.O. Box 27, Washington, DC 20044, or phone (301) 589-6062, or contact your local AMSAT Area Coordinator.

WHAT IS AMSAT?

AMSAT is a worldwide group of radio amateurs which designs, constructs and uses Amateur Radio satellites. The Radio Amateur

Satellite Corporation (AMSAT), a non-profit educational organization, was founded in the Washington, D.C. area in 1969. However, radio amateurs' participation in space goes back eight years earlier when a West Coast group called Project OSCAR designed, built and obtained launches for four amateur satellites. Their first effort, OSCAR 1 beeped across the skies in December 1961, just four years after the launch of Sputnik. OSCAR is an acronym for Orbiting Satellite Carrying Amateur Radio. Since its founding in 1969, AMSAT groups have formed in many countries throughout the world. In order to distinguish between them, area designations have been added to the basic AMSAT name. The founding organization now has an "NA" attached, to denote AMSAT North America. AMSAT NA membership currently number about six thousand.

In addition to working with the American Radio Relay League to promote operation from space by licensed amateurs selected for Shuttle missions; AMSAT NA has been, and continues to be, active in the design and construction of satellites for the Amateur Service. On the user side, it provides support for licensed amateurs interested in learning how to employ the many unmanned Amateur Radio satellites now orbiting the earth. As an aid in knowing when a particular satellite will be in "view", AMSAT makes available software for most popular personal computers. A variety of manual satellite tracking devices are also available for those who do not have access to a computer. A computer bulletin board is maintained at 214-394-7438 to provide up-to-date information. In addition, regularly scheduled information nets are held on various amateur bands each week. Over 130 volunteers in various parts of the U.S. and Canada stand ready to give talks to club meetings and put on satellite demonstrations at amateur gatherings. Through such talks and demonstrations, those unfamiliar with the techniques needed for satellite operation can see for themselves how it is done.

AMSAT NA sponsors a number of awards for those who demonstrate a specified level of ability to utilize amateur satellites. One such award is called the ZRO Technical Achievement Award, in memory of Kaz Deskur who's amateur call was K2ZRO. This award is presented to those who show that they can receive especially weak signals transmitted through amateur satellites. There are even "hidden transmitter hunts" in which participants don't even have to leave home to participate.

Amateur satellites afford many opportunities for radio amateurs, as well as other interested individuals, to pursue interesting educational activities. Especially useful in this regard are the UoSats OSCARs designed and built by radio amateurs working at the University of Surrey in England. A novel application of one of these satellites took place in 1988, when it was used in conjunction with Search and Rescue Satellites (SARSATs) to transmit position information to a group of Canadian and Russian skiers trekking 1,200 miles across the top of the world. The SARSATs picked up signals from small beacon transmitters carried by the skiers. The position information derived by the SARSATs was then sent to the University of Surrey, where it was converted into digital code and sent up to UoSats OSCAR 11. The satellite's digital voice synthesizer then converted the digital signals into human-like speech, which was transmitted on the amateur 2 meter band to small FM receivers carried by the skiers.

While some OSCAR satellites, such as the UoSats, are primarily for scientific applications; others are intended to support two-way amateur code, voice, digital, FAX and slow scan television communication. Two of these, OSCARs 10 and 13, are in highly elliptical orbits which, while they are near apogee (farthest point away from the earth), enable them to "see" large portions of the earth's surface for many hours at a time. Thus, stations on several continents can communicate with one another simultaneously

through transponders carried aboard the satellites. Both of these OSCARs were designed and built by an AMSAT group in West Germany with help from AMSAT NA and AMSAT groups from several other countries. Other amateur satellites, in lower circular orbits, have been built by AMSAT groups in countries such as Japan and The Soviet Union.

In January 1990, six amateur satellites were launched at once on a single Ariane rocket from French Guiana, South America. Two were the latest in the UoSAT series of OSCARs while the other four represented a brand new concept in spacecraft design. AMSAT has dubbed them "MicroSats", an appropriate name, as these ultra-small satellites measure only about 9 inches on a side and weigh about 20 pounds each. Despite their small size, they carry a huge amount of electronic capability. Each contains a highly advanced computer with ability to store eight-million bytes of information - without the moving parts associated with disk drives. Two of the MicroSats, called PackSats, are intended to receive, store and forward amateur packet radio messages. One of these was built for, and with the help of, the AMSAT affiliated group in Argentina. A third MicroSat, called DOVE, an acronym for Digital Orbiting Voice Encoder, was built in cooperation with AMSAT's Brazilian affiliate. DOVE is designed to transmit synthesized voice messages of greetings suggested by school children throughout the world. The fourth MicroSat was designed and built with the help of Weber State College in Utah and carries a suite of scientific experiments including a CCD camera to snap images of the earth.

What's Ahead?

AMSAT NA and its affiliates around the world are planning still additional projects to further promote the use of space for private citizens interested in Amateur Radio. The Japanese group has just launched a new amateur satellite and the Soviets are understood to be planning another launch in their continuing series of amateur satellites, quite soon. A worldwide collection of AMSAT organizations, including AMSAT NA, are actively studying a new and more capable version of OSCAR 13 to go into the same elliptical orbit proven so effective. AMSAT NA is also actively planning its most ambitious project - a geosynchronous satellite.

In the manned space sector, AMSAT NA, in cooperation with ARRL, is working to get NASA permission for additional "ham in space" operations on future Shuttle missions. In addition, the two organizations are pursuing the possibility of including a permanent amateur installation on the Space Station. With such equipment, licensed crew members will be able to talk with hams around the world during their off-hours - helping relieve the boredom of many months in orbit. Demonstrations, from the Station, for school children, and other groups, represent a central part of planning for Amateur Radio's participation in this space adventure; and one of the major points made in the joint ARRL/AMSAT proposal submitted to NASA. Television, relayed through the amateur geostationary satellite, is planned to increase the impact of such live demonstrations. A relay is needed because the low altitude, planned for the Space Station, would limit demonstrations, using direct communication, to a maximum of about eight minutes each. On the other hand, relaying, through a high orbiting satellite, will permit coverage of up to a half hour or more. So, AMSAT's geostationary satellite project becomes a key link in what ARRL and AMSAT propose to do in support of the Space Station.

AMSAT NA membership is open to anyone with an interest in Amateur Radio satellites.

For further information on AMSAT, contact:

AMSAT
P.O. Box 27
Washington, DC 20044

WANTED: Jennings vacuum variable capacitor 150 picofarad, 15kv
or greater Stan Sander, N6MP 183-901, x-42625
