

JANUARY

JANUARY 1990 Volume 19 No. 1

Jet Propulsion Laboratory
W6VIO CALLING M/S 264-419
Attn: Eileen McKinney
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BOARD

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DIRECTOR AT LARGE: JOHN TALLON N6OMB

CLOSED REPEATER TRUSTEE: WALT DIEM WA6PEA
EDITOR: EILEEN MCKINNEY KA6DGV

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.

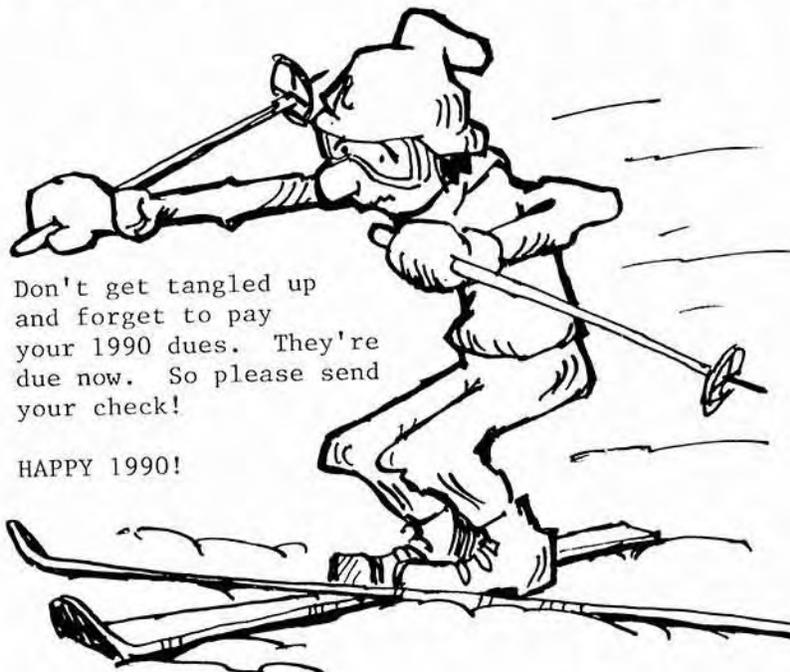
Your articles, ads, photos, diagrams, Letters to the Editor, or technical instructions should be submitted to Editor at address above.

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W6VIO

CALLING



Don't get tangled up
and forget to pay
your 1990 dues. They're
due now. So please send
your check!

HAPPY 1990!

DX NEWS

By the time you read this, Christmas and New Years will probably be fond memories. That being the case, I hope that your holidays were fun filled and that you had an opportunity to work lots of dx. For the last several weeks, I have been pulling the old body out of bed at 4 or 5 AM and listening to both 40 and 80 meter cw. This has been a real blast! I've heard dx on those bands never before available, at least in my ham radio career. Zone 20 and 21 stations have been easily workable on 40 and were even heard for short periods on 80 meters. Try it - you may also enjoy it! Now for the news.

Bhutan - The king of Bhutan is rumored to have again authorized the use of amateur radio from this rare country. With any luck, we will be hearing the A5's back on the air shortly.

Bouvet - One of the rarest countries in the world for amateur radio is Bouvet Island. At this time, two operations are planned. The first is 3Y5B. They plan to arrive on 23 December and operate for about 14 days between then and 23 days later. The next operation is planned for 1 to 11 February. They will use the call 3Y0B. There is a possibility that this second operation may be retargeted to an alternate rare location such as South Sandwich or South Georgia if the first operation eliminates most of the need for Bouvet.

Maldives - Look for 8Q7/F6EEM and F6FYP from 12 through 17 January. Frequencies are 3870, 14256, 21210, 28470, 25 kHz up from the low end on cw, and 7005 kHz on 40 meters. Good luck!

Marion Island - ZS8MI continues to operate Fridays from 1300 to 1500Z at 14050 kHz. This is another fairly rare country. Work him this year!

Saudi Arabia - HZ1AB has been heard at my QTH over the north pole at 1500Z on 28003 kHz. He also operates at 28500 from 1200 to 1400Z. A number of reports show him and HZ1HZ at the low ends of 15, 20, 40, and 80 meters cw at appropriate times of the day.

Sudan - Need the Sudan on cw? Look for G4WYG/ST2 on 14010 or 14053 at 1800Z. The station working him just before you will hopefully be me!

Vietnam - 3W0JA will be operating on 80 through 10 meters from 25 December through 5 January. This is a fairly rare zone. Make sure you work them.

As promised, the CQ WW CW Contest in late November was a fantastic event. Propagation all around the world on all bands was possible, even from La Canada! Hang in there and get your fill of dx. The conditions wont be this good again for another 11 years.

Good DX,
Bob, N6ET

JPL Amateur Radio Club Board Meeting 11/22/89

The JPL ARC membership and board meeting was convened at 12:05 in 238-543. The following board members were present:

John Tallon N6OMB, President
Jeff Skaletsky N6TJO, Vice-President
Steve Jenkins N6UNI, Acting Secretary
Walt Diem WA6PEATrustee, WB6IEA
Walt Mushagian K6DNS, Past President

The meeting was conducted by John Tallon.

The nominating committee report was given by Mark Schaefer, who announced that he currently has nominees for Vice-President and Treasurer. Nominees are still needed for President and Secretary.

Walt Mushagian reported that the next Emergency Preparedness Committee meeting is December 2. A 220 MHz ground plane is to be installed at the guard shack. Jan Tarsala inquired about space for the new repeater on the mesa. John Tallon stated that the Emergency Communications position on the club board needs to be more active, and should be filled for more than one year at a time.

Jan reported that we have been contacted by Soviet amateurs wishing to run a special event station commemorating the flight of Yuri Gagarin. There are a number of options under consideration. Walt Mushagian moved that Jan be appointed to respond to the letter and coordinate with other NASA facilities. Steve Jenkins seconded and the motion carried unanimously.

Reporting for the repeater committee, Jan announced that the new repeater is in. There is no voter board yet. The repeater is on the bench now and is mostly performing well. The digital voice store is not working and there may be a power problem. We still must have the IM control panel before the repeater can be put into service. We also need one for W6VIO/R. Walt Diem inquired about getting lab funding for the IM control panels (and/or other items). John Tallon will pursue it. Walt pointed out that we must have lightning protection for the transmitter. Jan will look into it. Walt also emphasized that we should be pursuing the remote receiver installation.

Jan listed the following upcoming capital expenditure needs:

Scala antenna and hardline \$450
Palomar telecomm controller 2000
Kendecom remote receiver 600
Pass cans & GaAsFET preamps 550
(2) Kenwood TS-940's 5000

Some of these items will be voted on in the December 13 general meeting.

The meeting was adjourned at 1:03 PM.

General Meeting 12/13/89

The JPL ARC membership and board meeting was convened at 12:09 in 238-543 by President John Tallon.

Mark Schaefer presented the following officer slate from the nominating committee:

President - Mark Schaefer WB6CIA
 Vice-President - Bill Morris KB6VGW
 Secretary - Sid Johnson WB6VWH
 Treasurer - Jim Kesterson KA6IBF

John Tallon opened the floor for any further nominations. None were given. Steve Jenkins moved that the slate be elected and Jeff Skaletsky seconded. The motion passed without opposition.

John welcomed Jerry Leslie AH2AN, who has recently joined the lab from the NASA Spacecraft Tracking and Data Network on Guam.

Walt Mushagian reported for the Emergency Communications committee. There will be no new building for the repeater. The prospects for erecting a 220 MHz antenna at the guard shack were discussed.

Mark Schaefer reported for the Education Committee. There are new question pools resulting from the new Part 97. Mark has a copy of the new novice pool and copies of Tune In The World. There will be a novice course next year at Clark School.

Jim Kesterson gave the Treasurer's report. We have approximately \$900 in each of autopatch and general funds.

The remainder of the meeting was devoted to a discussion of possible increases in dues. Action will be taken at the next board meeting.

The meeting was adjourned at 1:00.

Steve Jenkins N6UNI Acting Secretary



EDUCATION REPORT

by Mark M. Schaefer WB6CIA

Well another decade has come and gone. A lot of great things happened at JPL in the 80's and it looks like the rest of the world could be just as fortunate before this century is over. It could also mean great things ahead in Ham Radio with a lot more people to talk to all over the world. These possibilities along with the possibility of the biggest Sunspot Cycle in recorded history adds up to this being a most opportune time to upgrade your license. Having a Extra license in 1990 makes it easier to remember when you have to renew (2000). The future of education here at JPL is looking up too. This will be my last column as Education Chairman. Not just because I will be busy with my new post as President of the club, but because we have a great new Chairman of the Education Committee. Gil Yanow K6TOC will be our new Education Chairman. He and Peter McClusky N6TGZ and Ted Pfeiffer K6OEF all work for the JPL Education Department at Clark School. The Clark School will be an ideal place to hold our Licensing Classes in the evenings so everyone, even your XYL, can take the class and be on the air in no time. If you want to see what the facilities are like, show up for the QSL stuffing parties on Jan 6 and 13. Stay tuned for more info on these events. Well in the past 4 years, I've run a few classes and made a lot of friends in the process. It has been a good learning process for me as well. I thank all of you for your help and support and hope that I will be as fortunate in my role as President in 1990. Best of LUK, DX, and 73's to U ES URS in this new decade SK. WB6CIA



Spot-2 is an earth resources satellite with a high resolution camera. The Microsat's include two packet radio satellites, PACSAT and LUSAT, a camera and experiment satellite WEBERSAT, and a voice encoder educational satellite called DOVE (Digital Orbiting Voice Encoder). PACSAT is sponsored by AMSAT-NA and TAPR. LUSAT is sponsored by AMSAT Argentina. WEBERSAT is sponsored by the Center for Aerospace Sciences and Technology at Weber State College in Utah. DOVE is sponsored by Junior De Castro, PY2BJO, and Brazil AMSAT. All spacecraft had contributions made to them by the ARRL and its lab staff. The UOSAT satellites are done by the University of Surrey and are in the continuing tradition of UOSAT-9 and UOSAT-11.

This past week saw the finishing touches put on the initial flight software load. NK6K and N4HY worked on finishing off the software. Harold Price, NK6K finished the kernel, initial AX.25 software, the software loader, and the memory wash (to correct for radiation induced errors). Bob McGwier, N4HY finished the initial control code for each satellite.

On Thanksgiving day, N4HY, Jan King, W3GEY, Jeff Zerr, and Greg Hines, WTOM began making the final telemetry calibrations, and final testing of the battery charge regulation control loop, and the transmitter power control algorithm. All four Microsats had their algorithms extensively tested and the spacecraft were left running for days. The algorithms were run under simulation by simulating the solar arrays with a current limited power supply, various timers to simulate eclipses, and beginning from various states of battery charge. In every case, the overdamped control loops behaved perfectly. The hardware was extensively exercised under command code using AX.25 packets from a normal TNC. Various transmitters, experiments, etc. were tested. NK6K's memory wash routines and software loaders were repeatedly used without fault.

At last, an end to end test, from ground station to algorithm controlling the DOVE voice experiments, was performed. The Motorola 68HC11 in the DOVE module acting as a very smart UART chip, was sent a program from the spacecraft IHU and it then ran the digital to analog converter (DAC). This provided an end to end test on both hardware and software that until this test had been run, had never been exercised as a system. It was a working testimonial to the modular approach taken in the spacecraft design. On Tuesday, a program to exercise the digitalker, the VOTRAX SC-02 chip, was loaded and speech was produced from the DOVE spacecraft for the first time. The entire DOVE speech hardware has now been shown to produce the correct signals and signal levels. This will promise to be an extremely loud signal with a 4 watt transmitter and 4 KHz deviation.

CAST had WEBERSAT the week preceding these tests. They tested all the experiments on their 'attic' which sits on top of a normal Microsat configuration. During this period and the last testing that occurred in Boulder, several pictures have been taken and downloaded via the packet channel. The camera produces very good pictures and the mechanical iris functions well. The extensive environmental testing that has gone appears to have done no damage to the iris. This promises to be an extremely popular bird and satellite to watch (pun intended). Other than a minor accident requiring several hours of work to repair, these tests went off without a hitch.

Finally after several days of running the control algorithms on the spacecraft, after all spacecraft passed all their memory tests okaying a total of 32 Megabytes of storage, the control algorithms functioned appropriately, telemetry calibrated, and AX.25 being used to command the spacecraft, Jan King, W3GEY, project manager exclaimed that we had four live spacecraft, ready to begin on orbit operations.

There will be an extensive engineering test phase immediately after launch. It is vital that we have the cooperation of the amateur radio community. We must fine tune control algorithms in space, finish off the BBS code, hundreds of thousands of kilobytes of digitized voice must be uploaded to DOVE, and hours of upload of camera software to WEBERSAT must be accomplished. NK6K and N4HY will be spending numerous hours each day at their QTH's and at the TRW radio club in Redondo Beach, Ca. getting the spacecraft fully loaded with software and taking the pulse of the spacecraft. In addition to the Microsat's, NK6K and WB6YMH, Skip Hansen (who has written the low level I/O drivers for the Microsat's) have extensive software responsibility for UOSAT. This promises to be a busy time for all.

If the spacecraft are launched on time in January, do not expect full operations to begin before LATE FEBRUARY. Your cooperation will speed the process and possibly lead to an early release of these spacecraft for full use.

73 Bob N4HY

