

Copies of new local repeater control codes, Club Roster, February Minutes, and Treasurer's Report were available.

Meeting called to order by President John (ad6nr) at 7 pm.

Self introductions included 15 members and guests, then 3 more showed up later. Two of the guests were Mike (w6ara) and Paula (n6vgw) who had driven up from Ridgecrest. Mike had volunteered to put on the program for the meeting, and both later joined the BARC.

Treasurer's report was done by Terry (k6un) after an apology for not having last month's report at the February meeting. January 12 to March 8 income was \$235 from dues, and \$15 from the 50/50 for the Duplexer fund. Expenses amounted to \$85.92 to pay the power bills on Silver Peak. Total on hand was \$1,606.07.

Minutes by Jon (nw6c) were approved as earlier amended (Kurt, w6ph, caught a typo in the review).

Program: Mike (w6ara) offered to share his interest and knowledge of Amateur radio communications using space satellites. This had been a pursuit of his since about 1970, and this was a similar presentation to the one he did at the recent Pacificon. There, the conference room was packed. Mike started his presentation by stating the fact that the normal mechanism Amateur radio operators use to make long distance contacts is signal reflection (skip) off the ionosphere. This is dependent on radiation from the sun, as historically measured in sun spot numbers, and being able to launch an RF signal of the right frequency. These numbers were presented by a graph showing number versus time. The peaks are dwindling, possibly to a new minimum period. The Maunder Minimum (date 1650 to 1700) and Dalton Minimum (around 1810) are in those records. Sun activity has been trending down since Cycle 19. Less ionization usually means lower frequencies are needed, and therefore larger antennas. Add to this more HOA (homeowner's association) regulations, and the point is made about how being able to make contacts via satellite can be a very attractive tool. Many of the latest association regulations limit external antennas to an 18" TV type satellite dish. OSCARs, Orbiting Satellites Containing Amateur Radios, have now been in place for many years. There are special sub-bands in the Amateur band plans set aside for this activity, although a problems are created when typically new operators are unaware of these allocations and start normal station to station operation when the satellite is at the edge of its range. Individual satellites that are intended to be in range of the entire earth's surface are launched in polar orbits, so that as the satellite orbits in a north south path, the earth is rotating east to west. That seemed fairly basic, but Mike went further. It is also possible to cover the whole earth with this type of orbit, while the satellite is always in the sun. A popular communications satellite orbit in the US and Europe is the geosynchronous orbit above the equator, but for populations to the far north or south, the signal path is blocked by the earth. This is a concern for Russia as an example. More about orbits! Mike described LEOs (low earth orbit), HEOs (high earth orbit and highly elliptical orbit) and some that he had worked that were in between. These orbits present a wide variety of operating opportunities ranging from really brief contacts, to interesting longer conversations. In the longer communication windows, there can be a sizable group taking their turns at the microphone, while new participants literally rotate in as earlier participants drop out. Mike circulated a model of a "cube sat", a small satellite conjured up by Amateur radio enthusiasts to make use of underutilized cargo capacity on launches. These have grown in popularity for the research and education sector to the point that they are crowding out use for Amateur radio.

Some Amsat history, including the AO7 which was launched in the 1970s, died because of a short in a nickel cadmium battery, then came back to limited life as a very limited power daylight only bird as the short gave up and went open.

Frequencies, modes, and methods were presented. Equipment varies from handheld antennas power by handy-talkies (BARC Field Day setup courtesy of Terry) to computer controlled circularly polarized antenna arrays integrated with transceiver operation. Mike made a firm point that high transmitter power was not only not needed, but is very detrimental to satellite operation. Overloading the satellite's receiver ruins the activity for everyone.

More aspects were covered, such as operators seeking rare grid square locations (as in Death Valley), satellite propulsion, stabilization vs. tumbling, launching problems (how many ways to mess up an antenna), and the many future planned Amsat launches. Free satellite tracking software is available. Most of the astronauts now have Amateur radio licenses, of which a common use is to be able to talk to family and friends back home without the overhead of the formal command system.

(Ed. note – above are just a few highlights from Mike's lecture, which was a condensation of his over 40 years involvement. He also took the time to answer many questions from our group).

Program concluded about 8:30 pm.

50/50 Raffle. Mike was the winner! That, and apparently John paid for Mike and Paula's dinners, so hopefully it was a rewarding trip for them.

Meeting resumed at 8:40.

Activities:

The BARC monthly breakfast is scheduled for March 19, 8 am, Denny's.

Transmitter hunt this month? Didn't look promising. Too many other things going on Saturday. 80 meter nets still going. 3950 KHz, Sunday mornings, 8 am, and 3947 KHz, Thursday, 7:30 pm.

Old business: NPOTA (National Parks On The Air) station in Death Valley? Looks like a go at Panamint Springs campground.

BARC and SARC in the park. Looks good. Maybe an opportunity to raise funds for new batteries on Mazourka Peak.

More Business:

BARC Field Day (FD) 2016. FD chairman needed! Long time FD host Kurt (w6ph) is planning to be in Germany during Field Day.

Mule Days. Shall we have an Amateur Radio display this year? May 27, 28, and 29. Participation was minimal last year. Terry will reserve the W4M special event call.

Antelope repeater? Jeff (aa7gk) was told that this site was likely to be made available at the conclusion of a formal study, that was scheduled to be completed before now. He will try to find out about progress – or lack of.

Show and tell:

Rich (kf6ylw) brought in the distressed Mazouka packet antenna. It looked repairable with a new porcelain insulator and some cleaning.

Jeff brought in some small loop antennas, useful for direction finding.

Jon hauled in a giant heliax stub, complete with schrader valve on the small end. Two of these were given to the Club by Greg (ki6cyx), along with some tuned cavities. John was sure this was to connect a high power transmitter to the filters. Greg was helping his church clean out their storage area, and figured if hand them over to BARC, rather than hauling them straight to the dump. Greg requested that

if the items were sold, that half of the proceeds would be donated to his church.

Meeting adjourned at 9 pm.

Jon Patzer, nw6c,
Secretary,
Bishop Amateur Radio Club, Inc.