http://sf -arc.org **March 2007** P.O. Box 1005, Newcastle, CA 95658

How to Sail a Raft Through the Fence

(Reported by Greg, KO6TH)

"Shields UP!!", they said.

The "they", in this case, is not Captain Kirk, nor Mr. Spock. And this is not Stardate 2493.7, nor are we on a small rock orbiting Alpha Centari. In fact, it's 1961 and we're in South Texas, Earth.

The Russian launch of Sputnik-1 some 4 years earlier made it clear that the country needed a way to detect objects in space and calculate their orbital characteristics. Receiving stations were set up to detect the signals from these satellites, and with that data compute their orbits. Signals from the spacecraft themselves can yield a lot of data, but only if the satellite (and launching country) cooperates with accurate base information, and the satellite actually transmits something that you can pick up. For the relatively passive, or non-cooperative objects, and active system was needed. RADAR had been used for years

(*continued on page 2)*

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RESOURCES

REPEATERS
145.430 (-0.6 MHz/PL 162.2)
440.575 (+5.0 MHz/PL 94.8)
223.860 (-1.6 MHz/PL 100.0)

CLUB NET
Thursdays, 7:30PM, K6ARR/R 145.430

CLUB MEETINGS
Second Friday of the month, 7:30PM at the Library, 350 Nevada St, Auburn CA

CLUB BREAKFAST
Last Sat of the month at Susie's Café, Cirby at Riverside, Roseville – 8:00 AM

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2007 Calendar of Events

(Operating Events in Italics)
[Dates are local unless otherwise indicated]

Mar 3-4	*ARRL DX-SSB*
Mar 3	**V.E. Session (see pg. 3 for details)**
Mar 9	**Regular Meeting**
Mar 11	*NCJ Sprint-RTTY*
Mar 11-12	*WI QSO Party*
Mar 23-25	*CQ WPX-SSB*
Mar 31	**Club Breakfast**
Apr 13	**Regular Meeting**
Apr 28	**Club Breakfast**

We encourage members to receive Sierra Signals via email to save the Club the cost of reproduction and mailing

Forty Years Ago At The SFARC

(Reported by Gary, KQ6RT)

March 15, 1967

Met at Memorial Hall. Joe, Carl, Sage, Dick and Bob present. Wendell Robie passed through and when queried said the trail ride would be held July 28th. We adjourned to Koffee Kup where Joe bought the coffee.

Dick

73,

Gary, KQ6RT

How to Sail a Raft

(Continued from front page)

for the location and tracking of aircraft and ships, but was not up to this task. Instead, they hit upon the idea to create a narrow wall of RF energy that would be reflected back to Earth by anything passing through it.

In the late 50's, a demonstration of this concept was carried out in Fort Monmoth, New Jersey. They used a high power transmitter and the existing network of receivers to prove that it would work. From there, a proposal for a larger and permanent network was approved, and the system we now know as NAVSPASUR was approved.

The current system consists of three transmitters which are located along a great circle path across the southern United States. The main (central) transmitter is located in Texas, with smaller transmitters in Arizona and Alabama. The Texas transmitter puts out a 767 kw continuous carrier on 217 mhz, with the other two "fill-in" sites running only about 40kw. In order to generate a very narrow wall (so that the entry point of the space object will be precisely known), an extremely high gain antenna is needed. The Texas antenna consists of 2,556 dipoles in a linear phased array some 2 miles long. That results in a fan-shaped wall of RF only a half-degree wide, with an insane EIRP of over 6 Billion watts. Multiple receiving sites around the country are set up to receive and relay the signals bounced back to a central processing facility. They also employ massive antennas, with one dimension reported at 260 wavelengths long. The precise time of detection and doppler shift information from multiple receivers is used to pinpoint where the object is, and where it is going. In 1994, the system was detecting some 1.7 million crossings each month.

But, even with all this power and precision, the system is only good at tracking objects at least 12 inches in diameter. There are lots of objects, indeed, lots of active satellites, that are much smaller than this. The ham "Cubesat" fleet measure only 4 inches on a side, so they are nearly invisible. How then can we get accurate tracking information on these objects?

Fast forward to December, 2006. The Space Shuttle launches four new satellites, including the two spheres ANDE and Fcal that were described last month. The 3rd satellite in the set was RAFT, the RAdar Fence Transponder. It is a cubesat, again just 4 inches on a side, that is outfitted with a simple experiment. A 217 mhz receiver is placed on the satellite, and tied into the amateur VHF transmitter. When turned on, a precise "ping" is heard in the downlink signal whenever the satellite passes through the detection fence. This gives a positive acknowledgment that *this* is the satellite that just passed through the fence. Knowing that, the detection team can then improve the detection and accuracy of the system. In early February, 2007, the receiver was turned on by ground command, and the distinctive "ping" was received back on the ground! There's lots more information on this ingenious experiment on the Web. Point your browsers to http://www.ew.usna.edu/~bruninga/craft/RAFTusna.ppt for a powerpoint slide set on the Fence and RAFT-1, and to http://www.ew.usna.edu/~bruninga/raft.html for more on the satellite and its mission.

RAFT-1 also carries an amateur APRS transponder, which is also operational. The 145.825 mhz 1200 BAUD packet signal is very weak, and requires a good receiving system and a high overhead pass to be heard. Since the spacecraft is quite small, and in a low orbit, it is only expected to be in orbit for about 6-8 months.

73s,

Greg KO6TH

Contesting

(Reported by Fred, K6DGW)

Selected Contests for March:

ARRL DX [SSB]: 3 Mar 0000Z – 4 Mar 2400Z
www.arrl.org/contests/rules/2007/intldx.html

NCJ Sprint [RTTY]: 11 Mar 0000Z – 0400Z
www.ncjweb.com/sprintrules.php

WI QSO Party: 11 Mar 1800Z – 12 Mar 0200Z
www.warac.org/wqp/2007/07rules.htm

CQ WPX [SSB]: 23 Mar 0000Z – 25 Mar 2400Z
www.cqwpx.com/rules.htm

We just completed the CW section of the ARRL DX, and it turned out to be very interesting, and fun. I managed about 243 QSO's in 90 DXCC entities for around 65,340 points in about 7 ½ hours of on and off operation. Despite the bottom of the solar cycle and with discouragingly low solar flux numbers, we had a good 20m opening to Europe, the mid-East, and N. Africa on both Saturday morning and especially Sunday morning. Additionally, 10m opened on both days … not for a long time, and not a lot of stations were checking for this, but

those that did (including me) did well. Two highlights for me were being called by R1FJ (Franz Josef Land – TR-Log said the beam heading was 0 deg and the sunrise/sunset window said "All Dark") and getting 599, and managing 5Z4/9A3A (Kenya) on the first call. He also gave me a 599 J The moral there is "Don't ever give up on 10 meters when the sun is up." Hopefully, the SSB section in early March will be as good.

I included the Wisconsin QSO Party for a couple of reasons. First, we N. Californians seem to have a pretty good pipeline into the upper mid-west, and this is usually a fairly well represented contest, both CW and SSB. It's also short, running from 1100 PDT to 1800 PDT on Sunday. Big reason however is that Drew, our adopted troop from last year is now home and has been invited to operate with the crew from W0AIH www.qth.com/w0aih Don't miss this link, you'll understand why he is excited. Drew was on the air a few times as 9K2/KB9LLO with his KX1, and came home late last year. He has since upgraded and done the vanity thing and is now AB9NE. He tells me he is likely to stick to SSB in the contest as he's still a bit unsure of his contest skills on CW.

We've covered the NCJ Sprints and WPX before. The WPX CW will be in early May.

Keeping Time: Just a reminder for those of us who need to know both the time in CA and in Greenwich UK as well … in their never-ending attempt to fool around with non-essential stuff and thus stay distracted from the real problems we elect them to work on, last year our representatives decided to adjust the Daylight Saving Dates. Few of us were aware it was broken, but apparently it needed fixing nonetheless. Beginning sometime very early in the AM on 11 Mar, we will go to DST (UTC minus 7 hrs), and will return to PST (UTC minus 8 hrs) on 4 Nov, again sometime early when we're all still asleep. Remember, "Spring forward, Fall back."

Techs and 10 meters: The FCC's Report and Order eliminating the Morse exam for all amateur license classes will take effect near the end of Feb (I think it is the 23rd) This R&O also essentially did away with the no-code Technician license and on that date, all Techs will be equal, and will have the old Tech+ privileges on HF. Those include SSB from 28.300 – 28.500 on 10 meters, and CW on 10, 15, 40, and 80 as well. The ARRL DX [SSB] coming up on the first full weekend in March offers a great chance for all of you to try out HF phone. The odds are moderately high that 10 will open probably in mid-morning to mid-afternoon … but don't rule out surprises, 10m is very unpredictable at the bottom of the cycle … and if it opens, just about any antenna will do pretty well. The ARRL has a nice one-page chart of the new allocations for download as a PDF file at www.arrl.org/FandES/field/regulations/bands.html They thoughtfully provided a monochrome version for those of us without color vision.

73,

Fred K6DGW

February Meeting Minutes

(Reported by Leslie,K7NYE)

Minutes of the SFARC Board and General Meeting, February 9th, 2007 at the Auburn, CA main library:

Board of Directors meeting began at 6:50 PM with all officers and directors in attendance. New business discussed included obtaining a new webmaster for the SFARC site. Old business discussed included lining up topics for future meetings; Antenna analyzers and PSK-31 were presented by Kevin, K7TST as topics for the March meeting. Other topic suggested for future meetings were Emergency Preparedness and having Placer County Search and Rescue present at future meetings. Current expenses and balance for the club were presented by George, KG6LSB. Meeting was adjourned at 7:30 PM.

SFARC General Meeting Minutes:

7:30 PM Meeting started by SFARC Club President, Don Hay, WB6LPJ. Meeting started with Pledge of Allegiance, Introduction of SFARC Board Members and introductions made of all club members and guests, total of 37 in attendance, including several guests; Officer reports were given by Vice President, Secretary and Treasurer; Committee reports made for ARES, ARRL and VE and Satellite. After George, KG6LSB presented Don, WB6LPJ with his official President name badge, there was a surprise presentation. Michelle, KD6QQW, XYL of Don, was presented with the name badge of "First Lady", beginning a new tradition for the club.

New Business: The club members agreed by consensus that the use of a trivia question or "rib tickler" for the weekly club net was beneficial and was spurring attendance during the net.

Presentation: Kevin, K7TST introduced Harry Miller, W6HFM to speak about the ARC and WIN system. Harry presented a PowerPoint presentation accompanied by information about the WIN network. The network is a privately-owned network (Shorty, K6JSI in San Diego owns it.) It is comprised of a series of 43 linked and internet-linked repeaters across California. There are 26 repeaters linked by internet and 17 repeaters that are directly connected. Harry explained that the system is not a closed or private repeater network, but instead is open for any licensed ham. The WIN system has proven to be dependable, top quality, wide area coverage. It is accessed via dedicated radio or via IRLP links. With the WIN system, radio communications can be transmitted to many parts of the United States (13 states) and with the IRLP internet capability, many parts of the world can access the network remotely. At this time, there are about 350 paying members of the network. Harry provided a live demonstration of the capabilities of the network which was very impressive to the club members and guests.

Gene, KG6NYH held the monthly Drawing. Meeting was adjourned around 9:30 PM.

Respectfully submitted:

Leslie, K7NYE

Secretary

Visalia International DX Convention 2007

The 2007 International DX Convention will take place April 27, 28 & 29, 2007 at the Holiday Inn Hotel & Conference Center in Visalia, California. This is an ARRL sanctioned convention that is sponsored this year by the Northern California DX Club. It is expected to draw visitors from around the World and will feature programs from recent DX-Peditions and contest operations.

The Convention theme this year is, “Elmering New DXers is Job Number One!” Accordingly, a portion of the programming will be devoted to helping new DXers learn about how to be noticed in a pile-up, snag a “new one” and get that elusive QSL card.

Other Convention offerings will include: DX, Top Band and Contest Forums, technical talks, many door prizes, both Friday and Saturday evening "attitude adjustments", Saturday Barbecue Lunch, Saturday night banquet, Sunday morning “power” breakfast, Vendors Exhibits and QSL card checking.

Current information and registration forms are available on the Convention web page, which can be found at **www.dxconvention.org** . Additional registration information can be obtained by contacting Convention Registration Chairman, Dick Letrich, W6KM via Email at **dlw6km@aol.com** .

If you’re interested in DX or DXing, the Visalia International DX Convention is *the* place to be. We hope to see you there.

Looking for a V.E. Session?

SFARC sponsors a V.E. session on the first Saturday of every month at the Event Center in the back of the Raley’s store located on Douglas Blvd. at Auburn Folsom Rd.

Our next session, March 3, will be our first session following the FCC’s decision to drop the Morse code requirement. If you have a current CSCEE for the General written, but haven’t passed the code test, you will need to bring your CSCEE along with a current copy of your license to a test session to complete your upgrade.

“Cellular Telephone” Bills Pose Potential Problems For Ham Radio Operation

(Reprinted from ARRL Letter, Vol 26, No07)

Bills aimed at thwarting "driving while cellular" and "driving while distracted" behavior have been introduced in several states, and most are worded broadly enough to potentially proscribe some Amateur Radio mobile operation. ARRL Regulatory Information Specialist Dan Henderson, N1ND <reginfo@arrl.org>, so far has catalogued 11 active pieces of legislation. Bills introduced in Montana and New Mexico have been sidelined for now, but related measures -- more than one in some states -- remain alive in Georgia, New Jersey, Oregon, Texas, Vermont, Washington and Wyoming. Henderson reports that ARRL Field Organization volunteers and members called the League's attention to the various pieces of pending legislation, none of which specifically exempt Amateur Radio mobile operation.

"In most cases we try to work to have language exempting Amateur Radio inserted into the bill, rather than narrowing by definition the behavior or activity the bill seeks to address," Henderson explains. "It is a far easier approach and removes ambiguity down the road."

Henderson says that, if requested, the League will advise radio amateurs preparing to testify about a bill before a state legislative committee. "We offer some suggestions regarding what to cover and how to approach their testimony," he said. "We also will speak with legislators or their aides to try and clarify questions or help them craft language that help accomplish our goal of specifically exempting Amateur Radio operation from these measures." Most of the measures include exceptions for emergency communication and law enforcement agencies.

In Georgia, House Bill 5 (HB 5) would assess those anyone found to be "driving while distracted" while using a wireless communication device one driver's license infraction point. The bill defines "device" to cover not only cellular or mobile telephones -- whether or not they're hands-free, but any "wireless communication device, personal digital assistant, radio or citizens band radio." HB 5 thus appears to include such routine activities as changing the station on your car radio.

In Montana, House Bill 233 (HB 233) would restrict drivers from "the use of electronic communication devices, or any other activity that causes the driver to become inattentive." This bill was tabled in committee on January 30, following a hearing a few days earlier.

In New Jersey, Assembly Bill 1966 (A 1966), would broaden the scope of that state's existing law prohibiting the use of a hand-held wireless telephone while driving. It would expand the law to cover "distracted driving" by prohibiting a motor vehicle operator from engaging in "any activity unrelated to the actual operation of a motor vehicle in a manner that interferes with the safe operation of the vehicle."

In New Mexico, House Bill 241 (HB 241) would prohibit a driver from using "a mobile communication device while operating a motor vehicle." The measure has been tabled.

Three related bills now are in play in Oregon: House Bill 2482 (HB 2482) and Senate Bill 293 (SB 293) contain essentially the same language, making it an offense to operate a motor vehicle "while using a mobile communication device" without a hands-free accessory. Senate Bill 246 (SB 246) establishes such behavior as an offense, punishable by a fine of up to $180 and providing more serious consequences if property damage, injury or death result -- up to and including license suspension and prison terms.

In Texas, Senate Bill 154 (SB 154) would prohibit a motor vehicle operator from using a "wireless communication device" while under way, unless equipped for hands-free operation.

In Vermont, two measures are in play. House Bill 31 (HB 31) would make it a violation to use a "cellular telephone" while in motion on the highway, except in the event of an emergency. Enforcement would be secondary; ie, police would have to first stop a driver for a suspected violation of another traffic offense. A more-restrictive bill, HB 126, addresses "distracted driving," and cites "any activity involving the use of one or both of the driver's hands if the activity is not necessary for the operation of the vehicle or any of its installed accessories." The bill would include activities ranging from smoking, eating or drinking to "performing personal grooming," "interacting with pets or unsecured cargo" and "using personal communications technologies." Hands-free cell phone operation would be permissible, however.

In Washington, House Bill 1214 (HB 1214) would outlaw such activities as "reading, manually writing or sending a message on an electronic wireless communications device." The measure does not include an exception for hands-free devices.

In Wyoming, two nearly identical measures are alive. The more general legislation, House Bill 152 (HB 152) addresses using "a cellular or satellite telephone while operating a motor vehicle" without a hands-free device. House Bill 284 (HB 284) contains essentially identical language but specifies drivers operating under an "intermediate permit." Both incorporate an exemption for Citizens Band, but not for Amateur Radio operation.

Henderson advises ARRL members to contact their Section Manager <http://www.arrl.org/FandES/field/org/smlist.html> to learn about any initiatives under way to address the ham radio implications of a particular state bill.

Radio Amateurs Sprinkled Among Future Space Station Crews

(Reprinted from ARRL Letter, Vol 26, No07)

NASA and its International Space Station partners have announced the expected ISS crew complements for the next two years, and the list includes several Amateur Radio licensees. The crew members comprise three ISS expeditions and represent four space agencies.

"We now have a ham-licensed US crew member -- including back-up crew members -- who will be onboard the ISS through Expedition 18," said Rosalie White, K1STO, who's secretary-treasurer of the Amateur Radio on the International Space Station (ARISS) program <http://www.rac.ca/ariss>.

Assignments include the first long-duration station flight for a Japan Aerospace Exploration Agency, JAXA, astronaut and the second long-duration station flight for a European Space Agency, ESA, astronaut. "The JAXA and ESA astronauts will work on the installation and checkout of the Japanese Experiment Module Kibo and European Columbus laboratories on the space station," NASA said this week.

NASA astronaut and ISS Expedition 5 crew member Peggy Whitson, KC5ZTD -- an ARISS veteran -- will command Expedition 16, set to begin this fall. Flight engineers for that mission include cosmonaut Yuri Malenchenko, RK3DUP-- who was ISS Expedition 7 commander -- ESA astronaut Leopold Eyharts, KE5FNO -- a Mir veteran -- and NASA astronaut Garrett Reisman, KE5HAE. They will join NASA astronaut Daniel Tani, KD5DXE, aboard the station.

Eyharts will fly to the station on space shuttle mission STS-122, which is expected to deliver the Columbus lab module this fall. He'll remain aboard to oversee activation and checkout of the laboratory while Tani takes the shuttle home. Reisman will replace Eyharts and remain on the station for about six months.

Cosmonaut Sergei Volkov, arriving in the spring of 2008, will command Expedition 17. Flight engineers include cosmonaut Oleg Kononenko, RN3DX, and NASA astronaut Sandra Magnus, KE5FYE.

NASA astronaut and ISS Expedition 9 veteran Mike Fincke, KE5AIT, will command Expedition 18. Flight engineers include cosmonaut and veteran station crew member Salizhan Sharipov, JAXA astronaut Koichi Wakata, KC5ZTA, and NASA astronaut Gregory Chamitoff, KD5PKZ.

Under the current system of ISS crew rotations, there are at least three crew members aboard during any given expedition, with one crew member's duty tour bridging two expeditions. All ISS crew members spend approximately six months aboard the orbiting outpost. -- NASA/ARISS

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