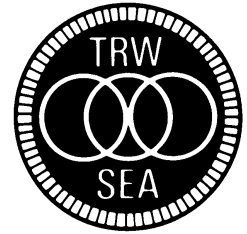




# CROSSTALK

News Bulletin of the TRW Amateur Radio Club



Volume 99 Number 6

June 1999



(See Page 3 for the latest News!!)

Misc. url's to check out.....

<http://setiathome.ssl.berkeley.edu/>

[Search for Extraterrestials Web Page](#)

<http://www.ns.net/~rtwod2/ft100.htm>

[Yaesu FT-100 User Web Page](#)

## **In This issue:**

- **Field Day '99 Update by Dennis Santiago KQ6KR – Page 3**
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- *New So. Ca. Bandplan for 440 – Page 6*
- *Contest Corner by Jim Harrison N6OUE – Page 9*

# TRW ARC Monthly Calendar of Events

First Tuesday of each month	5:30 pm	<b>Executive Board Meeting, R4/2041</b> (All Club Members are invited)
Second Tuesday of each month	5:30pm	<b>Club Meeting</b> <b>Round Table Pizza, (Redondo Bch. &amp; Hawthorne)</b>
Second Tuesday of each month	12:00 noon	<b>Emergency Communications Team Meeting</b> R3 Emergency Operations Center
Last Saturday of each month	7:00 am	<b>TRW ARC Swap Meet</b> Marine and Aviation (Northeast Corner)
After the Swapmeet	12:00 noon	<b>T-Hunt</b> Swap Meet Parking Lot - 144.72 MHz

## Weekly Events

Every Monday Night (Except the 1st & Holidays)	7:30 pm	<b>Disaster Communication Systems (DCS) Net</b> DCS Members: Check in on 2 Meter Repeater
Every Wednesday	12:00 noon	<b>ECT Net on 2 meter Repeater</b> All Amateurs Welcome
Every Thursday	7:00 pm	<b>Space Hams Net on 2 meter Repeater</b> with N6SHI and W6EKK
Every Mon, Wed, Fri	2:00 pm	<b>TRWARC Retirees Net</b> 7185 KHz
Every Friday Morning	7:30 am	<b>TRW Amateur Radio Club Breakfast</b> Building S Cafeteria - Everyone is invited Talk-in on 2 Meters

## Other Events

**Computer Fair** *Hours: 10:00 to 17:00 (get a \$25.00 annual pass see:*

*<http://www.lacomputerfair.com/annpass.html>)*

**POMONA** \$6.00 admission

Live Broadcasts: KFI-Jeff Levy "On Computers", KZLA, Y-107FM

June 26 & 27, 1999 (Sat. & Sun.) bldgs. 6, 7 & 8

Fairplex Exposition Complex Exit Highway 10 at Fairplex Drive.

Go north to McKinley Avenue, turn right. Turn left on White Avenue to Gate 14.

**RESEDA** \$3.00 admission

June 12, 1999 (Sat.)

Sherman Square Entertainment Center From the 101 Freeway take the Reseda offramp,

go north to Sherman Way and turn right. Go one block to Canby Street. 18430 Sherman Way.

**BUENA PARK** \$5.00 admission

June 13, 1999 (Sun.)

Sequoia Conference Center Take the Beach Blvd. exit off the 91 Freeway.

Go one block north to 7530 Orangethorpe.

**All Shows Open to the Public 10:00 a.m. to 5:00 p.m.**

**Call for more information (408) 778-5200 or 800-800-5600 Fax# (408) 779-1374**

### **Other Ham Swap meets:**

**Inland Empire ARC** - 2nd Sat. ea. mo. 7:00 to 11:30 AM @ A.B. Miller High School, Walnut & Oleander

in **Fontana** Talk-in 145.480 (-600 pl=77.0hz)

**El Cajon ARC** - 1st Sat. ea. mo. 6:00 AM @ Santee Drive-in Theater, Woodside Ave. @ Hwy 67 in **Santee** Talk-in 146.52

**CAL POLY** - 3rd Sat. ea. mo. 7-11am in lots F8,F9 and F10 @ CAL Poly Pomona at 3801 West Temple.

Talk-in TBD (*if you know, please email me... ed.*)

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## **1999 Field Day Update** by *Dennis Santiago, KQ6KR*

### **ATTENTION ALL FIELD DAY PARTICIPANTS!**

It's time to firm up those schedules and let us know when you will be at field day and where you'll be working. Also when you check in specify if you are planning to help put on set-up Friday and/or take-down Sunday. There are still operating slots available with several stations both day and night.

Band captains. Please verify again if you are fully booked with operators or are still in need so I'll know where to refer people they report in. And do let me know which of you, if any, is still missing things like radios, tents, tables, chairs, extension cords, multi-outlet boxes, lights for night time. And I do recommend a fan for the tent during daytime. Better we find out now than 3 weeks from now.

Do check in folks. This body count thing is important. How else am I going to get the catering right. We're talking making sure we have enough pizza and chicken wings here.

You can get in touch with me at (310) 966-5390 or via e-mail at [dennis@cms.dbc.com](mailto:dennis@cms.dbc.com). If you call and I'm not there, leave a voicemail and I'll get back to you. Sorry but I travel on business a lot.

*Dennis Santiago, KQ6KR*  
*Chairman, W6TRW Field Day 1999*

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## **FCC SPIKES RESTRUCTURING RUMORS AT DAYTON** reprinted from the ARRL Letter Volume 18, Number 21

The big FCC announcement about Amateur Radio license restructuring that many hams erroneously had been expecting at the Dayton Hamvention turned out to be that there would be no announcement. Speaking to a packed house at the Sunday FCC forum at Dayton Hamvention, Bill Cross, W3TN, of the FCC's WirelessTelecommunications Bureau spiked rumors that the FCC would have something substantive to say at Dayton about Amateur Radio restructuring, WT Docket 98-143.

"I can confirm without reservation that the rumors that have been flying fast and furious as to what the Commission has decided or will decide are just rumors," he said. According to Cross, the Commission had not decided anything as of May 13.

Cross said the FCC received 2250 comments from the amateur community in the proceeding. Comments have been read and filed, he said. Some comments continue to straggle in, although the deadline passed in January.

Cross offered his take on what the FCC might do, inferring that the Commission would propose either three or four license classes, no more, no less.

Based on the comments received, Cross said, many hams believe amateur examinations are not testing on the correct information. He invited hams to suggest questions to the Question Pool Committee, the body that comes up with the questions that appear on amateur exams. Suggested questions go to QPC Chairman Ray Adams, W4CPA, 6702 Matterhorn Ct, Knoxville TN 37918-6314. A copy to Bart Jahnke, W9JJ, ARRL VEC, 225 Main St, Newington, CT 06111, would be appreciated.

Cross said comments on Morse code testing standards "drew the most passionate responses." The League has suggested 5 WPM and 12 WPM testing tiers. Cross said those expecting a new top speed above 20 WPM would be disappointed, but he offered no other predictions on how the Commission might act on the CW requirements issue.

Cross also said the Universal Licensing System would be going into effect for Amateur Radio later this year, and it will incorporate the vanity call sign program. The system will replace the venerable Form 610 series with a new, inclusive electronic document known as Form 605. ULS will permit amateurs to file applications, modifications or renewals via the Internet. Individual hams will not be required to file electronically, however. He encouraged hams to register for the ULS.

For more information, visit the FCC's Amateur Radio page, <http://www.fcc.gov/wtb/amateur/>.

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## **AGREEMENT NEAR FOR PHASE 3D LAUNCH**

*reprinted from the ARRL Letter Volume 18, Number 21*

The long-awaited Phase 3D Amateur Radio satellite could be launched into space as early as this fall. A statement from Phase 3D Project Leader and AMSAT-DL President Karl Meinzer, DJ4ZC, delivered during the Dayton Hamvention revealed that AMSAT is "in the final phase of working out the details of an agreement" to launch Phase 3D.

Meinzer's remarks were read during the AMSAT forum by AMSAT-NA President Keith Baker, KB1SF. Meinzer said that since an opportunity to fly Phase 3D aboard the last Ariane 5 test flight fell through last summer, the Phase 3D launch team has been seeking a replacement launch. "We have been patiently negotiating with a number of different launch agencies, and it looks now that this work is starting to pay off." He said he's optimistic that a launch contract can be finalized soon.

Phase 3D would remain "a standby passenger," Meinzer's statement said. AMSAT officials declined to identify the launch agency or vehicle. Meinzer's statement said Phase 3D could fly as early as October but stressed that the date is very tentative and depends on successfully working out the remaining contract details.

"It's mostly technical issues," Baker told the ARRL. He emphasized during the AMSAT forum that things are still tentative at this point. "The October date is the opening of a window that will stretch into the future," he said. Phase 3D Integration Lab Manager Lou McFadin, W5DID, told the gathering that the spacecraft "is essentially complete." Additional integration and vibration testing will be completed this spring and summer. For more information, visit <http://www.amsat.org>.

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## **ARISS READIES HAM ANTENNAS FOR SPACE**

*reprinted from the ARRL Letter Volume 18, Number 20*

There's been recent forward progress in activities to establish a permanent Amateur Radio presence in space aboard the International Space Station. Training models--or "mockups"--have been prepared of the antennas that eventually will be deployed for Amateur Radio on the International Space Station, and pattern testing is under way on some antenna systems. Four flight antenna systems are being developed to support Amateur Radio operation from the ISS on 20, 15, 10, and 2 meters, plus 70 cm, L-band and S-band.

"The ARISS international team has made tremendous progress on the design, development and flight qualification of an antenna system," ARISS Administrative Chairman Frank Bauer, KA3HDO, said this week. The antenna system being developed for ISS includes a dualband VHF/UHF antenna, a multiband microwave antenna, and a diplexer mounted on a plate that attaches to an extra vehicular activity handrail clamping device. These four antenna systems will attach to four bulkhead Service Module feedthroughs, made available to the ARISS international team through the efforts of Sergej Sambourov, RV3DR. Russian space officials said this week that Russia will not pull out of its ISS commitments because of that country's opposition to the NATO campaign in Yugoslavia.

The VHF/UHF and HF antennas were developed by the ARISS team members in the US. They use a flexible measuring tape covered with yellow Kapton as the driven element. A large circular piece of Delrin provides a solid mounting interface and houses the connector and attachment hardware. The design is very robust and has no sharp edges. The microwave antenna system, developed by the Italian ARISS team, will support L-band and S-band operation.

The microwave antenna design chosen by the ARISS team is a flat spiral antenna. This dual-use antenna--intended for ham operations as well as NASA/Energia use--also enables the ISS crew to transmit and receive local video during space walks. A diplexer, designed and developed by the Italian team, provides an efficient split in radio signals between the lower frequency (HF/VHF/UHF) antenna and the microwave antenna. The antennas, diplexer, EVA "clothespin-type" handrail clamp, and the various coaxial cable connections will be integrated in the US on an antenna system plate developed by the US team, Bauer said.

The four antenna systems being developed for flight will be installed around the perimeter of the Russian developed Service Module, which will serve as an orbiting outpost for the ISS crew. A "high fidelity" EVA mockup developed by the AMSAT-NA/Goddard Amateur Radio Club team in Washington, DC, has been delivered to Matt Bordelon, KC5BTL, in Houston for evaluation by the NASA Johnson Space Center EVA engineers.

The microwave antenna system is currently undergoing a series of antenna pattern measurements at the NASA Goddard Space Flight Center in Greenbelt, Maryland. Former US astronaut and AMSAT member Ron Parise, WA4SIR, is leading a team of hams from Goddard's Microwave Branch in the test activity. Once antenna testing is completed, the Italian team, led by Fabrizio Bernadini, I0QIT, will move ahead with the final flight antenna fabrication. All Amateur Radio initial station hardware is slated for launch on the STS-101 mission.

## The TS-850 Computer Control Cable Project

by Steve Lambert, KQ6ZC

Not long ago, I bought a new Kenwood TS-850 HF radio. Well...not new. I bought a previously owned TS-850. Like many other hams, I wanted a good HF radio and had decided the 850 was the radio for me. It has a wealth of features such as a built in antenna tuner, CW keyer, and a really good receiver. I even found a good deal on the digital voice recorder option board. All I want now are the narrower SSB and CW filters and I'm set.

As an added benefit, the TS-850 is a computer controllable radio. The prospect of being able to hook my radio into my computer for ease in logging and contesting was a neat idea I was eager to try. That is to say I was eager until I started looking into the computer interface. The TS-850 computer interface is based on +5V TTL logic, but all computer serial ports are based on the RS-232C specification. Needless to say, these two interfaces are not immediately compatible.

Once again, I had been bitten by the "overpriced-aftermarket-addon" game played by so many radio manufacturers. Kenwood decided to forgo putting a \$5 RS-232 to TTL converter chip into their radio so they could charge \$110 - \$120 for an external box plus a \$5 computer cable. I committed myself to defeating this vile omission on the part of Kenwood.

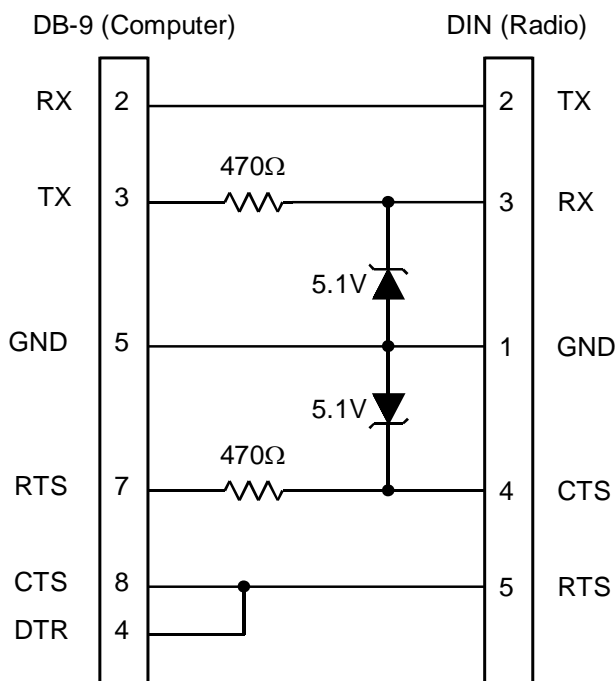
A bit of searching on the internet (I love the internet) and talking with a few other hams revealed the following bit of basic electronic trickery. The circuit in the figure at right shows how to easily implement a basic level converter circuit using standard +5V Zener diodes.

The +5V TTL output level of the TS-850 is sufficient to drive the RS-232 inputs which will work on as little as +2V. The +12V RS-232 output levels are regulated to +5V by the reverse breakdown voltage of the Zener diodes. Neat!

I gathered the parts to build this interface and decided to try it out. Following the advice of a ham friend of mine, I built the circuit into the DB-9 connector itself. There was plenty of room in the shielded connector backshell for two resistors and two diodes. A little time and some soldering and it was done.

After assembling my converter it was time for the litmus test. I connected it up to my radio and computer and nothing. I scratched my head and went back to my circuit diagram. I soon found my wiring error, re-soldered some wires and tried it again. Suddenly I was controlling my HF radio with my computer! Band changes, mode changes, and direct frequency entry all from the logging software. YES!

This is an easy project to build with a little soldering patience. So far, I've tested this cable with the CT, NA and DX4-Win programs and there doesn't seem to be any problem. The only addition that I'm contemplating is a few ferrite beads on the cable if any RFI problems crop up. I'm looking forward to playing with computer control during Field Day and also for day to day logging. What can I say...I'm basically enamored with modern technology. The only problem is finding yet another free serial port on the computer for another piece of ham radio equipment. Oh yes...the total cost to build my computer interface cable? Around \$12. Take that Kenwood.



## **SOUTHERN CALIFORNIA 440 MHZ AMATEUR COMMUNITY RE-ENGINEERS ENTIRE 440 MHZ BAND PLAN**

Pasadena, CA, May 10, 1999

In accordance with well established community band planning procedures, the active Southern California A.R.S. 440 MHz community met en masse in Claremont, CA on 1 May and, by consensus, re-engineered the entire 440 - 450 MHz regional "mobile relay" band plan. This is the first major modification to the existing Southern California band plan since the normalization of inputs and outputs to 5 MHz spacing in 1977.

The new band plan establishes 50 additional duplex channel pairs in the available repeater spectrum (440 - 450 MHz), an increase from 200 to 250 usable pairs. This provides material spectrum relief for the Southern California band which has been effectively "filled" for more than 15 years.

The most important change in the new band plan is the shift from the historically-derived 25 kHz channel spacing to a new narrower 20 kHz channel spacing plan. This plan allows continuing use of the 16K0F3E complaint equipment presently utilized by all existing coordinated and applicant stations. The 20 kHz channel spacing scheme has been in use in Southern California for point-to-point links in the 420-440 MHz sub-bands for a number of years, with complete success.

In addition to the new narrower channel spacing plan, the community adopted a channel re-alignment scheme and schedule for present coordinees on the current mobile relay channels, directed the establishment of additional simplex channels, approved the establishment of additional, dedicated "open repeater" and "test-pair" channels, and established a permanent arbitration committee to resolve coordination disputes.

Present at the meeting were representatives from two-thirds (396) of the region's 611 stations. Representatives from all systems, including those with valid applications on file, were mailed a notice inviting them to attend this meeting. The agreements to make each of the changes to the 440-450 MHz band plan were reached by consensus. In an amazing show of support, the attendees remained present throughout the meeting and participated actively, resulting in completion of business by very early afternoon, an unprecedented occurrence.

This meeting marked the culmination of several years' preparation and several prior SCRRBA general membership meetings devoted to the subject of improving the utilization and availability of channel pairs in the 440-450 sub band. SCRRBA membership reviewed and directed this preparation through its publicly announced annual meetings. At the 1997 annual SCRRBA general membership meeting, a detailed presentation of the technical parameters required for 12.5 kHz spaced (11K0F3E) operations was made. The membership overwhelmingly rejected such a channel plan. The SCRRBA technical committee was directed by the membership to "go back to the drawing board" to determine, and then present alternatives. At the 1998 annual SCRRBA general membership meeting, several alternatives were discussed, including a 20 kHz spacing plan. A similar detailed technical presentation of the parameters required for 20KHz, 16K0F3E operations was made. The SCRRBA membership directed the SCRRBA staff to schedule a band planning meeting within 6 months to determine the acceptability of such a plan to the entire community of 440-450 relay station operators.

The new band plan will be fully implemented over a twelve month period beginning immediately. The details of the new band plan follow.

### **SUB-BAND UTILIZATION**

Mobile relay input channels: 440.000 - 444.980 MHz  
Mobile relay output channels: 445.000 - 449.980 MHz

## **"100 kHz BLOCK" CHANNELIZATION**

The following channelization pattern repeats every 100 kHz in both input and output sub-bands. The chart details both the present channels and their transition to the new spacing.

Present Plan(MHz)	New Plan(MHz)	Notes
44x.y00	44x.y00	No change
44x.y25	44x.y20	- 5 kHz change
44x.y50	44x.y40	- 10 kHz change
none	44x.y60	New channel
44x.y75	44x.y80	+ 5 kHz change

SCRRBA notes that newer synthesized radio equipment is manufactured programmable to 20 kHz channel spacing. Some older synthesized radio equipment may need modification. Equipment that uses discrete quartz crystals for frequency control should accommodate the plan utilizing the existing crystals, requiring only "re-netting" of the oscillators.

## **TIME SCHEDULE FOR TRANSITION**

The present 44x.y25 and 44x.y75 systems transition will occur first, with completion by August 1, 1999. Some stations will be requested to change to an entirely different frequency pair. This determination will be made by the SCRRBA technical committee. The SCRRBA technical committee will complete notifying most stations of such changes by August 1, 1999. The present 44x.y50 systems transition and first occupancy of the new 44x.y60 channels will occur beginning August 1, 1999. The entire transition of all stations will conclude on or before May 1, 2000. The SCRRBA technical committee will be closely monitoring the presence of stations in the 440-450 band to verify actual channel utilization.

## **NEW SIMPLEX CHANNELS**

Two new simplex channels for "ground-based communications" will be established between 446.000 and 446.500 MHz, adding to the existing two simplex channels. SCRRBA will announce the new frequencies as soon as practical after August 1, 1999. A new simplex channel will be established at 449.460 MHz for use by remotely-controlled base stations, which generally operate at high elevations. This channel is not available for use until after August 1, 1999.

## **NEW OPEN REPEATER SYSTEMS AND TEST PAIRS CHANNELS**

Four new frequency pairs will be devoted to "open repeaters" (i.e., public repeaters), thus bringing the total number of open repeater pairs to twelve. These new open repeater frequency pairs (and potential changes of some existing open repeater pairs) will be announced as soon as practical after August 1, 1999. One additional "test pair" to complement the existing test pair will also be established at 441/446.860 MHz. This frequency pair is NOT available for use until AFTER August 1, 1999. These "test pairs" are utilized for construction, development, and demonstration of operation of new systems prior to requesting and obtaining coordination of a final operating frequency pair. These test pairs are for ground-based systems only, are uncoordinated, and are shared equally among all systems on those frequency pairs.

## **NEW ARBITRATION COMMITTEE**

A new arbitration committee was appointed to handle coordination disputes. This committee will initially arbitrate any disputes arising from the transition plan, but will continue past the completion of the plan as a permanent SCRRBA function. The committee consists of ten individuals, each serving for a two year period, staggered annually. Each member is a 440 MHz system coordinee, but is not an officer or member of the technical committee of the SCRRBA organization. The committee will meet at least once each calendar quarter. Arbitration decisions will be binding and not subject to review; disputes remaining after arbitration is complete will be treated as interference problems.

SCRRBA is the recognized Southern California frequency coordinator for the A.R.S. 29, 52, 440, 902, 1240 MHz and microwave frequency bands, and is the Southern California representative for the above bands to the National Frequency Coordinators Council. For more information about the new band plan, minutes of the band planning meeting, specifics about the Arbitration Committee, and about SCRRBA in general, please see its World Wide Web page <http://www.scrba.org> E mail concerning your coordination in the 20kHz plan may be sent to 20kHz@scrba.org  
SCRRBA

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### ***ED. Note: The following is a partial news brief from TRW Vice President Tim Hannemann***

"As many of you know, the third Milstar satellite, launched last Friday, and the 19th Defense Support Program satellite, launched on April 9, have both been launched into improper orbits. The Milstar satellite, which was launched on April 30 from Cape Canaveral, carries a TRW-built low data rate payload and key TRW components of an advanced medium data rate payload. Milstar is used to provide commanders and troops with near real-time transmission of maps, video and other battlefield information. A Titan IVB rocket, with a Centaur upper stage boost vehicle, delivered the Milstar satellite to an elliptical orbit. That orbit is currently 400 miles by 2,700 miles. It was intended to be placed in a 23,300-mile circular orbit. It's unfortunate that the Flight 3 satellite was not placed in its proper orbit. TRW employees have done an outstanding job supporting the Milstar program over the years. Our challenge now is to keep the efforts of Flights 4, 5 and 6 on or ahead of schedule, so that the Department of Defense can add these communications capabilities to the constellation of Milstar Flights 1 and 2 already in orbit. TRW builds this missile-warning spacecraft and integrates the sensor payloads under contract to the U.S. Air Force Space and Missile Systems Center. The DSP satellite was also launched into an improper orbit. Like you, I am disappointed and saddened by these two events. I know many of you have worked countless hours on both of these spacecraft, and I can imagine it must be heartbreaking for you to see the results. As we all know, launching satellites is still a less than perfect process. But we must continually strive for perfection in everything we do. We must move ahead and continue to produce quality products for our customers. Thank you again for your hard work on these two important programs."

Sincerely,

Tim Hannemann  
Executive Vice President & General Manager  
TRW Space & Electronics Group

## **STS-93 News - SAREX mission delayed again**

The next Space Amateur Radio EXperiment shuttle flight has again been delayed. The flight will carry the (TRW) Chandra X-ray Observatory. NASA has decided to postpone mating the observatory with its inertial upper stage (IUS) pending additional progress in the US Air Force investigation into problems with the April 9 launch of a Department of Defense satellite (TRW – DSP). The launch had been set for July 9. The specific impact on the launch date is not yet known.

NASA says it will not launch (TRW) Chandra on shuttle mission STS-93 "until the situation is fully understood." The IUS is a two-stage solid rocket that will help propel the Chandra observatory from a low-Earth orbit to its operating altitude nearly one-third of the way to the moon. The STS-93 mission is the only SAREX opportunity scheduled for 1999.--NASA



## Contest Corner

Jim Harrison K6OUE

### Spring VHF/UHF Sprints

The 70cm spring sprint was held on Wednesday evening April 28. There was a lot of activity again, particularly on SSB, which was nice to hear. I operated from Signal Hill with my own rig. Club members that I heard on the air included KC6ABS, KE6YEX, and KF6UWU. Greg, KE6YEX was using his handheld in the rotating bar on the top of the Bonaventure Hotel in downtown Los Angeles. Patrick, KF6UWU even came up to Signal Hill to visit and see what was happening.

The 902/1296/2304 MHz sprint was held on Saturday morning May 8. I borrowed the club's all-mode 1296 MHz radio and took it to KE6YEX's house which is on PV just below Friendship Park. I was surprised at how much activity there was. Most of the UHF "big guns" were on the air, including Chip Angle N6CA in Lomita, and N6XQ in San Diego both of whom hold some of the North American VHF and UHF distance records. I was only able to operate the last two hours but I made 12 contacts as opposed to only 7 contacts last year. This year all my contacts were made on SSB, none on FM.

### ARRL June VHF QSO Party

The ARRL June VHF QSO Party will be held from 11AM Saturday June 12 to 8PM Sunday June 13. It is for all bands from 6m up. All modes are allowed, but no contacts thru repeaters. This is probably the biggest VHF/UHF contest of the year, but because it falls right before Field Day there is no club effort being organized. But if you happen to be on the air that weekend, get on the simplex frequencies and hand out points to the contesters.

### Club ARRL Membership

If you have been thinking about joining the ARRL, please do it! The ARRL represents US radio amateurs' interests to the FCC, the US government, the International Amateur Radio Union (IARU) and the International Telecommunications Union (ITU) which is an "international FCC." The more members that the ARRL has, the more clout they have with these governmental bodies.

And if you do join, please let Dave AB6DU, our membership chairman, know. He keeps track of these things, and if we can increase our employee club members' ARRL membership from the current 47% to 51%, we will then qualify to be an ARRL Affiliated Club. Normally only individuals can be members of the ARRL (the club's QST magazine subscription is just that, no ARRL membership is included). The advantages to the club in being affiliated with the ARRL include the following:

- Can buy equipment insurance and club liability insurance thru the ARRL.
- Can take part in club competitions in some ARRL sponsored contests
- Can get a [W6TRW@ARRL.NET](mailto:W6TRW@ARRL.NET) e-mail alias for the club
- A listing on the ARRL web site with info about our club
- Free ARRL club president's workbook
- ARRL Affiliated Club stationery
- Commissions to the club on ARRL memberships and renewals
- Free clip-art for the newsletter
- Discounts on ARRL publications if they are donated to local libraries
- Mailing lists of hams by zipcode
- 50% off on ads placed in QST by the club
- and... a nifty certificate to hang on the shack wall!

# TRW AMATEUR RADIO CLUB

## ELECTED OFFICERS

President	Greg Shreve	KE6YEX	201A/3009	(310) 812-2079
Vice President	Elizabeth Kunkee	KS4IS	D1 / 1024	(310) 813-0524
Secretary	Craig Gullickson	N6ED	R6 / 2529F	(310) 812-5389
Treasurer	Steve Lambert	KQ6ZC	R6 / 2529	(310) 812-5019

## APPOINTED STAFF

447 Repeater Autopatch	Duane Park	WA6EIK	R8 / 2778A	(310) 813-4219
Activities Chairman	Greg Martens	N6RRY	M1 / 1275	(310) 813-4049
Crosstalk Editor	Duane Park	WA6EIK	R8 / 2778A	(310) 813-4219
Emer. Comm. Coordinator	Wendell Young	KE6ASC	R5 / 1060B	(310) 813-7691
Librarian	Steve Papa	KO6VF	O2 / 1715	(310) 812-5305
Membership Chairperson	Dave Nelson	AB6DU	R8 / 2144	(310) 813-9775
Past President	Rich Sauer	N6CIZ		
Publicity Chairperson	Dave Nelson	AB6DU	R8 / 2144	(310) 813-9775
QSL Manager	Bryan DeAro	KN6OW	120 / 1020B	(310) 812-4789
S.P. Packet/Internet Sysop	Chris Wachs	WA2KDL	M4 /	(310) 813-1506
SEA Representative	Nina Whiddon	KN6FL	01 / 2020	(310) 813-9351
Swap Meet Manager	Greg Martens	N6RRY	M1 / 1275	(310) 813-4049
Technical Chairperson	John Cheatham	KE6OJM	R9 / 2477	(310) 813-5903
Training Chairperson	Bryan DeAro	KN6OW	120 / 1020B	(310) 812-4789
Trustee of W6TRW License	Elizabeth Kunkee	KS4IS	D1 / 1024	(310) 813-0524

TRW ARC Hotline (Club Answering Machine) (310) 813-8569  
W6TRW 2 Meter Repeater (Open Repeater) 145.32 (-600) PL 114.8Hz  
W6TRW UHF Repeater (Open Repeater / Closed Autopatch) 447.00 (-5 MHz) PL 100 Hz  
W6TRW-3 Packet Radio Internet Gateway and BBS (1200 Baud Port) 146.745 (-600)  
W6TRW Internet Home Page <http://gw.w6trw.ampr.org/w6trw/>

TRW Amateur Radio Club  
S/1156  
One Space Park  
Redondo Beach, CA 90278

## FIRST CLASS

Deliver To:

