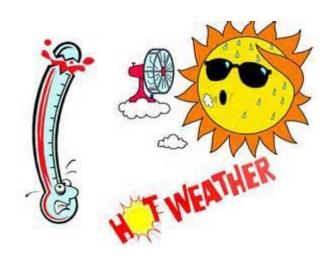


4529 W. Park Place Glendale, AZ 85306-1512







Vol 43, No 8

August 2018

CLUB MEETING SCHEDULE

SARC

Aug 1st Scottsdale Senior Center 7:00 PM

OPRC

Sep 12th Marshall Conference Ctr at Tucson Medical Ctr 7:15 PM

MCCARC

Aug 6, 13, 20, 27 Mesa Community College Tech Bldg 7:00 PM

AARC

Aug 9th Red Cross Bldg. - Phx 7:00 PM

TBARC

Aug 16th North Phoenix Campus Northern Arizona University 7:00 PM

CADXA

Aug 2nd PERA Club 7:00 PM

CLUB MEETING SCHEDULE

QCWA

Aug 18th Coco's Bakery & Restaurant Surprise 11:00 AM

SuperstitionARC

Aug 21st Charles K Luster Bldg 7:00 PM

MARCA

Aug 21st Denny's Restaurant - Tempe 6:30 PM

ANSR

Aug 16th via GoToMeeting 7:30 PM

OVARC

Aug 17th Ascension Luthern Church 7:30 PM

WVARC

Aug 6th Shephard of the Desert Luthern Church 7:00 PM

ARA

Aug 23rd Denny's Restaurant - Tempe 7:30 PM

MARA

Aug 4th Maricopa PD Community Rm 9:00 AM

YARC

Aug 2nd Prescott Rodeo Grounds 7:00 PM

TCARA

Aug 20th Goodyear City Hall 7:00 PM

ARIZONA AMATEUR RADIO CLUB

The Arizona Amateur Radio Club meets on the **SECOND THURS-DAY** of each month at 7:00 p.m. at the American Red Cross Building at 4747 N 22nd St. in Phoenix. Visit web site at www.W7IO.org for map. Visitors are welcome.

President	Gary Hamman	K7GH	602.996.8148
Vice President	Mark Kesauer	N7KKQ	602.843.0960
Secretary	Reinhard Geissle	er K7RGG	
Treasurer	Bob Hodges	K7JJT	602.375.9982
Activities Mgr	Lori Cripps	WA7EDI	602.955.7517
Membership	Bob Hodges	K7JJT	602.375.9982

AARC c/o Bob Hodges, K7JJT, 15214 N 7th Place, Phoenix, AZ 85022. DUES: \$15.00/YR, Prorated (\$18.00 Family,\$9.00 Student), MEMBERSHIP YEAR BEGINS FEB. 1.

SCOTTSDALE AMATEUR RADIO CLUB, INC.

The Scottsdale Amateur Radio Club meets the **FIRST WEDNESDAY** of each month at 7:00 p.m. in Room 8 at the new Scottsdale Senior Center located at 1700 N Granite Reef Road (west side of Granite Reef Rd., 50 yards north of McDowell Rd. Parking on site). The club also holds a net <u>every Tuesday night</u> at 7:00 p.m. on the 147.78/.18 repeater.

cater.			
President	James Wasson	N7ELL	480.456.1154
Vice President	Ray Vasques	K4RMV	
Secretary	Paul Jorgenson	KE7HR	
Treasurer	Ed Nickerson	WU7S	480.949.5162
Past President	Paul Finell	W7EFQ	602.741.6563
Board Members	Irv Hembeck	K0OTZ	
At-Large	David Yee	N7AJR	
	Bill Kouchis	N9EIV	602.723.0700
	T D Kennard	N7ISR	
	Ray Vasquez	K4RMV	(ARCA Rep)
	Bruce Harmsen	KA9EYX	
	Chris Tabor	K7TAB	

SARC, P. O. Box 10878, Scottsdale, AZ 85271-0878. Phone: 602.735.3988. DUES: \$20.00/YR, (\$10.00/Add'l Family Member). Web Site: www.scottsdalearc.org

ARIZONA NEAR SPACE RESEARCH

The Arizona Near Space Research group meets the **THIRD THURS-DAY** of the month at 7:30 p.m. via GoToMeeting. Technical meetings are held the first Monday of the month at 7:30 p.m. on GoToMeeting. Please contact an officer about joining our meetings.

President	Stephen Thomas KE7TLS	iamgadget1@yahoo.com
Vice President	Clayton Jacobs, KJ6QJS	
Secretary	Steve Miller, W6SDM	
Treasurer	Bill McLean, K7WWM	bmcleanl@gmail.com

ANSR, PO Box 31003, Mesa, AZ 85275-1003. DUES: \$10.00/YR. Web Site: www.ansr.org



THUNDERBIRD AMATEUR RADIO CLUB

The Thunderbird Amateur Radio Club meets the **THIRD THURS-DAY** of each month at 7:00 p.m. at North Phoenix Campus of Northern Arizona University located at 15451 N. 28th Avenue (near I-17 and West Greenway Road). The meeting is held in room 147. See the website (http://w7tbc.org) for a map and more details.

President	Brian McCarthy	AK7F	president@w7tbc.org
Vice President	Chris Johnson	K6OZY	vicepresident@w7tbc.org
Secretary	Gary Cline	AF7BJ	secretary@w7tbc.org
Treasurer	Darren Johnson	AF7CO	treasurer@w7tbc.org
Board Members	Clair Wyant	KG7MAJ	kg7maj@w7tbc.org
	Wayne Hale	W6IZK	w6izk@w7tbc.org
	Robert Fairfield	K7RQN	k7rqn@w7tbc.org
	Andrew Cornwal	1 KF7CCC	kf7ccc@w7tbc.org
Past President	Gary Duffield	WK7B	wk7b@w7tbc.org

For further information about the ThunderBird Amateur Radio Club, visit our website at http://w7tbc.org, send an e-mail to: info@w7tbc.org or call 602.938.8219. The Thunderbird Amateur Radio Club is a 501(c)(3) non-profit organization. Mailing address: PO Box 32544, Phoenix, AZ 85064-2544.

OLD PUEBLO RADIO CLUB

The Old Pueblo Radio Club meets the **SECOND WEDNESDAY** of March, June, September and December at 7:15 p.m. in the Marshall Conference Center at Tucson Medical Center. Visitors are welcome.

President	Ron Kalish	N7SPW	520.207.3852
Vice President &			
Treasurer	George Devich	N9IUK	520.760.0125
Board of Director	s: Cliff Hauser	KD6XH	
	Jim Ulmer	KC7THU	
	Lin Donnelly	KF7CNR	
WebMaster	Ted Willis	AA7HX	520.790.3828
	(www.oprc.org)		
Trustees: (all re	epeaters operating	under the K7	TRA call)
Primary	Cliff Hauser	KD6XH	
	146.660, 146.820,	147.220-	
	Paul VanBeverho	oudt KA7LFX	X 224.06+
Secondary	Ted Willis	AA7HX	146.66-
	Ralph Turk	W7HSG	146.82-
	Paul VanBeverho	oudt KA7LFX	X 224.06+

Mailing address: OPRC, P.O. Box 42601, Tucson, AZ 85733-2601. DUES: Individual - \$20.00/YR, Family - \$30.00/YR.

AZ RED CROSS COMMUNICATIONS CLUB

The Arizona Red Cross Communications Club meets at the Red Cross Building located at 4747 N 22nd Street in Phoenix. The group meets at emergency drills and at the call of the officers.

President	Frank Engstrom	KB7IQ	480.209.7300
Vice President	Larry Buchanan	AA0LB	623.703.9161

Arizona Red Cross Communications Club - K7ARC, 4747 N 22nd Street, Phoenix, AZ 85016.

BARRY M GOLDWATER, ARIZONA CHAPTER QUARTER CENTURY WIRELESS ASSOCIATION

The Barry M Goldwater Arizona Chapter of the QCWA includes amateurs from all over Arizona. Four luncheon meetings are planned each year. The meeting months and locations are announced by newsletter, but generally follow the following schedule:

Spring Meeting March/April Tucson Area Summer Meeting June/July Prescott Area Fall Meeting October Phoenix Area Holiday Meeting December Carefree Area

The AZ Chapter meets on the air evey Sunday morning at 0700 MST (0730 during December and January) on 3890 +/- QRM. During December and January, the net time is moved to 0730 MST.

President	John Marshall	WA/BSR	623.334.2583
Vice President			
Secretary			
Treasurer	Dave Hanson	W7BJ w7b	j@outlook.com
Webmaster	John Marshall	WA7BSR	623.334.2583

Web Site: http://azqcwa.org Email: azqcwa@gmail.com.

DUES: \$7.00/year and current national QCWA membership.

MINGUS MOUNTAIN REPEATER GROUP

Meetings are held twice a year, an annual board meeting in Phoenix and a picnic meeting in Chino Valley. Dates, times, and locations are announced in the newsletter.

President	Bob Sitterley	K7POF	928.636.2146
Vice President	Ray Tyrrell	N6MY	n6my73@gmail.com
Treasurer	Bob Sitterley	K7POF	928.636.2146
Secretary	Lori Cripps	WA7EDI	602.955.7517

Web Site: http://www.k7mrg.org. DUES: \$20.00 per year, due prior to July 1. MEMBERSHIP YEAR - July 1 - June 30.

MARICOPA AMATEUR RADIO ASSOCIATION

The Maricopa Amateur Radio Association (MARA) meets the **FIRST SATURDAY** of each month at 9:00 a.m. at Maricopa PD Community Room, 17985 N Greythorn Dr. in Maricopa.

President Vice President	Steve Miller Chris Canevit	W6SDM W7CGC	602.290.1603
Secretary	John Wiltberger	NO7IN	
Treasurer	Curt Steger	NA7CS	520.568.9471
Board Members:	Ronald Beasley	KG7MUV	520.568.4880
	Bob Howard	W8RH	520.709.6176
	David French	N7FAN	480.430.9426
	Dale Dallon	KB7DD	
	Greg Harding	KG7VNZ	
PIO:	Steve Miller	W6SDM	602.290.1603
Webmaster:	David French	N7FAN	480.430.9426

The Maricopa Amateur Radio Association is a 501(c)(3) non-profit organization. DUES: \$25.00/year individual, \$30.00/year family. Apply on-line at www.copahams.org. Mailing address: P O Box 951, Maricopa, AZ 85139

WEST VALLEY AMATEUR RADIO CLUB

The West Valley Amateur Radio Club is an Arizona 501(c)(3) non-profit corporation. Meetings are the **FIRST MONDAY** of each month at 7:00 PM at Shepherd of the Desert Lutheran Church, 11025 N 111th Avenue in Sun City. Doors open at 6:00 PM, Meeting starts at 7:00 PM, VE Testing at 8:00 PM. The board meets the third Tuesday of the month at Lou's Trivoli Gardens, 12535 W Bell Rd, Surprise at 7:00 PM. The Emergency Preparedness Group meets the third Monday of the month at 7:00 PM at Boswell Hospital. Club nets are held on 147.300 (tone 162.2) at 9:00 AM daily and Monday - Thursday at 8:00 PM. The preparedness net is held the last Friday before the monthly Monday night meeting at 8 pm on the NY7S repeater 147.300 MHz, Tone 162.2 Hz. A weekly breakfast is held every Thursday at Lou's Trivoli Gardens, 12535 W Bell Rd., at 7:00 AM.

President	Gary Robin	K9HDU	
Vice President	Ralph Nagle	W9ADW	
Secretary	April Kramer	KI7GFJ	602.284.6312
Treasurer	Tom Connor	W7TLC	623.444.7956
Club Directors:	Bob Paul	KG7FIL	623.252.0149
	Nancy Collins	KG6QWW	623.398.5286
	Many Blanco	KI7QLD	
	David Putman	W7DCP	

WVARC, P O Box 1573, Sun City, AZ 85372-1573. DUES: \$15.00/ YR for family residing at the same address. MEMBERSHIP YEAR -January - December. Web Site: http://www.westvalleyarc.org. Email: suncitywvarc@gmail.com

SUPERSTITION AMATEUR RADIO CLUB

The Superstition Amateur Radio Club meets at 7:00 p.m. on the **THIRD TUESDAY** of each month (except December) at the Charles K Luster Building, 640 N. Mesa Drive, Mesa (use the glass door on your left at the main entrance). Visitors are welcome. Board meetings are held at 6:30 p.m. on the second Tuesday of each month (except December) at Black Bear Diner, 1809 E. Baseline Road, Gilbert.

President	Steve Estes	KB7KWK	480.251.0551
Vice President	Andy Keels	KD4ABB	602.809.3561
Secretary	Brent Butler	W7FK	480.332.1141
Treasurer	Douglas Mitchell	W7ADD	480.540.4110
Board Members:	Dan De Vlieger	KC7MSU	480.335.4914
	Dan Karnes	W7TWR	602.502.5259
	Don Rollock	W2EUL	w2eul@yahoo.com
	Jeff Harris	K2DFE	602.617.6930
	Jeff Heinze	N7CCW	480.720.7908
	Jeff Marchesky	K7ZLX	602.628.0238
	Larry Fort	AB7C	480.861.7066
	•		

Superstition ARC, 5155 E Eagle Dr #21522, Mesa, AZ 85277. Web Site: <u>SuperstitionARC.org</u> and <u>SuperstitionSuperFest.org</u>. The Superstition Amateur Radio Club is a 501(c)(3) non-profit organization. For club information, please send email to: <u>Communications@SuperstitionARC.org</u>.



MARCA, Inc. / W7MOT

MARCA is an Arizona 501(c)(3) Non-Profit organization. The club call sign in W7MOT. Membership is open to all amateur radio enthusiasts. Meetings are held the **THIRD TUESDAY** of each month at 6:30 p.m. at Denny's Restaurant located at 825 S 48th Street in Tempe (SE corner of University & 48th Street). Monthly presentations cover a broad spectrum of interesting subjects. Vistors are welcome to attend. Come early for dinner and socializing. Repeater Problem Reports are encouraged. A Repeater Problem or Comment Reporting is available at http://www.w7mot.org/index.php/repeaters/report-a-repeater-problem. Site Managers and officers will take reports for any W7MOT repeater. Contacts are found on website. Club activities include providing voice, aprs, packet, DStar, and Fusion repeaters Central Arizona; ARRL Field Day, special interest groups in SDR, APRS, antennas, digital modes, and SBC applications.

President	Norm Johnson	AA7OO	480.278.2886
Vice President	Dave Hall	N7ZPY	
Treasurer	Don Aldridge	WA7RLL	
Board Member	David Yee	N7AJR	
Trustee:	Norm Johnson	AA7OO	480.278.2886
Webmaster:	Norm Johnson	AA7OO	480.278.2886

MARCA, Inc., PO Box 28246, Tempe, Arizona 85285. Membership dues \$25 annually. See our website (http://w7mot.org) for more information about meeting schedules, membership, repeaters, library, and club activities.

ARIZONA REPEATER ASSOCIATION, INC

The Arizona Repeater Association general meeting is held the **FOURTH THURSDAY** of each month at 7:30 p.m. There are no meetings in July and December. The November meeting is held the Monday before Thanksgiving. Meetings are held at Denny's Restaurant, 825 S 48th Street, in Tempe, near SR143 and University Drive. Visitors are welcome. Come early for food and social time before the meeting starts. For further information about the ARA, including repeaters, site status, and the tech/board meeting, please visit our web site at www.w7ara.org.

President	Brian McCarthy, AK7F	ak7f@w7ara.net
Vice-President	Erv Heimbuck, K0OTZ	k0otz@w7ara.net
Treasurer	Cole Cunningham, AA7R	D aa7rd@w7ara.net
Secretary	Jim Hoff, N7XXX	n7xxx@w7ara.net
Board Members:		
	11 TITLET TY	

Lance Halle, KW7LH	kw7lh@w7ara.net
Dennis Bietry, KE7EJF	ke7ejf@w7ara.net
Doug Pelley, WB7TUJ	wb7tuj@w7ara.net
Joe Godfrey, AE7JG	ae7jg@w7ara.net
Dennis Campbell, AE7WU	ae7wu@w7ara.net
Mike Montalvo, KF7MBK	kf7mbk@w7ara.net
Marty Dusenberry, KE7DGP	ke7dgp@w7ara.net
James Wasson, N7ELL	n7ell@w7ara.net

For Membership Information, contact (Joe Godfrey, AE7JG membership@w7ara.net) Arizona Repeater Association, Inc, P. O. Box 35758, Phoenix, Arizona 85069-5758. To join or renew, please visit http://w7ara.org/mbr/Membership.aspx. DUES: \$18.00/yr. (Jan. 1 through Dec. 31) with a one-time initiation fee of \$10.00. Life and family memberships are available.

YAVAPAI AMATEUR RADIO CLUB

The Yavapai Amateur Radio Club meets the **FIRST THURSDAY** of every month at 7:00 PM in the Freeman Building at the Prescott Rodeo Grounds located at 840 Rodeo Drive in Prescott (visit web site at www.w7yrc.org for directions and map). YARC is an ARRL Special Service Club dedicated to public service and emergency preparedness. The club serves the quad cities area of Prescott, Prescott Valley, Chino Valley/Paulden, and Dewey/Humboldt.

President	Kathy Laing, KJ6KMK	president@w7yrc.org
Vice-President	Joe Thomas, KG6IDN	vice_president@w7yrc.org
Secretary	Art Jackson, KA5DWI	secretary@w7yrc.org
Treasurer	Mike Reid, N7IEP	treasurer@w7yrc.org
Board Members	Frank Bender, K8FB	k8fb@w7yrc.org
	Don Bauer, WB7TPH	wb7tph@w7yrc.org
	Dave Hanson, W7BJ	w7bj@w7yrc.org
	John Laing, K7PRS	k7prs@w7yrc.org

Yavapai Amateur Radio Club, P O Box 11994, Prescott, AZ 86304-19994. DUES: \$20.00/yr. Visit the website at www.w7yrc.org

ORO VALLEY AMATEUR RADIO CLUB

The Oro Valley Amateur Radio Club meets the **THIRD FRIDAY** of each month at 7:00 p.m. at Ascension Lutheran Church located at 1220 W Magee Road in Tucson. (June is normally Field Day. December is annual Christmas Party and date and location varies.) Visitors are welcome. Board Meetings are held at 9:00 a.m. at the Oro Valley PD Substation EOC on Tangerine Rd (next to WalMart) in Tucson. Check the web site at www.tucsonhamradio.org for dates.

President	Steve Wood, W1SR	president@tucsonhamradio.org
Vice-President	Fred Bresani, W2HZ vi	cepresident@tucsonhamradio.org
Secretary	Carl Foster, KB7AZ	secretary@tucsonhamradio.org
Treasurer	Hanna Eckert, KG7TPI	treasurer@tucsonhamradio.org
Board Members	Ross Eckert, K4WBR	
	Scott Boone, K7ADX	
	Cama Diamas WE7CD	

Scott Boone, K7ADX Gary Pierce, WE7GP George Cooley, NG7A Marnee Dearman, KG7SIO

DUES: \$25.00/year (Household members living at same address \$15.00 each additional). To join or for additional information, visit website at http://www.tucsonhamradio.org/.

MESA COMMUNITY COLLEGE AMATEUR RADIO CLUB

The Mesa Community College Amateur Radio Club meets **EVERY MONDAY** of the month at 7:00 p.m. at Mesa Community College located at 1833 W Southern Avenue in Mesa. The meetings are held in the Technology Center Building 50, Room TC414 on campus. Every other meeting focuses on beginner topics to assist members in testing for the Technician license. All are welcome to join and there are no membership dues or requirements other than only MCC students may vote and hold club officer positions. Visit us at https://www.facebook.com/KM7CC

President	Charlie Brown	NJ7V	nj7v@arrl.net
Vice President	Nick Bratcher	the	etowerpeople@gmail.com
Senator	Victor Valderram	vi	cau50911@maricopa.edu
Secretary	Robert Swanson	ro	bswanson30@yahoo.com

CENTER FOR AMATEUR RADIO LEARNING

The Center for Amateur Radio Learning is a hands-on amateur radio station, W7ASC, located within the Arizona Science Center at 600 E. Washington, Phoenix. Board meetings are held the last month of each quarter at the AZ Science Center. Annual meeting for all volunteers is held the **THIRD SATURDAY** of January. Watch ADAW for details.

President Vice President	Jack Landon Jim Felkey	KD7ROB N7BBS	480.759.5195 480.966.7084
Secretary	John O'Neal	K7IP	480.345.7800
Treasurer	Karen McCona	ghy NO7D	602.799.7338
Roard Members:			

Jean W4CIH ADAW, Publicity

Steve WB4ZSC Tech/IT, CARL/ASC Interface

Fred K9TOS Logbook/QSLs
Tom K9TOS At Large
Sam N7INV Scheduling
Dave W7PMD Hamfests
John K7JP Teacher Packets
Bob KG7QJ Classes, ASC Contact

Web Master, ARCA Rep - Roger Buel, W9NCQ - 602.493.7242 For information: Email to <u>carl@w7asc.org</u> or call Jack, KD7ROB at 480.759.5195. Web Site: <u>http://www.w7asc.org</u>

CENTRAL ARIZONA DX ASSOCIATION

The Central Arizona DX Association meets the **FIRST THURSDAY** each month at 7:00 p.m. (except for January Awards Banquet) at the PERA Club, located at 1 E Continental Drive in Tempe. Visitors always welcome. See www.cadxa.org/meetings.html for a map. The May meeting is an outdoor barbecue at 6:00 p.m. (reservations required).

President	Lee Finkel	IX 1 / IVI	ars-ky7m@cox.net
Vice President	Fred Hoffert, III	NA2U	cwman1@aol.com
Secretary	Bill Poole	AA4Q	bill@poole.com
Treasurer	Alton Chaney	W7AC	X w7acx.480@gmail.com
Past President	Tom Kramer	NQ7R	tkramer@azci.net
Board Members	Larry Loen	WO7R	lwloen@gmail.com
At-Large	Reinhard Geissle	r K7RGG	dl1uf@compuserve.com

CADXA, P.O. Box 24616, Tempe, AZ 85285-4646. Email: cadxa@cox.net. Dues are \$25 per year (\$12.50 per additional family member). For more information, DXing resources, and a membership application, visit our website: www.cadxa.org.

TRICITY AMATEUR RADIO ASSOCIATION

The TriCity Amateur Radio Association meets the **THIRD MON-DAY** of the month at 7:00 p.m. in the Goodyear City Hall Conference Room located at 190 N Litchfield Road in Goodyear. Parking is available on the west side of the building. (A social gathering is held at Village Inn at 2700 N Litchfield Road after the meeting.) Weekly Rag Chew every Wednesday at Village Inn (2700 N Litchfield Road) at 2:30 p.m. All hams are welcome. Weekly net is held Wednesday evenings at 7:30 p.m. on 446.400 MHz (PL 100 Hz). Events are posted on our Yahoo Group page at https://groups.yahoo.com/neo/groups/TRICITYARA/info

President	Bob Nobis	N7RJN	n7rjn@nobis.net
Vice President	Open		
Secretary	Carol Melton	AK7N	ak7n@azsnaps.com
Treasurer	Arnold Knack	KA7AOK	ka7aok@gmail.com

TriCity ARA, P O Box 6293, Goodyear, AZ 85338-6293. DUES: \$18.00/yr. for individuals, \$25.00 for family. Web Site: http://n7tca.org.



Please be sure your club has your current email and/or mailing address.





The <u>Arizona Desert Aire Waves</u> is published monthly and is the official news media of the sponsoring clubs. All news items, articles and inquires should be submitted to each club's editor. Any information and opinions printed herein are those of the contributors and are not necessarily those of the sponsoring clubs. Full permission is granted to quote from this publication providing credit is given to the individual contributor and the ADAW. ALL RIGHTS RESERVED. **Deadline is 10th of the month**

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ADAWWEBSITE	www.adaw.o	



From The Editor's Desk

August is a fairly quiet month for Amateur Radio in Arizona, and with good reason! As I write this, it's 114 degrees outside (according to the weather app on my phone), although the thermometer in the back yard tells me it's 116 down here where we live. Ever wonder why they put the official thermometers up in the air instead of down where the people actually are? Don't figure.

Anyway, with the heat in the valley of the sun, it's a great time to get on the radio and make some contacts. There might even be a contest you can take part in. If you're an ARRL member, you can peruse the Contest Calendar on page 86 in the August issue for a contest you might enjoy. You might even be able to complete a certificate that you've been working on. All from the air-conditioned comfort of your own home!

Or you could explore a new mode or band. Amateur Radio is ever expanding and offers so many possibilities. Check with your club to see what's on tap for their August meeting or if they have a class or activity scheduled.

Another thing you might do is study for that upgrade. There are 11 testing sessions scheduled in August in all parts of Arizona. So, if you've been meaning to upgrade, now is a good time.

Volunteering at the Science Center is another opportunity. You can spread the word about Amateur Radio to visitors to the Ham Shack. It can be very rewarding and fun. Check out the Center for Amateur Radio Learning's (CARL) column on page 9.

The next hamfest in Arizona is RST's Tucson Fall Hamfest on September 29. Start making your wish list of items now, especially if you missed the White Mountain Hamfest in Pinetop and/or the Kingman Hamfest (or you couldn't find what you needed at one of them). Mark your calendar and make plans to attend.

In November, you'll have the choice of going to either Marana for the OVARC Hamfest, or to Congress for HARKfest. This year they are both on the same day which makes it difficult for those of us in the valley to decide which to attend. They are both excellent events. So make your decision and plan to attend one of them. Either way, you'll have a good time.

Hope to see you in the fall at one of the upcoming events. Have a wonderful August. Stay cool and, like we're always being told, stay hydrated. Catch ya next month!

73, Chris, N7PVL





Occasionally, when I meet people at ham radio events and they know that I am a member of Arizona Near Space Research, they will ask, "What do you guys do?"

Simply put, us guys, and a few ladies too, send helium-filled balloons into the stratosphere. The purpose of these balloons is usually to carry student payloads containing experiments that are part of their college curriculum. Our payload also contains a mode C aircraft

transponder so that we're visible to air traffic control, APRS beacons so that we can track the payload on reentry, a CW beacon for locating the payload on the ground, and a parachute for bringing everything down safely. We also include a variety of cameras for the flight review and for live streaming video.

The cost of a high-altitude flight is somewhere around five hundred dollars depending on the size of the balloon. That doesn't include the cost of ground station or chase team volunteers. Our funding comes from a variety of sources including private donations, member dues, and the Arizona Space Grant Consortium.

Another question I get asked is how high our flights go. There are a number of factors that limit the altitude of a flight including the size of the balloon, the weight of the payload, and weather conditions. Our top altitude to date well exceeds 100,000 feet.

What keeps the flight from going any higher? Essentially, it's the law of physics. There simply isn't enough air pressure to keep the ballon together. It expands until it disintegrates.

Our next hamfest flight will be at Copafest 2018 in Maricopa on October 27, 2018. Stop by and introduce yourself. We are an inclusive group and always looking for new members.



The 2018 Field Day was a great event at the Methodist Mingus Mountain RV Park. No need for me to give you statistics because these will most likely be available to you elsewhere. AARC President, Gary Hamman, K7GH did an excellent job of summarizing Field Day. He comments:

"Thanks for participating in the W7IO Field Day on Mingus Mountain. It was a fun time that included some set-up and then repacking of the equipment, operating contest style for 24 continuous hours, and many good meals together as a group that included great food as well as conversation. An extra thanks to Reinhard and Ingrid for coordinating the meals and doing lots of the food preparation. We enjoyed cold watermelon on Friday and Sunday. We had 14 operators participating in Field Day on Mingus."

MMRG President Bob Sitterley, K7POF actively worked with AARC president, Gary, K7GH on getting the antenna system set up and in addition, Bob was able to take some of the group to see the Mingus Repeater which is not too far from our Field Day location.

Highlights of the Field Day include the four contacts made via the OSCAR satellite by Peter, KD7OIW and his group. The operator for the contacts was Reinhard, K7RGG, but there were at least a half dozen involved during the satellite pass to get everything to work well enough to make the contacts. Ingrid, W7ISG made one contact on 6 meters using our VHF station.

I would not be surprised to find an AARC Field Day in the same location in 2019.

73, Lori, WA7EDI







Red Cross Disaster Service Technology Team







Disaster Service Technology volunteers traveled to Mingus Mountain to spend the last weekend in June sharpening their communication skills. Ten volunteers, all amateur radio operators and members of the Arizona Red Cross Communications Club, partnered with the Arizona Amateur Radio Club to participate in Field Day sponsored by the Amateur Radio Relay League (ARRL.) More than 35,000 radio amateurs gathered with their clubs, groups or simply with friends to operate from remote locations. It is a time where many aspects of Amateur Radio come together to highlight the many diverse roles. While some treat it as a contest, many groups use the opportunity to practice their emergency response capabilities.

The contest was simply to contact as many other stations as possible and to learn to operate the radio gear in abnormal situations or under less than optimal conditions. These same skills are used when helping with events such as marathons and bike-a-thons; celebrations such as parades; and exhibits at fairs, malls, and museums — these are all large, preplanned, non-emergency activities.

Ham radio has been called into action again and again to provide communications in crises when it really matters. Amateur Radio people (also called "hams") are well known for communications support in real disaster and post-disaster situations. Most recently, ham radio operators played a vital role supporting American Red Cross relief and recovery efforts in Texas and the Caribbean during last year's hurricane season. The Red Cross requested additional ham radio operators through the ARRL to deploy to Puerto Rico in the wake of Hurricane Maria. Twenty-four ham radio operators were recruited and provided communications in remote villages and other hard hit areas across Puerto Rico until normal communications could be restored.

Locally, the members of the DST team keep busy with several communications related projects across the state, including installing and maintaining radios in Red Cross offices, ERVs, and other vehicles. Most DST volunteers are trained to support networking, computers, and communications on disaster relief operations. The team maintains a website, www.k7arc.org, that provides information about who we are and what we do. For more information about the Red Cross Communications Club or amateur radio, contact the group at arccc@cox.net or stop by the radio room at the chapter to talk with one of the members. (submitted by Charles Zurenko, Red Cross volunteer)

The DST team's primary goal is to set up connectivity to support Red Cross disaster relief efforts.

By using satellite technology, the team can network the operation quickly. Once the network is completed, DST will start issuing laptops and equipment such as cell phones, printers, and radios.

Common equipment includes: satellite internet dish, modem, servers, switches and routers, laptops , VOIP phones, cell phones, laptops and lots of cable.



Field Day has come and gone, but it has left us with some memories that must be shared. The generosity of the Arizona Science Center allowed about a half-dozen licensed Hams to visit the Center and then help W7ASC volunteers with Field Day activities.

As a matter of course, there are usually two volunteers on duty at the Harkins Ham Shack. This number was increased by about 10db on Field Day. There were "Do Your Name in Morse Code" stations on every floor of the Science Center. There was a NOAA weather expert Ham (Steve KB7QHP) at the Sky-Warn desk just outside the Forces of Nature gallery.

W7ASC was on the air on HF as well as VHF/UHF, providing contest points to other stations and on-air experiences to ASC visitors. This staffing level gave the Ham volunteers ample opportunity to explain Field Day and Ham radio as an essential Public Service. A service that is capable of providing communications even if access to power or cell-phones is out.

The "Do Your Name in Morse Code" session is concluded with the award of a certificate and a little sticky badge. Bob KG7QJ and John K7JP produced some very special certificates and badges that were marked as Field Day issue. Nice touch. With Morse Code ringing through all of the halls and galleries of the Science Center (and warm temps), visitors stayed long on Saturday, there was no mistaking the communication theme.

This Day brought together many of the Hams who founded the Center for Amateur Radio Learning (C.A.R.L.). Old Timers Rick Horwitz AB7FH and Charlotte KB7TKQ. Rick and Charlotte had not been at ASC for a long, long time. Dave Zinder W7PMD was there, as was John O'Neal K7JP and Bob Burleson KG7QJ. Some founders were missing, SK, and some were simply unable to make the journey. But we did see Willy AC7BI, teaching Morse to a young visitor.

Steve Warford WB4ZSC introduced an innovation to the Morse code protocol. When a visitor completed the code and had received the badge, Steve allowed that visitor to reach into a container and select a strip of paper. Each strip had a different number. When the visitor asked what the number meant, he was told that he had found the largest number that would be found on any of those strips. A winner! A happy visitor.

Most of the ADAW readers realize that the Sky-Warn Continued Next Column

CARL Continued from Previous Column

volunteers provide a vital service of which most members of the community never see. An invisible service. A service that, at some point, touches every member of the community. Steve KB7QHP, who is retired from the weather service, is uniquely equipped to explain Sky-Warn. He manned the table that was located at the entrance to the Forces of Nature demonstration and exhibit. He was busy! Many cubic yards of explanatory material were handed out. Many questions were answered and Steve had very tired vocal cords at the end of the day.

Field Day at W7ASC would never reach its full potential without the enthusiastic support by the Science Center staff and management. The Center building was plastered with posters. Entering visitors were provided with a document that announced, and explained, Field Day. There is no doubt that the large crowds that were observed visiting the Shack that day were there largely as the result of the visibility provided by ASC efforts. Every year this seems to get better.

Those of you who volunteer at the Shack are well aware that the Arizona Science Center attracts a large percentage of its visitors from other areas. Foreign languages and foreign dress are quite common in the halls and galleries.

This past Saturday, a quite distinguished appearing gentleman entered the shack and then sat, without invitation, at the Morse code station. He asked if someone would demonstrate the code for him, and perhaps, teach him a few letters. The request was expressed in a very British dialect. Well, of course, we would be happy to provide that service. But we had noted that this gentleman had headed for the Shack from the moment that he had entered the Digital gallery. What has stirred his interest? What could we do for him that made us such an obvious priority destination? He explained that, Yes, he was indeed, British. In fact, he is an active member of the British Armed Forces. For quite some time he has been assigned to the Royal Signals section. That is the British equivalent to our Signal Corps. They never taught him Morse code and he really, really wanted to know it. He heard the code when he was checking in and had asked about the location. There is now a new official badge on a British Army uniform. It reads "I sent my name in Morse Code at W7ASC."

You never know what fun you can have when volunteering at the Harkins Ham Shack at the Arizona Science Center. There will never be a better time to sign up as a volunteer, or suggest it to a friend. There is really no binding commitment.

Sam, N7INV (w7asc.sked@gmail.com) will fit your preferences into the schedule. Do not be left out. Call Bob (480-961-1109) or Sam (602-291-0992) and they will send you an application. Or stop by the shack and pick one up in person.

If none of that works, contact the author, W7ASC, at 480-664-7353 or jeanjol@hotmail.com

Have a great summer. Hope to see you see you at the Shack, 73





Cross-Band Operations

Dennis Bietry KE7EJF

Over the last few months, the ARA has been experiencing interference from hams who have decided to use the crossband function on their radios. At least one of those wasn't even crossbanding on an ARA Repeater, but was causing interference on one due to improper set up.

The crossband function really isn't designed for use on repeaters but rather best suited for use with simplex modes. It allows a ham to set their cross-band radio at a high elevation location and then extend the distance the radio can communicate without building a repeater.

There are serious pitfalls/issues to consider when using crossband mode:

- An improperly configured crossband implementation can cause interference AND hang up a repeater or a linked repeater system
- If other hams get into your crossband, YOU are responsible for all radio traffic that goes through your radio.
- Most crossband capable radios do not provide a method of identifying itself. That means your crossband needs to be regularly identified by all operators using it.
- A radio in crossband mode requires a control operator. Turning on crossband and walking away from your radio and "assuming" it will be okay is a violation of FCC Part 97.

Recently, the issues described above happened when a crossband radio was set up improperly and caused interference to one of the ARA linked systems for two weeks.

For two weeks the owner of the radio didn't know there was a problem because he didn't monitor his own radio and incorrectly "assumed" things were working okay. This operator error forced a repeater owner to make a trip to their mountain top site to troubleshoot a problem caused by the operator of the crossband radio. Furthermore, the issue required many hours of time by the ARA Interference Committee to use Doppler tracking equipment to locate the offending crossband.

I have heard operators state they set up a crossband to a repeater because they bought this really cool little short

Continued Next Column



No Report Received



Real Estate

Are you or someone you know looking for a Ham Home? I can help you find a home with a tower or one where a tower can be added. Call or email me to get started.

Richard Haworth W7MDQ Coldwell Banker Residential Brokerage 602-370-1450 Cell, rahaworth@cox.net

ARA Continued from Previous Column

antenna for their HT, but after installation, they were unable to reach the repeater, so they set up a crossband. I wonder if that cool antenna is really just a dummy load or even good for the radio? Others use crossband because they don't have an outside antenna, so they crossband to their car to reach a repeater.

The ARA has a policy of NO crossband or remote bases on their repeaters without prior approval. Those policies are there to prevent the types of problems I have described above. Many other repeater owners enforce the same rules, whether published or not, for just the same reason. Now some will scoff that Part 97 doesn't specifically prohibit crossband repeating, but a repeater owner has the right to set additional rules above and beyond Part 97, which includes prohibiting users from using their repeaters.

Ham radio is about experimenting and enjoying the hobby, but just because a radio has a certain function that makes it transmit doesn't mean it's the right solution. You should learn about how to use it and the side effects *before* you allow that function transmit.

If you are uncertain how to correctly use the cross-band function on your radio, please contact an experienced operator.



CHAPTER 16 BARRYM, GOLDWATER ARIZONA CHAPTER

Next Meeting

Date: 18 August 2018 Social time: 11:00 AM Lunch time: 11:30 AM Meeting time: 12:00 PM

Coco's Bakery Restaurant 9801 W. Bell Rd. Sun City, AZ 85351 623-972-9295

We look forward to seeing you and your guests at the meeting. Please let us know if you will be coming so that we will know how many to plan for. You can email John, WA7BSR at wa7bsr@gmail.com

Screwdriver on a Light Stand

I will show my improved screwdriver antenna on a light stand that originally appeared in January 2014 QST. The antenna goes up quickly and easily with no tools.

Business Meeting

Finances

Grants

Officers

Our Mission

Marketing



Attention: Repeater Owners in Arizona

The Arizona Frequency Coordination Committee has recently gone through a major overhaul of its band databases. With this overhaul, we plan on offering new features to on-line users as well as to the printed copies available at major hamfests.

The first thing you'll notice on-line is we have listings now by frequency and by location. You'll also notice we offer a map to show where your repeater(s) is (are) located. Click on the map symbol in the upper left corner of the listing page

During this upgrade, however, many outdated and incorrect data entries were discovered. The Coordinators ask that you update your records every 3-years, so that we can maintain accurate info. This is not only to satisfy the coordination requirements, but also to insure your coordination will be recognized by the FCC in the event of problems.

A coordination older than five (5) years may not be recognized as valid by the FCC. This is in the event of an interference complaint or a dispute. Updates are needed not only for any technical changes (power, antenna height, location, modulation, coordinates, etc.), but also for ANY changes in site owner, sponsorship, contact, licensee, email address, info etc. Also, if someone listed on the coordination form has moved away, is a SK, or is otherwise not involved with the repeater, a new form must be submitted.

We will make every attempt to contact you, should your coordination be older than the 5-year requirement. If we are unsuccessful in our efforts, your repeater coordination is then subject to the de-coordination process. It is your responsibility to insure your coordination is updated regularly.

Thank you for your cooperation.

73, The Arizona Frequency Coordination Committee www.azfreqcoord.org

Have you been a ham for at least 25 years? Then celebrate by joining the Quarter Century Wireless Association!

The Barry M. Goldwater Chapter 16 Arizona chapter has four lunch meetings a year with fabulous speakers. Check us out at http://www.azqcwa.org/we are also on Facebook at https://www.facebook.com/AZQCWA We are always looking for speakers and great lunch locations. Let us know.



Hamfest Calendar

29 September 2018 - **Tucson Fall Hamfest** - hosted by the Radio Society of Tucson will be held at the Target Store, 9615 E Old Spanish Trail in Tucson. Hours - 7:00 AM - 11:00 AM. Seller setup starts at 6:00 AM. \$10 per space. Free Admission and Parking. Free VE Testing - GOTA Station - QSL Card Checking - Prizes. Coffee, Tea, and Donuts will be available. For Information & Map, visit http://www.k7rst.org

27 October 2018 - Copafest 2018 - hosted by the Maricopa Amateur Radio Association will be held at the UltraStar Multitainment Center, 16000 N Maricopa Road in Maricopa. Hours are 7:00 AM until 1:00 PM. Admission is \$5.00. Spaces are \$10.00 for two parking spaces. Setup begins at 5:00 AM. Balloon Launch, VE Testing, Card Checking, Vendor Exhibits, Seminars, Prizes and more. Many activities available in the Multitainment Center including laser tag, bowling, movies, games, dining and more. Dining and Hotel also available. For information, email fest@copafest.org or visit the website at www.copafest.org.

10 November 2018 - HARKFEST - hosted by the Hassayampa Amateur Radio Klub will be held at North Ranch Escapees RV Park, 30625 S Hwy 89 in Congress. Free Admission, Free Tailgate Sites (Pre-Registration Required - djgrooms@yahoo.com) Overnight Camping (Full Hook-Up or Dry) Available (pre-registration required for camping at www.escapees.com/parking/congress) Tailgating permitted at campsite. VE Testing Available - Must Pre-register (cecarter39@yahoo.com) - Prizes - Arts & Crfts Show at Activity Center 9:00 AM - 2:00 PM. Lunch served at Activity Center. Talk-In 146.620 (pl 162.2) or 146.580 (simplex)

10 November 2018 - **Oro Valley Hamfest** - hosted by the Oro Valley Amateur Radio Club will be held at Marana Middle School, 11285 W Grier Road in Marana. Gates open at 7:00 AM (5:00 AM for sellers) and closes at 1:00 PM. Admission: \$5 (Children under 12 free with a paid adult). Students with AZ School ID are free. Sellers: \$10 per space and includes seller. Prizes, VE Session, Seminars, QSL Card Checking, Breakfast & Lunch Available. Talk-In: 146.620(-), 444.100(+), and 147.32(-) all Pl 156.7. For more information, please visit the web site at <u>orovalleyarchamfest.com</u> or send an email to hamfest@tucsonhamradio.org for more information

1 December 2018 - **Superstition SuperFest 2018** - hosted by the Supersition Amateur Radio Club will be held at Mesa Community College, 1833 W Southern Ave in Mesa. Hours are 8:00 AM - 4:00 PM. Admission is \$5.00/person (includes 1 door prize ticket) and children 12 and under free. Tailgate is \$10.00 for 2 spaces which includes 2 paid admissions tickets. VE Testing will be available. Registration is from 8:00 to 9:00 AM with testing beginning at 9:00 AM. ARRL Card Checking, Special Event Station, GOTA Station, Fox Hunt, Prizes, Live Music, Food Vendor, and Drinks will be available. Contact the Hamfest Chairman at chairman@superstitionsuperfest.org for more information.

January ?? 2019 - **Thunderbird Hamfest** - hosted by the Thunderbird Amateur Radio Club. Location and Date to be determined. Visit the TBARC web site at www.w7tbc.org for up-to-date information.

4 May 2019 - Cochise Hamfest and 7th Region Communications Exercise - hosted by the Cochise Amateur Radio Association will be held at the club site, 2756 South Moson Road in Sierra Vista. Gates open at 7:00 AM. Free Admission and Parking. Tailgating - \$5. Inside Table - \$10. VE Testing from 9:00 until 11:30 AM. Coffee, Pastry, and Drinks Available. Hourly Prizes with Main Prize drawing at 12:00 Noon. Talk-In on 146.76(-) Pl 162.2 Hz. Watch for more details.

1 June 2019 - **2019 Prescott Hamfest at ERAU** - hosted by the Eagle Amateur Radio Club at ERAU and the Yavapai Amateur Radio Club will be held at Embry Riddle Aeronautical University (ERAU), 3700 Willow Creek Road in Prescott. Watch for details. For up to date info, visit the website at www.prescotthamfest.com

27 July 2019 - White Mountain Hamfest - hosted by the Kachina Amateur Radio Club will be held at 1101 Woodland Road in Lakeside. Overnight camping may be available. VE Testing, Demonstrations, Hourly and Grand Prizes, Tailgaters, and Refreshments. Further details to follow. Visit the web site at www.kachinaarc.org and click on "Hamfest" or email info@kachinaarc.org for up to date information.







We've got a special contributor this month. The TBARC president, Brian McCarthy, AK7F has shared his midyear update to all members:

"At the board meeting, it was a very good realization that Thunderbird is a great organization. The Club has so much in progress, we had to cut things short because the place was closing.

I would love to mention all the people by name, but I am not going to take the risk of forgetting someone. What has become obvious is we need more help to complete our many projects.

White Tanks Degrade

One of our largest projects is the rebuild of the White Tanks Site. To date, we have:

- * Secured a better location (156' on the tower)
- * Updated the coordinations
- * Relocated the VHF from the Hospital to the Mountain
- * Completed the temporary install for testing
- * Hosted some of the Tuesday nets

We are far from done and always looking for more help. In particular, we need 4x4s to gain access to the mountaintop site. We will be recovering the equipment on June 30th to rebuild the rack and should be reinstalling it within the week.

VE Testing

We have become a popular testing site for Phoenix. We have had people drive cross town, or into town to upgrade or get their new license. The VE team has been very diligent to handle all of the testing. To join the ve team, or upgrade your license, email ve@w7tbc.org

Hamfest

Our January Hamfest was very successful for the Club. As successful as we have been, the church did not grant permission for 2019. We are looking for a new location. Please let me know if you have time to make some calls to find a potential location. To help out, email hamfest@w7tbc.org

Education

We still have an Extra Class planned for the fall. Alex is requesting help teaching and referrals for potential students for

Continued Next Column

TBARC Continued from Previous Column

the class. Please pass this opportunity around over the summer. To Enroll, teach or volunteer, email course@w7tbc.org

Community

As a club, we have been increasing awareness of our club through social media. We have an active Facebook page and use Meetme.com to publicize our meetings. Please welcome the new members when they come to the meeting. To provide ideas or volunteer, email socialmedia@w7tbc.org

Emergency Communications

We have plans to meet with Scottsdale Amateur Radio Club and jointly propose a plan to Honor Health. This includes setting up repeaters and developing an Emergency Communications System with the Hospital. If you would like to participate, please email emscomm@w7tbc.org.

Board

Although it may not have been visible, the board has been making the changes required for us as a 501(c)(3). New Paypal account, better financial accounting, reduced rates for monthly meetings, etc.

In addition, we have set up a common storage for the club equipment. Tracking of our equipment is important as a 501(c)(3). The Club will need a Property Chairman to help track the equipment. If you can help, please email president@w7tbc.org.

I am sure I missed something, but Thunderbird has been busy. Please email me with anything the club should continue to do, stop doing or start to do. I can always be reached via email, president@w7tbc.org, or by phone 623-670-0410."

Thanks Brian for letting us know about these activities! I believe as I write this, our repeaters are going back up the mountain. Helping out at TBARC is a great way to learn more about ham radio.

Have you been to a TBARC meeting yet? Why not stop by? We'd love to have you join us, and guests are welcome. Our meetings are held on the third Thursday of the month at the North Phoenix Campus of Northern Arizona University. It's near Greenway and I-17, starting at around 7:00 p.m. See the club website at w7tbc.org for directions. In August, Gordon Bousman, NW7D will talk about Hex Beam Antennas. You may have seen these interesting antennas that look like inverted umbrellas. How do they compare to other antennas, and is it possible to get good performance without a tower? Find out at the meeting!

Andrew Cornwall, KF7CCC kf7ccc@arrl.net





The July 5th meeting was well attended despite being a day after the big holiday. We had one of the club's Honorary Members, John Warburton, G4IRN, give us a presentation from England via Skype about his one-man DXpedition to the Andaman Islands where he operated as VU4G. John deserves our appreciation for getting out of bed at 3:30 a.m. local time to speak to us about his amazingly brave journey. John did not receive his final operating permission until he was at the airport for his final flight from India over to the island destination. One memorable slide from his program was the warning about not going near the water because of the danger of being attacked by salt water crocodiles. Who knew???

The whole focus of the DX world this past month was on the Baker Island DXpedition, KH1/KH7Z. This little speck in the South Pacific Ocean had not been on the air for many years and the U.S. Fish and Wildlife Service is extremely particular about who receives permission to go there. The Dateline DX Association received permission, but not for a time of year that is good for DXers or humans in general. With temperatures over 100 degrees every day and no natural shade, it is a brutal environment, particularly when you add the physical effort required to bring all required gear on shore and construct the shelters, antennas, and all the life support gear needed for a successful DXpedition. Despite all their challenges, the Baker Island DXpedition was remarkably successful, making more than 70,000 QSOs. Both AA7A and N7CW were on the team from CADXA and, aside from one badly bruised toe (Ned), seem to have survived the adventure in good shape as part of the 14-man team.

As many of you know, this was the first big test of the DXpedition "Fox/Hound" version of FT8 that AA7A and others had been developing and testing for the past 6 months. All of their hard work paid off big time with thousands of FT8 QSOs logged during radio conditions that were marginal at best much of the time on the traditional modes of CW, SSB, and RTTY. I know that many CADXA members were successful in making QSOs with Baker on FT8 as well as the other modes. We had a definite West Coast advantage for this one! Congratulations to Bud and Ned for a job well done and welcome home!

Next Meeting is August 2nd at the PERA Club at 7:00 p.m.

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Old Pueblo Radio Club INTERMOD

President's Column

No Report Received

OPRC Repeaters			
146.66 - PL 110.9	wide coverage	W7GV	
146.82 - PL 110.9	wide coverage	W7GV	
RACES Repeaters			
145.150	packet/wide	N7OEM	
146.880 - PL 110.9	wide coverage	N7OEM	
147.300 - PL 110.9	wide	N7OEM	
448.55 - PL 110.9	wide coverage	N7OEM	





CADXA Continued from Previous Column

The August Meeting will be held at 7:00 p.m. on Thursday night, August 2nd, at the PERA Club. Ned Stearns, AA7A, has promised a first "sneak peek" at some pictures and stories from the Baker Island DXpedition. The remainder of the evening will be a D-I-Y program of storytelling about our personal journeys in the hobby. We have done these before and it is always fun to hear stories about how we got started in the hobby, who our Elmers were, how many of us scrounged to put together our first station, and how we got hooked on DXing.

Please feel free to arrive early to socialize with your friends. Refreshments will be served at the break. Guests are always welcome.

73, Lee, KY7M CADXA President





Field Day 2018 is in the books. A huge THANK YOU goes out to Tom, W8TK for being a gracious host for the club's Field Day event. On Friday morning "the usual suspects" arrived to start hammering stakes in the ground, assembling beams and propping up fiberglass poles. Everything was all in place for launch on Saturday morning. Plenty of visitors and spectators arrived while the operators were filling up the logbooks. On Saturday evening, a potluck dinner was on the schedule. Everyone brought a dish of some sort and nobody went away hungry. Thank you again to Tom and all of the OVARC members that volunteered and operated during the event.

On July 4th, OVARC sponsored another outing. Thanks to Hanna-KG7TPD and Ross-K4WBR, we celebrated Independence Day at their home on Mount Lemon. Although band conditions weren't that great, the elevation sure does make a difference on HF. Later in the morning some OVARC members gathered to participate in the July 4th parade, a first for OVARC.

The OVARC repeater committee continues to make progress. With multiple sites, equipment and modes we are slowly transforming all of these pieces to eventually have a premier digital linked system. There are lots of details to be considered. A testing regiment has begun to make sure we've made the right choices. There's no doubt that analog systems will eventually be replaced with more efficient digital methods.

Speaking of repeaters, the current linked OVARC repeaters are used for SKYWARN reporting. This past weekend was the first time in 2018 that the local SKYWARN members were activated.

73, Steve, W1SR





The July club meeting was all about the field day wrap-up and the ice cream social. Here is brief account of the evening by our activities director, Paul Finell, W7EFQ.

We had a new member of the club last night at the ice cream social. He is Eric Peters, KI7YOR, a new ham. We also had our new Life Time Member attend. He is Ron Taylor, WA7GIL. He is the 7th life member for the club. He is the ham that restored the Goldwater station. At the meeting we had a lot of donation to our normal raffle. In addition to that we started a raffle for a YASEU Fusion FTM-100DR mobile radio. Tickets are \$10 each with a minimum of 50 tickets sold. After the 50th + ticket is sold the following month's meeting there will be a drawing for the winner of the radio

Breakfast activity will be at Denny's on Indian Bend Road Just West of Loop 101. The time and day is Saturday at 8:00 AM. I will have tickets for the YAESU there.

There is a very good article on our Field day activities. It is too long to print here but you can go to our club web site and enjoy it. The article was written by Doug Hayward W8DRH and the web site is www.scottsdalearc.org

There is a Net every Tuesday at 7:00 PM on our repeater system. The repeaters are on 147.18 with a tone of 162.2 and on 440.00 with a tone of 100.00. Everyone checking in can give us a rundown on what they have been up to lately. Sometimes we have an interesting question for everyone. So set your clock for Tuesdays at 7:00 and we will see you on the air. By the way, you will get a free raffle ticket for every time you check into the net. Use them at the club meeting raffle.

Well, that's all I have for now. Be well and keep hamming.

Ed Nickerson WU7S enickerson427@aol.com



SARC CONSTANTS:

SARC is a 501 (c)(3) club. That means all donations are fully tax deductible. Contact Paul Jorgenson, KE7HR at 602.992.8043 for information on estate donations and equipment pick-up.

For membership information, call Judy Jensen, KE7IXI at 480.773.8452. Please send address change requests to Judy no later than the 7th of the month in which you would like the change to occur.





Arizona Red Cross Communications Club

4747 N 22nd St. - Suite 100 - Phoenix, AZ 85016 VHF - 146.84 MHz - PL 162.2 / UHF - 446.900 MHz - PL 131.8 Echolink Node #731289 - K7ARC-R

On July 21, we had our club meeting to ratify the bylaws and to set up our permanent committees. So I guess we have to toe the line from now on, huh? Our next tentatively scheduled meeting is August 25, at 9:00 AM.

We had a great time at Field Day this past June – good weather, good food and more importantly (to me, anyway), good friends. Our group made a number of contacts including some by satellite and on 6M. The consensus is we'll be going to this same spot next year. The new solar panel arraignment works well, but we'll need to find a solution for the noise generated by the inverter on 40M. Our Technical team has some ideas on that.

We are pleased that the high country has received much needed rain. This should help limit wild fires. As a Red Cross Volunteer, there is nothing more heartbreaking than seeing someone's home or cabin burnt to the ground - especially when it could have been prevented. If you are camping in the high country, don't let your guard down just because we've received some rain. Always be sure your campfires, etc. are dead out before you leave.

One of the club's projects is to equip all the chapter vehicles with 2-way radios and any deployed personnel with HT's to assist onsite. Something deficient we learned during the Tinder fire as mobile assessment teams were not able to communicate back to base.

Don't forget about the PSARG net on Tuesdays at noon. Also, we are sharing the Tuesday night net with our friends over at the PSARG. We have the odd-numbered weeks and they operate on the even-numbered ones. So come join us -7:30 PM Tuesdays on our VHF repeater. Both are available on Echolink as well. You can check out the net schedule on our website - www.k7arc.org.

Your Humble Scribe, Mark, N7KKQ



Silent Key



Edwin Harold Braatelien, Jr., KF7EWP became a silent key on June 1, 2018. He was born in Phoenix, Arizona in 1934 and graduated from Phoenix Union High School in 1952. Ed, as he was known to his friends, entered the United State Marine Corps in 1953 where he served until 1956. He attended Arizona State University where he earned a B.A. in Chemistry in 1961 and a Master of Science in Engineering in 1969. Ed received the

WPCF Hatfield Award in 1966, the AWWA Fuller Award in 1976, and Kentucky Colonel in 1981. He worked as the director of San Jose Santa Clara Water Pollution Control from 1981 until 1993 when he retired.

Ed held an Extra Class amateur radio license and served as a Volunteer Examiner. He was a member of the Thunderbird Amateur Radio Club and the West Valley Amateur Radio Club. He was also a member of the Arizona Live Steamers and the NRA.

Ed is survived by two (2) sons, five (5) grandsons, and two (2) great-grandchildren. He will be greatly missed by all who knew and loved him.

Submitted by Tom Braatelein, KF7IDB





If anyone is considering a major radio shack, workshop, addition or going into business for yourself, I am offering professional Electrical, Mechanical and Plumbing Engineering services to radio club members at a 20% discount for residential property, and 10% discount for commercial property. Talking is always free.

License Testing Information

When you are ready to take an exam for an Amateur Radio license, there are Volunteer Examiners available to assist you. Each Applicant will need to bring a picture ID (some test sessions require two forms of identification). If you are upgrading your class of license, be sure to bring the original (and a copy) of your license and/or Certificate of Successful Completion of Examination (C.S.C.E.). There may be a fee required.

PLEASE NOTE: Dates, times, locations, fees may change. Arrive promptly at time listed. Fees may vary and exact change or check is required at most sessions. Call test session contact to confirm information. Walk-ins are permitted unless otherwise specified.

August Test Sessions

Aug 2nd - CARBA -- 7:00 PM

Lighthouse YMCA, 2900 N Columbus Blvd, Tucson Contact - Matthew Grossman 520.750.7189

Pre-Reg by email preferred - veregistration@rstclub.org

Aug 4th - Western Arizona Radio Club -- 10:00 AM Mohave Cty Bullhead City Library, 1170 Hancock Rd,

Bullhead City Contact - Carolyn Krick 928.897.7439

Aug 4th - Oro Valley ARC -- 10:30 AM

Oro Valley Police Dept EOC, 1920 E Tangerine Rd, Oro Valley Contact - Quinton Gleason licensing@tucsonhamradio.org

Aug 4th - DeVry ARC & WVARC -- 9:00 AM

DeVry University Library, 2149 W Dunlap Ave, Phoenix Contact - David Morrill 623.680.5011

Aug 13th - Radio Society of Tucson -- 7:00 PM

Hardesty Mid-Town Police Bldg, 1100 S Alvernon, Tucson Contact - Diane Zimmerman 520.664.5070

Aug 15th - Thunderbird ARC -- 6:00 PM

Honor Health Medical Office Bldg, 19841 N 27th Ave, Phoenix Contact - James Skinnell 602.826.1949

Aug 18th - Unsponsored -- 10:00 AM

Kingman Fire Station #1, 2470 E Butler Ave, Kingman Contact - Daniel Miller 928.897.3883

Aug 20th - East Valley VE Team -- 6:00 PM

City of Mesa Utilities, 640 N Mesa Dr, Mesa

Contact - Fred Bolinger 480.242.8606

Aug 21st - Motorola ARC of Arizona -- 5:00 PM

Denny's, 825 S 48th St, Tempe

Contact - Edward Olague 602.885.7725

No-Walk-Ins - Pre-registration required

Public Service Calendar

Maricopa County Emergency Communications Group Events

EVENT	LOCATION	DATE
Barn Burner Mtn Bike Rac	0	09/08/18
	k Peak N of Flagstaff	03/06/16
Mogollon Monster 100	_	09/15/18
Tour de Scottsdale	Scottsdale	10/07/18
Xterra Estrella Mtn Trail R	S C C C C C C C C C C C C C C C C C C C	10/07/18
THOUSAND THE THEFT	Estrella Mountain Park	10/07/10
Javelina Jundred	Fountain Hills	10/27/18
Phoenix Half Marathon	Downtown Phoenix	11/04/18
Xterra San Tan Trail Run		11/11/18
AuxComm Interest	TBD	11/30/18
Scottsdale Half Marathon	Scottsdale Civic Ctr	12/09/18
Xterra - White Tank	Waddell	01/06/19
Prickly Pedal	Cave Creek-Lake Pleasant	01/19/19
Pancake Run	Paradise Valley Mall	02/03/19
Xterra McDowell Mtn	Fountain Hills	02/03/19
Black Canyon 100K		02/16/19
•	y to the Emery Henderson Trail	lhead
Xterra Black Canyon Trail		03/10/19
•	Black Canyon City	
Mesquite Canyon	Waddell	03/16/19
	Lake Pleasant to Crown King	03/30/19
March of Dimes for Babies	S	04/13/19
Wessley-Bol	lin Park, Downtown Phoenix	
TT COSTCY-DOI	mir ark, Downtown i nocilix	

To sign up for an MCECG Public Service Event: www.mcecg.net

For information, contact Dennis Bietry - KE7EJF at 602.274.3732 email, <u>ke7ejf@cox.net</u>, or contact the Event Coordinator for the event.



Test Sessions Continued from Previous Column

Aug 25th - NOMADS -- 9:00 AM

Venture Out RV Resort, 5001 E Main St, Mesa

Contact - Robert Bingham 480.404.1408

Aug 25th - Arizona ARC -- 7:00 PM

American Red Cross, 4747 N 22nd St, Phoenix

Contact - Gary Hamman 602.996.8148

No Walk-Ins - Pre-Registration Required by Friday night



June Meeting Winners

The club upgraded the UHF Fusion radio prize to a dual-band mobile in June. The Yaesu FTM- 7250DR supports both C4FM digital and analogue FM on 144 - 148 and 430 - 450 MHz with 50 watts RF output. It automatically detects analogue signals and switches modes accordingly.

Pictured below is John Jacques, KD8PC, left, the June winner of this radio on a \$5.00 ticket. And below, right, is Ryan, KF7RIY, our dollar-ticket winner of an RT7 HT by Retevis. In June, if we picked your name from the attendance sheet,



John KD8PC Wins: Ryan KF7RIY Wins: Yaesu FTM-7250D Retevis RT7 UHF HT

you won a pair of PL-259 RF connectors. There were two winners: Terry Ryan, KE7GRV and George Smoot, WB4IPB.

Tuesday, August 21 General Meeting, 7:00 PM

I do not yet have a Program presentation for August's meeting. Club meetings are held at the Charles K. Luster Building, 640 North Mesa Drive, Mesa. We welcome all visitors who want to learn more about amateur radio. Our meeting presentations are always geared toward the new ham in 2018. Meetings clear out about 9:00 PM or soon after.

Coffee and doughnuts are served at the break.

During the break, we will sell tickets to win a radio prize to be given away at this meeting. Also during the break, we will offer \$2.00 tickets for the Grand Prize Drawing held Saturday, December 1, at the club's Superstition SuperFest at Mesa Community College. Your presence is not required to win: 1) Yaesu FT-991A All-Band, Multimode; 2) Icom IC-7300 HF/50 MHz Transceiver; or 3) Icom IC-7100 HF/VHF/UHF Transceiver.

President's Corner by Steve, KB7KWK

In this Presidents corner I would like to write about how radio once again saved the day. It was the Friday before Field Day.

WK

Continued Next Column

Superstition Continued from Previous Column

I got off work early to head home and finish packing for the club's Field Day camping trip up North. My wife Brenda took the full day off to finish shopping and packing so that when I got home we could get going so we didn't have to set up camp in the dark.

I loaded up the trailer with our quad and side by side and the rest of the camping gear and we were off. We made one stop to pick up my mom and we headed up. All was going well with the drive until we were climbing the hill at Mount Ord. About 100 yards from the top of the hill I noticed that the truck's lifters were really rattling, so I asked Brenda to pull over so we could check it out. Before we could get pulled over, the truck started blowing white smoke and died. We managed to roll to the side of the road and I got out and opened the hood.

The truck was overheating badly so we waited for it to cool down and I added some water. This is a diesel truck so it took around 8 gallons to fill it back up. After starting the truck back up we noticed that it had a bad piston knock, so we were not going anywhere.

Believe it or not, we had no cell service here even though we could see the site on top of Mount Ord right there. Anytime we go on a trip, I put a radio in Brenda's truck, she is not a Ham, so there is not a permanently mounted radio in there. I called out on the club's repeater on 147.120 and to my surprise I was able to get into it. Andy, KD4ABB heard my call and I asked him to phone Dan, W7TWR to see if he had left for Field Day yet. While waiting to hear back from Andy, I contacted Dale, N7QJK and had him phone my brother Daniel to see if he could come up and tow the trailer back to the Valley.

Andy contacted me back on the radio and told me that Dan had not left yet because he was having trouble with the brakes on his trailer. Dan then got on the radio and got my location and headed up. Dale got back to me and told me that my brother was on his way also. A few club members who were just leaving the valley heard this. All of them stopped by where we had broken down and offered some help.

I would like to thank Mark, WX7MB for stopping by to check on us. Also a big thanks to Craig, KI7FAN for stopping by and taking as much of our equipment as he could fit into his truck and taking it up to the Field Day site for us.

Brenda and I also invited our friends, Kevin and Tina, to go up for the weekend. They are not hams, so I contacted Dale on the radio and asked him to give them a call to see if they had left yet. When Dale called them, they were at the Saguaro Lake turnoff.

Kevin and Tina stopped by and we were able to fit the rest of our stuff in their camper. Around this time, my brother and Dan arrived. Brenda and my mom rode with Kevin and Tina up to the Field Day site and I rode with Dan, W7TWR to take the truck back to the valley on his car trailer. Dan later brought me all the way back to the Field Day location.

Superstition Continued from Page 18

I owe all of you a big thank you. Especially Dan, W7TWR, for taking the truck home and then turning right around and bringing me back up the mountain.

I wanted to tell this story, not because of what happened to us, but to show how Ham radio can still help us out when needed. As you can see, the cell phone is not always reliable. So for all those new hams out there, this was a good example of how radio can help us out when needed.

Our next club event is going to be at Organ Stop Pizza on July 21st from 11:00-2:00. If you missed Field Day, this is a great place to come out to have some pizza and hang out with the club members and their family and friends. We always have a great time there. I also honor those club members who have helped out over the past year. So come on out and have some fun with good pizza and enjoy the fantastic organ music.

K7K 2018 ARRL Field Day



Our thanks to Steve for sharing his misfortune with us in the President's Corner, and my thanks to all of you who stepped up to help! I am glad Steve and Brenda made it up the mountain. And it is not limited to electronics: If you let the wrong smoke out, it won't run!

Despite the tinder-dry fire season and possible road closures, the club was able to reach the Lost Eden private sixty-acre site we call home for Field Day by way of Forest Road 211. We thank Charlie Brown, NJ7V for securing this property for our use! Lots of clearings to set up in and trees to hang things from all to ourselves!

The club last used its Mogollon Rim site in 2015. We could use a small TV antenna to watch Tucson TV, 200 miles away! But a thunderstorm with deadly lightning put a stop to all fun as we scrambled to ground antennas, cover or move our gear in out of the rain, and take cover ourselves.

A Forest Ranger looking for the source of a fake 9-1-1 call was about to cite us with fines for each car for we were parked too far away from the road – but he had an emergency call over his dispatch radio and we moved our cars out of Fine's way!

The Rim is a great place to be if there is no threat of forest

Continued Next Column

Superstition Continued from Previous Column

closure, but deadly lightning in those tall trees is no place to be.

We had 22 participants, all licensed radio amateurs plus family members. They included President Steve KB7KWK, Larry AB7C, who brought an antique generator he built, and Jeff K2DFE, whose article appeared in the July Communicator.

Brent, W7FK brought a BIG signal with him from a tower and beam on 20 meters. There were many guys on CW and on digital, as well.

Club Membership is Now Handled Online

The club has transitioned its membership database to HamClubOnline.com, used by many clubs across the country for their Membership needs. It is secure. Members can log in, and from the club home page, can view the roster and edit their Profile, making the email address private or available to club members—not Google! That roster will not be visible on Google either.

Please see https://superstitionarc.org/super_membership.shtml to find all you need to know how to establish an account as an existing member, how to renew, and how to join. We still have membership@SuperstitionARC.org to send email for help.

73, Larry Kuck, WB7C, for Superstition ARC's part of ADAW

Superstition ARC Repeaters

147.120 MHz (+) 162.2 Hz - Usery *
448.275 MHz (-) 100.0 Hz - Usery - FUSION
449.600 MHz (-) 100.0 Hz - East Mesa *
KB7KWK-L Echolink Node 538499 *
*-Linked Full Time

Club Nets

Morning Drive Time Net: Mon-Fri, 7:00-8:00 AM - Trivia City of Mesa CERT Team Monthly Net: First Tuesday of month, 7:00 PM

Weekly 6 Meter Sideband Net: Wednesdays, 7:00 PM on 50.140 MHz, W7ASL-L EchoLink, and 145.575 FM Simplex **Club Net:** Wednesdays, 8:00 PM - Discussion, Elmer Q&A. **Mesh Information Net:** Mondays and Thursdays, 7:00 PM - Net control Steve, KB7KWK

10-Meter Rag Chew: Thursdays, 8:00 PM, 28.465 MHz USB

Club Membership is open to anyone with an interest in Amateur Radio. Visit: https://superstitionarc.org for more information.

Superstition SuperFest

The Superstition SuperFest is held on the first Saturday of December. Visit www.superstitionsuperfest.org for the latest information.



Our 2018 Field Day event was a fantastic occurrence and one of the more comfortable ones that we've had. Despite marginal band conditions, we managed to make 194 contacts in both CW and phone reaching Hawaii to the west and Puerto Rico to the East. We didn't do a clean sweep, but we made a strong showing. We operated the entire 24-hour period. Some of us camped out on cots in the community room.

We were visited by Maricopa Mayor Christian Price, Vice Mayor Peg Chapados, and Councilwoman Julia Gusse. I think that we convinced our city leadership that if we are called upon, we can communicate anywhere in our country - with or without commercial power.

The food was amazing. I felt like we were in a gourmet restaurant. Many thanks to Linda Gerke, who has earned a permanent spot on our newly formed food committee. Dave French, N6FAN, managed breakfast by bringing in three boxes of donuts, jacking our blood sugar up to near hyperglycemic levels. Nobody went hungry at this event. Thanks to Dave for being a liaison with the dispatchers in the MPD dispatch center who, despite our occasional rowdiness, didn't toss us out of the building.

We operated with batteries that were being charged by solar power. Our rig was the classic IC-706 transceiver, in duplicate so that we had a backup. We didn't even need our two backup 180-amp/hour batteries supplied by Chris, W7CGC. The antenna engineering and power distribution were done by Bob, N6YPE.

Copafest 2018 is looking like it will be one of the best we've had to date. Not only do we have some of the best raffle prizes that we've been able to offer to date, but we are also going to be giving a radio away every hour from 7:30 AM until 1:30 PM. This is your chance to win the Baofeng UV5R dual bander with all the trimmings. Not only that, we have the Digital Bonanza as our grand prizes. These radios are:

1st Prize: Icom IC-5100A Dual Band D-Star Mobile 2nd Prize: Yaesu FRM-100R Fusion II Dual Band Mobile 3rd Prize: Anytone AT-D868UV DMR Dual Band HT

Raffle tickets are available online, in advance, and on our website at copahams.org.

We are still working on seminars, but you can bet they will be interesting and informative. Arizona Near Space Research

Continued Next Column



No Report Received ed





ARCCC Continued from Previous Column

will be flying one of their high altitude balloon flights and streaming video back to earth.

There is the swap meet, of course, with a chance to find that unique boat anchor or hard to find component. As always, the UltraStar offers a wide range of amenities including movies, laser tag, bowling, and a wide range of restaurants. You will be right next door to the Harrah's Ak-Chin Casino, which sports a brand-new hotel with another wide selection of fine dining. We hope to see you at this, our fourth hamfest.

Steve Miller

visit my website and blog at w6sdm.net follow me on Twitter https://twitter.com/stevedmiller

For Sale / Wanted

No Reports Received



LOOK!
Great Deals!

For Sale -

Kenwood TS590s with Power Supply - \$800 Yaesu G450A controller and rotator - \$375

20-foot Rohn tower

Coax and many extras

Cushcraft A4S Tri-band beam - \$350

(20m, 15m, and 10m)

6 meter vertical antenna

Located in Glendale. You must take down tower. All equipment in excellent condition. Will sell entire package for \$1400 or prices listed above. Contact Terry Liesengang, W7TRL at liesegangt@yahoo.com

A-4 Antenna For Sale - \$450

This is an older model that does not have the stainless steel hose clamps on the elements. It is the same size and has the same features as the modern A-4S. The mast mount plate is new, and some of the elements have been replaced with stock A-4S parts. The antenna is stock - does 10, 15, & 20 meters. It does not have the 40 meter add on. It is boxed and ready to go now. Contact: Bob Howard, W8RH at 520.709.6176 voice/text or email w8rh@live.com.

The **West Valley Amateur Radio Club** has radios and ALL kinds of supplies available for sale through the club. We get some old equipment that won't sell that will be added to the items for free. Contact: Ken Jenkins, WB6MMV at <u>kjenkins5623@gmail.com</u> or Bob Kettler WA6MIO at rdkettler@msn.com.



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TS-590SG | HF/50MHz Transceiver

. Equipped with 500 Hz/2.7 kHz roofing filter as standard . ALC derived from TS-990S eliminating spike issues . Antenna output function (shared with DRV connector) • CW - morse code decoder function . Improved 1st mixer . New PFB key with multi-function knob . New split function enabling quick setting . LED backlight with selectable polar tone



TS-2000/2000X | HF/VHF/UHF Transceiver

- 100W HF, 6M, 2M 50W 70CM TS-2000X 10W 1.2GHz
- . Built-in TNC, DX packet cluster. IF Stage DSP . Backlit from key panel

Call For Special Price!



TM-D710G | 2M/440 Dualband

. V+V/V+U/U+U operation . Built-in GPS . Built-in TNC for APRS & DX-Cluster operation • 50W 2M & UHF • 1,000 memories • Dual receive . Green or amber backlight colors . Latest APRS firmware w/new features . Sky Command II remote functions

Call For Special Price!



TM-V71A | 2M/440 DualBand

. High RF output (50W) . Multiple Scan . Dual receive on same band (VxV, UxU) . Echolink® memory (auto dialer) . Echolink® Sysop made for node terminal ops + Invertible front panel + Choice of green/amber for LCD panel • 184 code digital code squeich • "Five in One" programmable memory • 1000 multifunction memory

Call Now For Your Low Price!



TM-281A | 2 Mtr Mobile

. 65 Watt . 200 Memories . CTCSS/DCS . Mil-Std specs . Hi-quality audio

Call For Special Low Price!



TS-480SAT/HX | HF + 6M Transceiver

 480HX 200W HF & 100W 6M (no tuner) • 480SAT 100W HF & 6M w/AT . Remotable w/front panel/speaker . DSP built-in-



TH-D72A | 2M/440 HT w/extended RX

- 5W TX, RX 118-524 MHz, VxU, VxV, UxU APRS w/built-in 1200/9600 TNC + Built-in GPS. Built-in USB, digipeater . Echolink® compatible. · MI-Spec STD810
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TH-D74A | 2M/220/440 HT w/D-STAR!

· D-STAR compatible · APRS ready w/built in GPS . Color weather station information . Built-in KISS mode TNC • High-performance DSP voice processing . Standard compatibility for Bluetooth

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TH-K20A | 2M Handheld

- 2M 5.5W VOX CTCSS/DCS/1750 Burst built-in . Weather alert
- **Call For Special Low Price!**



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