

ASCRA IN-SERVICE



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Election Results for the 2017-2019 ASCRA Board of Directors Class

Pursuant to the ASCRA Bylaws, at the direction of the Secretary, a Ballot Tabulation Committee counted the ballots for the ASCRA Board of Directors election to terms commencing as of June 12, 2017. Only six nominees were on the ballot this year. Five of six incumbent directors plus one former board member and treasurer were nominated to the ballot. Incumbent director Terry Redding, W6LMJ, DeLand, FL, chose not to accept nomination this time. A total of 9 ballots were received by the Secretary, all via Email. Only six (50%) of the 12 current directors submitted ballots. Three non-director ballots were submitted. All six elected directors received 100% of the ballots cast. No ballots containing write-in votes were submitted.

The following are elected to the 2019 directors' class (2017-2019):
 Chuck Palmer, (NØONN), Independence, MO (Treasurer)
 Doug Shaw, (WAØEMX), Raytown, MO (Secretary & Trustee)
 James Craft, (ADØAC), Independence, MO (Executive Director)
 Ray Knapp, Jr., (WA2GTM), Perry, IA
 Robin Cross, (WØFEN), Kansas City, MO
 Jeff Winship, (NØOXK), Oak Grove, MO

Continuing on the board is the 2018 directors' class (2016-2018):
 Aaron Beebe, (KD8JQK), Oak Ridge, TN
 Chuck Brady, (KAØGFC), Boonville, MO
 Ed Briley, (KDØMEI), Independence, MO
 Larry Ragan, (NØAIX), Gladstone, MO
 Mike Thayer, (KMØS), Jefferson City, MO (President)
 T.J. Redding, (KB5EAG), Omaha, NE

Many thanks to all our nominees who volunteered to serve ASCRA as directors of the 2019 Class (term expiring in spring of 2019) and to the 2018 directors class who continue their service on the Board. Thanks also to Terry Redding, W6LMJ, DeLand, FL, for his many years of service as a member of the ASCRA Board, who continues in service supporting our ASCRA Net activities as one of our most consistent Net Control Stations on the air during our several nets most Sunday afternoons from 2:30 to 4:30 PM Central US Time.

Fall 2017 In Service President's Remarks

Fall is here, and my mom - KDOUAB, my wife Lois and I just returned from a trip to Pagosa Springs, Co. We drove out and I did take along my Yaesu FT-857D mobile / ATAS-100 antenna. While completing the final leg of the outbound trip on Sunday afternoon, I was able to check-in to the net with Gary's (WIOF) help. I is a good feeling to be able to join our net while mobile even with the help of another station. It is situations like this that hams support each other in our chosen hobby. ASCRA benefits in the same way. It is through our mutual support that we make ASCRA a better organization. As we come closer to the end of the year, I would ask each of you to consider what you can do to make ASCRA better. Each one of you has a good idea of what you might be able to contribute. One of the best and easiest ways to support ASCRA is participating in the election by voting. During the last election, I believe less than 10% of the membership voted. I challenge each of you to help us in changing the numbers around so that 90% or more of the membership votes this year. As always, each one of the existing boardmembers is open to inquiries and suggestions from the membership. 73 to all.

Michael Thayer, KMØS
km0s@earthlink.net

**Founder's Address to the
2016 General Membership Meeting of the
Association of Saints Church Radio Amateurs,
Inc.**

by David C. Bland, KD4GH

I do appreciate this opportunity to make a few remarks in commemoration of the 40th anniversary of the Association of Saints Church Radio Amateurs, Inc. I congratulate the many members and leaders who have been instrumental in assuring the longevity of ASCRA, including those who are now “Silent Keys,” who I want to especially recognize and thank for their past service. I trust that we will always remember those who came before us and honor them in celebrating future milestones.

I am honored by the title which I seemed to have obtained in recent years as the one who corralled and attempted to guide and provide some direction to the amateur radio activities that were already taking place among church members, which of course, in reality dates back far before my time—back to the very early 1900's, as well as the activity which flourished from time to time since. Despite the ebb and the occasional flow of the church-member amateur operators, there was no formal organization with only occasional contacts being made by individual members, mostly on Sunday afternoons — And, so it was until the early 1970's.

In looking back, little did I realize at the time that God had sown into me a gifting to organize and administer. So, when I found myself in a related responsibility at RLDS Headquarters, it was somewhat natural — or perhaps I should say super-natural, that I felt compelled to provide some guidance and direction to the church amateur activities, which eventually resulted in the launching of ASCRA.

I must say also that compelling drive that I had was also influenced by the fact that I had lived my first 15-years of life in church-owned housing around the Auditorium, as my father had been under appointment during that time, during which time I had grown, again very likely super-naturally, to appreciate the concept of Zion, as we understood it, and eventually realized the positive asset that amateur radio could be in such a community-centered, God-centered environment, as well as its positive value as a kingdom ‘out-reach’ tool. So, admittedly, my Zionic-community concepts were influential in, and provided motivation for establishing ASCRA, which motivation I believe was highly influenced by the Holy Spirit, perhaps for purposes of which we are not yet fully aware.

And in that regard, in the minute or two I have remaining, I ask for a moment of “personal privilege” to respond to those members who have questioned my obvious lack of ASCRA participation during the past 2-decades, as well as the seemingly irrational change of my call sign for the phonetic relevance of KD4GH; so I feel I owe you a little explanation — and I emphasize the word “little.” But, to make a

very long story short, the Lord is now “calling-in” a return on the investment that He sowed into me “before the foundation of the world”, which is the way that He and scripture describes that time long ago—even before Genesis.

I trust that all of you are aware that God is well under way in bringing His Kingdom to earth as it is in Heaven — and let me assure you that Zion will be redeemed, albeit, it may not be quite the way some of us had envisioned it in our various understandings through the years; but nevertheless, God is already, “marshaling His armies for the rescue of His truth,” as we used to sing in the old Saint's Hymnal.

For God is about to deploy His end-time soldiers that He has reserved for this day and time, as He explained in the 3rd chapter Malachi, and will be gathering them to various centers worldwide, which we, in our Restoration tradition, might call Zionic centers. These will be centers of spiritual light unto the world, even centers of refuge.

Now understand, God can, and does communicate any way He wants, but He prefers to use people who desire to be a part of His great kingdom plan. Consequently, I personally challenge ASCRA to seek how best its membership can be a part of that process when ASCRA members find that they have the opportunity before them to exercise their talents and equipment for God's Kingdom purposes.

And, I sense that the Lord [Holy Spirit] would say that, *He would encourage each and every one to do just that, for He is about to bring forth a mighty work in the world and is seeking those who would follow Him for that which He desires to do; and those who are so talented as you will come forth in those places and in those times to bring forth the work that He is doing wherever you are planted, and He shall bring forth the work you are doing in a grand and marvelous way — as a work and a wonder, for He is God Almighty and He is bringing forth His Zion. He is bringing forth His Kingdom upon the earth and all are called to bring forth their talents and their giftings to be who He has called them to be in this time and place; so says the Spirit of the Lord,*

Amen and Amen.

ASCRA Nets**By Ernie Miles, WB2UJL**

The following are net check ins since
May 2, 2016
and net schedules:

2 M net, EchoLink WØSHQ-R Sunday
7:30 PM CT
20 M net, 14.287 Sundays 3:30 PM
Central Time
40 M net, 7.190 Sundays 2:30 PM
Central Time
75 M net, 3.805 Sundays 9:00 PM
Central Time

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2 M 146.73 EchoLink Net

ADØAC - JIM CRAFT  
WØDZX - DAVE ATKINS  
WAØEMX - DOUG SHAW  
WØFEN - ROBIN CROSS  
KDØMEI - ED BRILEY  
NØOXK - JEFF WINSHIP  
NØSAB - SCOTT BRIDGES  
KEØMIB - THOMAS CRATIN  
KØJCM - JAMES MADISON  
KAØVTB - HOLLY CROSS  
WB2UJL - ERNIE MILES  
VK3LX - WARREN MOULTEN  
W6LMJ - TERRY REDDING  
K9YV - STEVE FAGAN

20 M Net

ADØAC James R. Craft  
KEØAHU Allen Grundmeier  
NØAIX Larry Ragan  
WØDZX David Atkins  
NØESY William Raiser  
WØF Gary Tickemyer  
KØFCL Conrad Veale  
WØFEN Robin Cross  
KAØGFC Charles Brady  
WAØIBS Andy Ferrar  
NØJHX Gary Martin  
NØOXK Jeff Winship  
WBØJQM Joseph Rossini  
KDØMEI Edward Briley  
KDØMLW James P. Craft  
AAØOS Jon Barney  
KØRDS Richard Swanson  
KDØRBX Mark Mitchell  
NØRSN Robert Nichol  
KMØS Mike Thayer  
NØTTQ Harold Dillon  
KDØTOV Mark Zappa

ACØUN Alan Henderson  
KBØVFW Charles Evans  
KØVKM Thomas Lane  
WAØYZW Charles Fuqu  
KA1FFY Ronald Adriano  
K1GND James Johnson  
K2APT Konstantinos Mavrikis  
WA2BRV Jordan Makower  
AC2GD Timothy Clark  
WB2IVN Michael Zuckerman  
KH2JK Joseph Bailey  
AC2LZ Harry Henderson  
WB2UJL Ernie Miles  
VE3BTX Paul Haberman  
W3HEN John Seither  
VA3RZ Raymond Else  
VE3SCP Scott Price  
VE3WWN Wayne Wilkins  
KM4EON Jon Lash  
KL4GR Larry Zuccaro  
KD4HCR Robert Grant  
KB4IML Robert Cox  
KD4LNO Peggy Grant  
KI4PMW Daniel Miller  
WA4YDK Elliot Kleiman  
W4ZFL Clifford Geiseke  
KD5CS Jack Aldridge  
W5DAD Clarence Campbell  
WU5E James Kennedy  
KB5EAG TJ Redding  
K5EXX Mark Budro  
W5HKY Barbara Redding  
WD5HMI Larry Frederick  
K5KG George Wagner  
K5KTD Kelly McDaniel  
KK5NC Douglas Hunt  
KG5NVD Lloyd Osbon  
K5OAI Sam Morgan  
KF5RSA Richard Arvedson  
K5RWD Darwin Lambeth  
KG5RYN Richard McBride  
W5TDN Thomas Noe  
AB5V Randy Friesenhahn  
W5VFR Charles McDonald  
K5VRB James Cathey  
KB5YZZ Richard Tiller  
KB6D Michael Gottlieb  
VE6DJC Douglas Corrigan  
W6DY Lawrence Fleming  
N6EZT Frederick Hyslop  
W6LMJ Terry Redding  
KW6PE William Klope  
KC7ND Warren Zimmer  
KI7AOE Jeffrey Snover  
KI7ATC Francis Taylor  
K7DJV Kelly Healy  
KA7ECY Harry Howell

KI7FQR Glynn Thomas  
KI7GHH Scott Downard  
KG7KNS Kevin Galegher  
N7CHT Dennis Waits  
VE7MP Morray Peterson  
W7MW Leon Underkofler  
K7NCG Jim Fish  
AK7RM Robert Monsipapa  
W7WH Vernon Anderson  
KD8OUR Scott Stout  
KA8RAB William Meadows  
AC8XB Peter Raupp  
KD8ZW Harlan Gibson  
NW9A Roger Dalman  
KD9BQO James Brantley  
KD9HJH Rudy Jarvey  
K9LQZ Lowell DePoy  
AI9R Thomas Moore  
WJ9E Mike Elder  
KJ5y Patrick Cameron  
VE5RH Richard Hanishewski  
AD7SN Mel Livingston  
NØJHX Gary Martin  
ACØUN Alan Henderson  
KBØMAL Mike Durell  
N7NXL Jim Gallardo  
KD5HLV Greg Knippa  
KB5VVJ John Bridwell  
KG5CPH Anthony Tompkins  
WR5D Jon Reynolds  
KG5SBA David Forrest  
KB8SIQ Lionel Lugo  
KD8VNN Steve Burgess  
KC8WZF Dave Courey  
N9CQT Chris Ledvina  
KB9LBP Steve Davis

40 M Net

ADØAC James R. Craft  
WØDZX Dave Atkins  
WØFEN Robin Cross  
WAØIBS Andy Ferrar  
KDØMEI Edward Briley  
KMØS Michael Thayer  
NØOXK Jeff Winship  
ACØUN Alan Henderson  
WB2UJL Ernie Miles  
KM4EON Jon Lash  
KB5EAG TJ Redding  
KG5KIC Obert Russell  
W6LMJ Terry Redding  
AC8XB Peter Raupp  
KC2LXD Rodney Pressley  
N3BGI Carl Hardy  
VE3SCP Scott Price  
KB9LBP Steve Davis

75 M Net

ACØUN Alan Henderson  
 NØOXK Jeff Winship  
 WØFEN Robin Cross  
 ADØAC James R. Craft  
 WØDZX Dave Atkins  
 NØJHX Gary Martin  
 W6LMJ Terry Redding  
 VE3SCP Scott Price  
 NM4W Will Perez

## An Invitation to Serve

By Jim Craft, ADØAC, Executive Director

Several years ago, when I was a freshman at Graceland, I became aware of the student organization W0YO, the official amateur radio club of Graceland University. At the time I had just received my Technician license as KD5BFE and was looking forward to getting on the air and communicating with others around the country and our world. Larry Oiler, N0BGG (SK) and Bob Farnham, KG0II (SK) were my early Elmers in the amateur service and introduced me to the weekly nets and ASCRA community. Over the years I would visit the general meeting at World Conference and the W0SHQ radio room at the Auditorium when I would visit Independence. Unfortunately, I avoided upgrading my license for many years due to the lack of time to devote to learning Morse code. Between college, law school, and starting a new career it was difficult to devote the time to learning what seemed to be an archaic method of communication. So I let my participation in the hobby become stale.

A few years ago I relocated back to Independence. I decided that even though I didn't have my own house to construct an antenna, I would try to improve my participation in the hobby and ASCRA. I reached out to Doug Shaw and Robin Cross and volunteered to help out with the antenna project at the Auditorium. I began to participate in local clubs again and became active on the local repeaters. I encouraged my father, Jim, KD0MLW

to become active and get his Technician and General licenses. We also built a station at my parents' home in Kansas.

In 2010, Doug Shaw asked if he could nominate me for the ASCRA Board of Directors. I accepted not knowing the full ramifications of what I was getting myself into. I volunteered to become Secretary at some point and served in that role for about four years. I have enjoyed getting to know many members of this organization and serving the overall membership of the church in participating in our weekly nets and demonstrating our capabilities to other non-hams whenever I get the chance.

I'm asking you to consider your involvement in the organization and the amateur service in general. There have been many arguments over the years on whether amateur radio is a service or a hobby. I would argue that it is both, and I think we need to maintain a balance of the two sides to the hobby. Our motto is "In Service", but we should not forget that we're doing this for our own personal enjoyment. Our nets should be a time of fellowship, and our fellowship should be of good nature and humor. There may be times when one is frustrated with another amateur or member of the organization, but we should remember that we are all here to serve and enjoy our service to others. We all have lives outside of the organization, and we should take the time to spend with our loved ones and friends at least more than we spend on the air.

We should respond to our calling to serve by helping expand the role of the organization in our local congregations. Several members of my congregation have noticed my callsign license plate and inquired of what amateur radio is all about. Most of the time the question is "People still do that?", and my favorite response is "There are more ham radio operators than ever in the United States, and many more around the world." This is a hobby and service that still has a role

to serve the greater good. Please consider joining the ASCRA board of directors, starting a new chapter, or assisting a committee within the organization. You would probably be surprised to find that there are other hams and members of ASCRA within your own congregation, but may not be active anymore. Encourage them to renew their interest in radio and help them find their way back on the air. Sign up to be a Radio merit badge counselor for the Boy Scouts, or host a demonstration station for the annual Jamboree on the Air. Learn new modes of communication, especially if you don't have room for the most efficient antenna for phone communication. Help teach the radio license class at Spec, or bring an HT with you to help demonstrate. Don't become stale; stay fresh in the service by your own service to the community and the organization. I hope to hear you on the air soon!

W0SHQ is now on RemoteHams.com! Go to RemoteHams and sign up for an account. Search for the 'W0SHQ' station and double-click on it to open. Click the button for "Request Permission" and send an email to [jrcraft79@yahoo.com](mailto:jrcraft79@yahoo.com) to let me know you want to use the station. –Jim Craft, ADØAC

## Off Center Fed Dipole Optimization

By Alan R. Henderson, AC0UN

The off center fed dipole provides a simple way to obtain multiple HF band operation with minimum hardware and cost. For a given length the OCFD has about the same gain as a center fed dipole, but unlike the CFD it can operate on odd and even harmonics.



If the feedpoint is moved from the center A to point B (Fig. 1) the current distribution over the antenna length remains essentially the same, but the feedpoint current is less and the voltage more. In other words, the feedpoint impedance rises. When a CFD is operated on a multiple of the halfwave resonance frequency the impedance also rises as shown in Table 1. The resulting impedance is shown in the plots of Figures 3 and 4, which will be examined in more detail later.

**Table 1**  
**Radiation Resistance at Current**  
**Maximum for Increasing N**

| <i>N</i> | <i>R<sub>min</sub> Ohms</i> |
|----------|-----------------------------|
| 1        | 73                          |
| 2        | 94                          |
| 3        | 106                         |
| 4        | 115                         |
| 5        | 121                         |
| 6        | 127                         |
| 7        | 131                         |
| 8        | 135                         |
| 9        | 138                         |
| 10       | 141                         |
| 11       | 144                         |
| 12       | 147                         |
| 13       | 149                         |
| 14       | 151                         |

I have limited this OCFD discussion to 80 meter through 6 meter wavelengths and horizontal flat top dipoles. However, the same principles could be more broadly applied.

Factors which influence OCFD design include desired operating bands and frequencies, preferred radiation pattern and directionality, end effect, ground conductivity and reflection, antenna height, antenna slope, harmonic impedances, and matching balun design.

Prior to the OCFD optimization with capacitors to be described herein, two OCF dipoles were built. The first was a half wavelength at 40 meters with a 4:1 Guanella balun made from two 1:1 baluns of 9 bifilar turns of stranded #16 AWG wire on each Palomar Engineers F40-61 ferrite toroidal core. The second was a half wavelength at 80 meters with a 9:1 impedance ratio autotransformer wound on one F40-61 toroidal core. Both antennas and baluns performed well. However, upon later examination the second antenna should have used a 4:1 balun or 4:1 autotransformer. Both antennas utilized the 100 watt transceiver output with tuner used on most bands.

Antenna resonant frequency and length are approximated by the ARRL Antenna Book formulas:

$$F_o = 492(n - 0.05)/L_T$$

$$L_T = 492(n - 0.05)/F_o$$

**F<sub>o</sub> = resonant freq in MHz**

**L<sub>T</sub> = overall antenna length in feet**

**n = # half lengths at resonance**

With these formulas it can be seen that a half wavelength antenna with a fundamental frequency resonance of 3.60 MHz would have a fourth harmonic resonance of 14.968 MHz, which is 618 KHz above the 20 meter band limit. The minus 0.05 in the formula is intended to account for wire loops around end insulators and capacitance effects. This correction term needs to be minimized or eliminated for more harmonics to be within HF amateur bands. I have used wire end loops just large enough for 60 lb. rono filament insulating lines to pass through twice and be tied. Another possibility is a short (1 inch) thin wall

brass or copper tube with snug fit on about 0.3 inch of the wire end. Sweat solder tube to wire end. Insert grass trimmer insulating line into 0.7 inch cavity with epoxy, then crimp before epoxy hardens. It is improbable that antenna end effect can be completely eliminated by the above, but what remains can be compensated by inserting a capacitor in series with each balun output. See Fig. 2.

The capacitors should have approximately 2 to 4% of the reactance at 80 meters of the straight wire antenna leg which they feed. 1000 pf for each C in Fig. 2 is a rough approximation. A 1 meg ohm resistor in parallel with each capacitor bleeds off static charges. The capacitors should be rated to withstand RMS output current and peak voltage at the 200 ohm output of a 4:1 balun.

For 1000 watt output at 200 ohms I<sub>2</sub> = 5 and I = 2.24 amps. The capacitors shown in Fig. 2 may need to be several in parallel or rated for RF power service. Peak voltage balun output would be 631, but higher voltage could occur if 1000 watts was delivered to the antenna unmatched.

However, since the reactance of the capacitors is much less than the reactance of the antenna leg wires and there is some division of the voltage across the series capacitors in each leg, 500 volt capacitors should suffice. The desired overall effect of the capacitors is to make the resonance formula:

$$F_o = 492(n)/L_T$$

When  $L_T = 137.43$  feet, the following resonances result which are plotted in Fig. 3 and 4.

|            |                  |
|------------|------------------|
| <b>80m</b> | <b>3.58 MHz</b>  |
| <b>40m</b> | <b>7.16 MHz</b>  |
| <b>20m</b> | <b>14.32 MHz</b> |
| <b>17m</b> | <b>17.90 MHz</b> |
| <b>12m</b> | <b>25.06 MHz</b> |
| <b>10m</b> | <b>28.64 MHz</b> |
| <b>6m</b>  | <b>50.12 MHz</b> |

Figures 3 and 4 show one half of a center-fed dipole and the current for fundamental and harmonic frequencies. For clarity, third and sixth harmonics are not shown. The third and sixth harmonics have a very high impedance at the point where several other harmonics have a much lower and closely grouped impedance. The third and sixth harmonic could be used if several other bands were sacrificed. Since the polarities of all frequencies alternate at different times, all current and impedance comparisons were shown on positive halfcycles. As shown in Fig. 4 the feed point could be chosen where seven resonances have similar impedances. The chosen feedpoint FPA in Fig. 4 is 33.8 percent, measured from the center to the end of the dipole. The ideal impedance for the balun output would be 151 ohms, to provide a 1.30 max SWR for antenna impedances between 120 and 190 ohms. Acceptable impedance match bandwidth is optimized by feeding the antenna with a slightly higher impedance than the antenna impedance at resonance so a standard 4:1 balun or a 3.1:1 impedance ratio autotransformer could be used without a tuner.

Other feedpoints could be used if operation on fewer bands is desired. In Fig. 4 FPB is 30.9 percent measured from the center to the end of the dipole with impedances for 80, 40, 20, and 12 meters between 120 and 140 ohms.

Antenna height of Fig. 4 is 65 feet above perfectly conducting ground. This height raises the impedance at the 3.58 MHz frequency to provide lower SWR on the 80 meter band.

By reducing capacitor values and slightly increasing total antenna length, particular desired resonant frequencies can be as shown below:

$$F_0 = \frac{492(n + 0.026)}{138.64} \quad \begin{matrix} 3.641 \text{ MHz} \\ 7.190 \\ 14.287 \\ 17.836 \end{matrix} \quad \begin{matrix} 24.934 \text{ MHz} \\ 28.482 \\ 49.775 \end{matrix}$$

$$F_0 = \frac{492(n + 0.123)}{145.273} \quad \begin{matrix} 3.803 \text{ MHz} \\ 7.190 \end{matrix}$$

$$F_0 = \frac{492(n + 0.09)}{141.9} \quad \begin{matrix} 3.779 \text{ MHz} \\ 7.247 \\ 14.181 \end{matrix}$$

*Resonances for 75, 40, and 20 meters in the last example immediately above are less than 0.8 percent from present ASCRA net frequencies.*

To perform properly on 80 meters and to keep RF out of the shack it is important to keep RF off the coax feed line shield. Clamp on ferrite chokes just below the balun and close to the shack entry keep conducted and radiated RF in check.

Feedline length is not a factor in this antenna design except that shorter feedlines have less loss.

As stated earlier, impedances and resonances are based upon a horizontal flat-topped dipole configuration. If one or both legs are sloped the impedances and gain will be somewhat lower.

Antenna pattern for a total

antenna length of one half to one wavelength is a figure eight pattern with lobes perpendicular to the wire in free space. However, when antenna height is less than one half wavelength the nulls in the wire direction are partially filled in and the radiation angle is high. When the OCFD is operated at the third and higher harmonics the radiation pattern breaks up into multiple lobes which are less than 90 degrees to the wire. The literature suggests that lobes are slightly larger from the longer leg of the antenna, so I arbitrarily connected the coax inner conductor to the shorter leg in Fig. 2 to hopefully provide better balance.

Commercial 4:1 baluns for various power levels are available from a number of sources. The Guanella design of Fig. 5, which I homebrewed, provides good performance. For impedance ratios less than 4:1 an autotransformer design is easy to build. Goals in achieving wide bandwidth and low loss are to have the coax see an impedance greater than 5K ohms at all frequencies of operation when no antenna is connected, to minimize capacitance between turns and turns to core, and to minimize eddy currents in copper and core through use of a high resistance ferrite and multiple individually insulated wire strands in the wound conductor. The conductor should have enough strands to carry RMS current with negligible heating at the highest frequency used. An autotransformer (see Fig. 2) with a total to driven turns ratio of 23:13 would have an impedance ratio of 3.13:1, which provides a good

match to the FPA feedpoint impedance of Fig. 4. Several companies are producing RF power capacitors suitable for inclusion in a balun housing. The low loss specifications, stability, and relatively small size of the NPO multilayer porcelain dielectric capacitors are impressive. A small heatsink may be required for the capacitor(s) in each antenna leg, when running power, to keep the capacitor temperature below 125° C. American Technical Ceramics (<http://www.atceramics.com>) and Presidio Components Inc. ([info@presidiocomponents.com](mailto:info@presidiocomponents.com)) are sources. Cornell Dubilier makes bulkier mica RF power capacitors.

The present OCFD with capacitors design, at 65 feet above ground, should have reasonable SWR without tuner on 80, 40, 20, 12, 10, and 6 meters for resonant and

nearby frequencies. Antenna Q should be around 14 or less, so tuning is not critical.

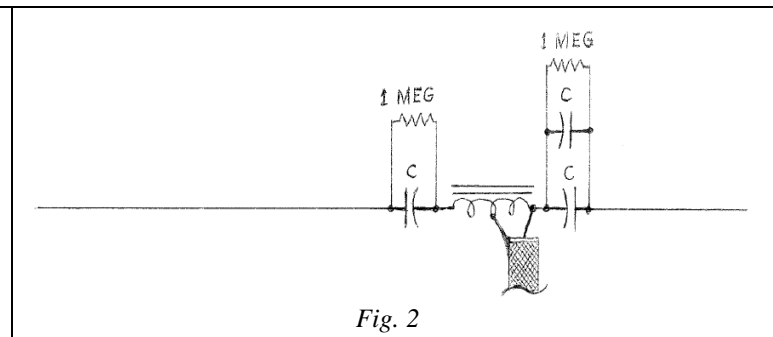
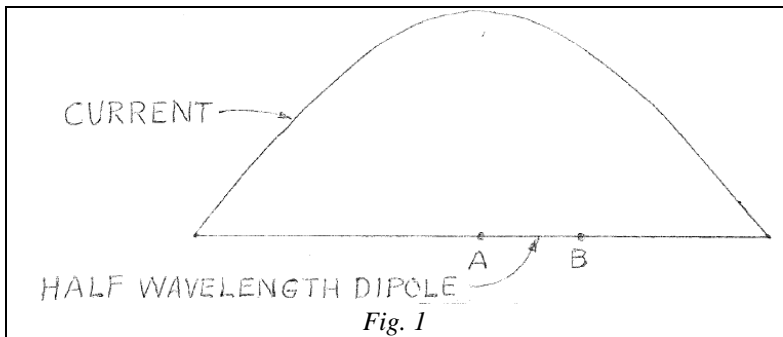
As with all wire resonant antennas close to imperfect ground the lengths may need final adjustment after the antenna is in place. The overall length is adjusted by observing the six or ten meter band resonance and, if series capacitors are used, the 80 meter band resonance. Feedpoint adjustment can be done by an iterative process of observing SWR at each of the resonant frequencies and comparing with the Fig. 3 & Fig. 4 plots, then lengthening one antenna leg while decreasing the other leg by the same amount.

This article has benefitted from the series capacitor resonance tests performed by Harry Henderson, AC2LZ, with his retractable dipole

feedpoint support system and Robin Cross, W0FEN, who assisted research of RF power capacitor specifications and availability.

*Sources:*

1. Witt, F. "How to Design Off-Center-Fed Multiband Wire Antennas using That Invisible Transformer in the Sky." *The ARRL Antenna Compendium Volume 1992*, 66-75
2. *The ARRL Antenna Book 13th ed.* American Radio Relay League, 1974
3. *The ARRL Antenna Book, 18th ed.* 1997-1999 American Radio Relay, 1997
4. Gaudier D., "Choke the OCFD." *QST* Sept. 1997, (Technical Correspondence)



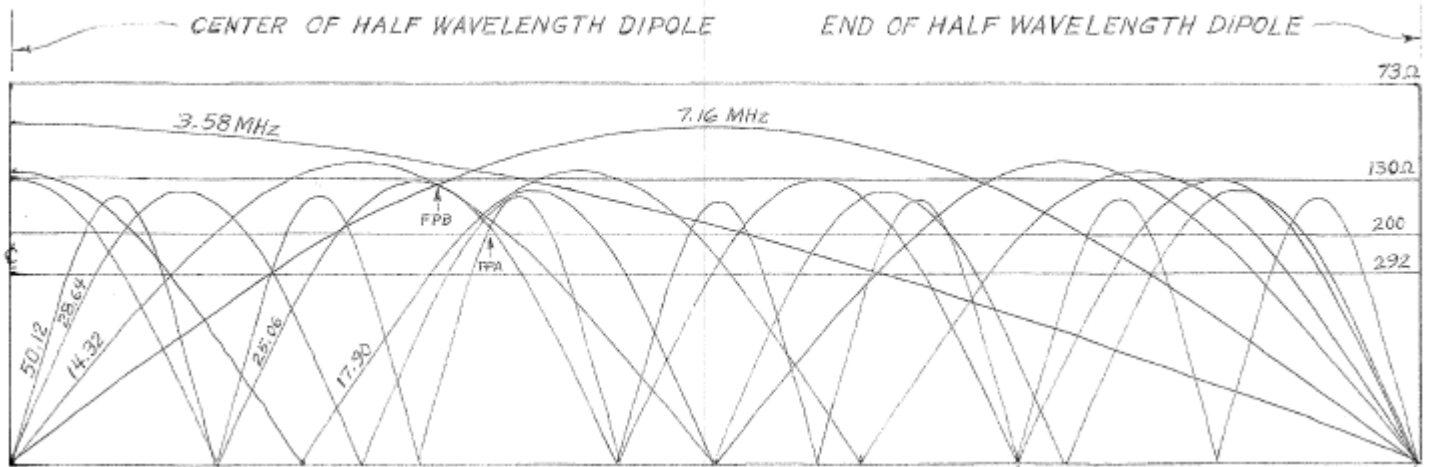


Fig. 3

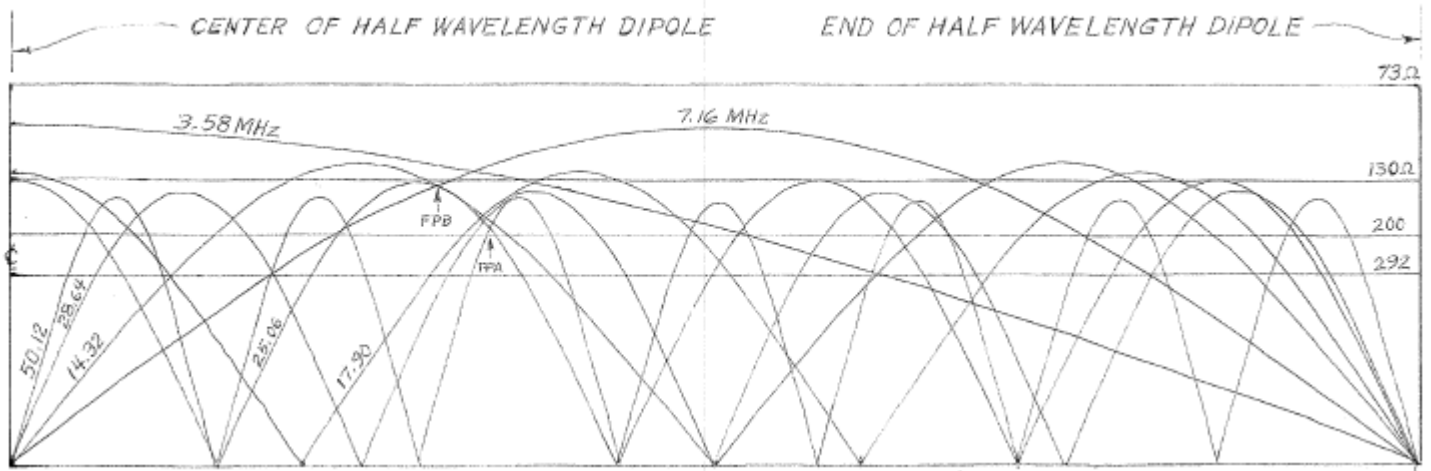
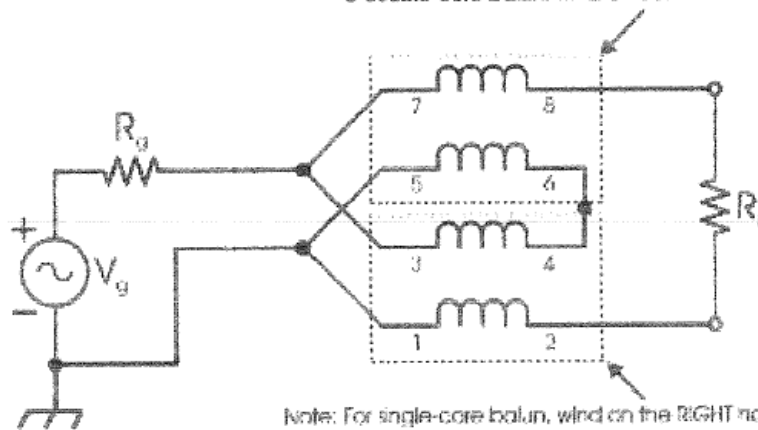


Fig. 4

Note: For single-core balun, wind on the LEFT half of the core, in a CLOCKWISE direction. For a double-core balun, wind on core #1.



Note: For single-core balun, wind on the RIGHT half of the core, in a COUNTER-CLOCKWISE direction. For a double-core balun, wind on core #2.

Fig. 5



**ASCRA Board Nominations Requested for 2020 Class (2018-2020 Term)**

*Nominations deadline for election to the ASCRA Board of Directors 2020 Class, 2018-2020 term, have been opened. A maximum of six (6) nominations may be submitted per member to be **received no later than January 15, 2018**. Please remind other members you may contact about the newly extended nomination deadline.*

Please verify that your nominees are willing to serve before you submit their names in nomination. Service as a director may entail travel to Independence, Missouri, or attendance via conference call, for at least one board meeting per year. All nominees should have E-mail capability but this is not a requirement for nomination or serving.

Only one nomination is required to place a willing nominee on the ballot. Each nomination must clearly identify who is making the nominations using a single piece of paper, postcard, E-mail message or phone call to the Secretary. Please list your nominees by name and call sign and include a preferred contact phone number, email, and postal address for each nominee.

**Submit nominations to:**

ASCRA Secretary Doug Shaw WAØEMX,  
c/o PO Box 73, Independence, MO 64051-0073  
by E-mail to [wa0emx.doug@gmail.com](mailto:wa0emx.doug@gmail.com),  
or c/o 11312 E 55<sup>th</sup> Terrace, Raytown, MO 64133-2965  
by text message to his mobile phone at (816) 686-0112,  
or by voice call to (816) 358-6856 or to mobile listed above.

**All licensed ASCRA members are eligible for nomination to the 2020 directors class (2018-2020 term), including the following 2018 Class Directors whose terms expire in the Spring of 2018:**

Aaron Beebe, KD8JQJ, Oak Ridge, TN  
Chuck Brady, KAØGFC, Boonville, MO  
Ed Briley, KDØMEI, Independence, MO  
Larry Ragan, NØAIX, Gladstone, MO  
Mike Thayer, KMØS, Jefferson City, MO (President)  
T.J. Redding, KB5EAG, Omaha, NE

**The following directors in the 2019 directors class (2017-2019 term) are NOT eligible for nomination at this time:**

Chuck Palmer, NØONN, Independence, MO  
Doug Shaw, WAØEMX, Raytown, MO  
James Craft, ADØAC, Independence, MO  
Ray Knapp, WA2GTM, Perry, IA  
Robin Cross, WØFEN, Kansas City, MO  
Jeff Winship, NØOXK, Oak Grove, MO

Please send comments or suggestions regarding ASCRA policies or programs to the Executive Director c/o jrcraft79@yahoo.com. Send revisions to the membership data base (license upgrades, postal or Email addresses, phone numbers, acceptance of newsletter delivery via email, etc.) to the Secretary... c/o P.O. Box 73, or via email c/o [wa0emx@arri.net](mailto:wa0emx@arri.net).

IN-SERVICE

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Radio Amateurs, Inc.  
P.O. Box 73  
Independence, MO 64051-0073

<http://www.ascra.org>

President: Mike Thayer, KM0S  
Secretary: Doug Shaw, WAØEMX  
Treasurer: Chuck Palmer, NØONN  
Executive Director: Jim Craft, ADØAC  
(Officers E-mail addresses available on the website)

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