

# Lewisville Amateur Radio Association



## W5LVC UPCOMING EVENTS

### **Business Meeting**

Saturday, Nov. 18, 0800 at  
Lewisville Central Fire Station  
188 N. Valley Pkwy.

### **LARA Christmas Party**

Saturday, Dec. 9, 1900  
Korner Café, 921 W. Main St.  
Lewisville

### **Winter Field Day**

Saturday & Sunday, Jan. 27 & 28  
Location TBD

### Weekly Nets

Information and Help Net  
Wednesday, 7:00 PM on 145.170 (PL 110.9, -.600)repeater  
General & Extra Study Net  
Saturday, 7:30 PM on 145.170 (PL 110.9, -.600)repeater

### **Saturday Breakfast (except 3rd Saturday)**

Tierney's Café & Tavern  
208 E. Main St., Old Town Lewisville

### Association Contact Information

Mailing address: P.O. Box 292282  
Lewisville, TX 75029

Email address: [W5LVC.Club@gmail.com](mailto:W5LVC.Club@gmail.com)

Membership Questions/Issues contact  
Ron, KF5OMH, at club email address or  
972-742-7839

Web Site: [W5LVC.com](http://W5LVC.com)

Check us out  
Facebook [facebook.com/w5lvc/](https://facebook.com/w5lvc/)  
Twitter [@W5LVCCLUB](https://twitter.com/W5LVCCLUB)

Calendar of events: [Click Here](#)  
and scroll down to Upcoming Events

Lewisville Amateur Radio Association is a 501(c)(3)  
organization

## LARA NEWSLETTER

Volume 2, Issue 11, November 11, 2017

### Words From the President —

November is here along with the cold rainy days. Sometime that's a great time to be in the shack working HF. It's also a time to be thankful. Yes, thankful we have so many things to be thankful for. The things I'm thankful for is God, family, each one of you guys, our great country, ham radio and this list goes on and on.

I would like to say thanks to Mike W5EVT, Jim WB8YWA, Ron KF5OMH, Steve W5JK, Dale KB5NFT, Ron KG5VIS Ron KG5VIV for each of there parts in making JOTA a great success. These guys put in a lot of time and foot work to make it great. Thanks for the hard work and good turn out.

I hope each and every one of you has a great Thanksgiving with lots of full bellies, happy faces, and good times with family and friends.

73  
Len KC5MPX

### WELCOME NEW MEMBERS

RICH ALVERSON, W5RPA

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### 2017-2018 Officers & Support

<b>President</b>		
Len Shipp,	KC5MPX	972-965-9082
<b>Vice President</b>		
Jim Lavin,	K5VZ	214-629-2327
<b>Secretary</b>		
Tim Monk,	WZ5TM	972-436-4866
<b>Treasurer</b>		
Ron Ford,	KF5OMH	972-742-7839
<b>Technical Director</b>		
Jim Horton,	WB8YWA	972-523-8467
<b>Operations Director</b>		
Mike Reitz,	W5EVT	214-535-1368
<b>VEC Coordinator</b>		
Steve Kline,	W5JK	972-679-6288
<b>Public Information Officer</b>		
Ron Bath,	KG5VIS	817-980-3165
<b>Newsletter Editor</b>		
Ron Ford,	KF5OMH	972-742-7839

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Association membership is open to all persons interested in amateur radio. Join at any meeting, by mail or on-line through our web site. Annual dues are \$25 individual, \$30 family.

### CHRISTMAS PARTY

The Christmas Party is scheduled at the Korner Cafe, 921 W. Main St., Lewisville for December 9 at 7:00 PM. We'll be ordering off of the regular menu and you can view that at <http://www.kornercafe.com/menu.php>. This is a family affair, so bring them along.

As we did last year we'll have a "White Elephant" gift exchange. If you want to participate in the exchange bring a wrapped gift (1 gift per person attending) valued at \$20.00 or less.

### Ham Trivia

Who was the first ham to transmit from space via Amateur Radio?

- Dave Garroway
- Owen Garriott
- Gary Owens
- Garrett Phillips

### Extra Pool Question

How is forward error correction implemented?

- By transmitting extra data that may be used to detect and correct transmission errors.
- By the receiving station repeating each block of three data characters.
- By varying the frequency shift of the transmitted signal according to a predefined algorithm.
- By transmitting a special algorithm to the receiving station along with the data characters.

Answers to Trivia and Pool questions at bottom of next page—no fair peeking.

### **Why Join the 160,000+ Members of ARRL?**

Whether you're interested in public service, making friends, or expanding your knowledge, ARRL members enjoy ham radio to the fullest!

As an ARRL affiliated club, LARA will receive a commission for every new ARRL membership and renewal they submit to ARRL Headquarters.

LARA retains **\$15 for each new membership** OR lapsed membership (of two years or more). A **NEW MEMBER** is defined as any individual who has never been a member of ARRL or any individual who has not retained a membership for two or more calendar years prior to the application submission.

LARA retains **\$2 for each renewal**. A **RENEWING MEMBER** can renew at any time, even before their current membership term expires.

For LARA to receive the commissions you must submit your application through the club. Contact our treasurer Ron, KF5OMH for further information and/or application forms.

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**TECHNICAL DIRECTOR'S CORNER**

BY: JIM, WB8YWA

## **Information and Tips on the many different antenna tuners**

Antenna tuners can be very confusing and misleading. Without going into deep theory I will try to shed some light on the different types and their use.

**Note one;** there is nothing better than having your antenna match your frequency and radio where as an antenna tuner is not needed. This said, it is not possible to always do this.

**Note two:** an antenna tuner does not adjust your antenna, it just matches the radio matching components to the transmission line and the antennas matching components.

**Note three;** an antenna tuner does not change your SWR (standing wave ratio) at your antenna but only matches your radio to the transmission line. Modern rigs today have SWR safety circuits and thus the antenna tuner allows radio to put out full power into the transmission line without it damaging or seeing the real SWR at the antenna.

**Note four;** the best possible place to insert your antenna tuner is at the end of your transmission line and feed point of your antenna. Again this is not easy or practical to do. Most times it is placed as the last piece of equipment in the shack.

**Note five;** the lower you go in frequency the harder it is to obtain broadband antennas. Starting at forty meters (7 MHz) we notice our SWR only is low for a few KHZ's within the band. This is where having a good tuner comes in handy.

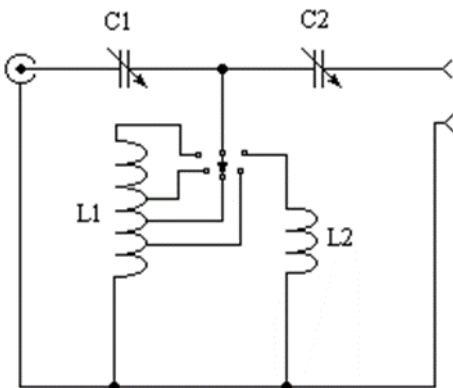
Information needed before you go out and purchase an antenna tuner:

- Are you going to use it with just your rig power, or do you plan on also being able to use it with your linear amplifier?
  - ◆ Components used in the design of the tuner determine how much power can be fed through them.
  - ◆ Manufacturers do list power handling of their tuners.
    - ◇ Watch PEP or key down watts.
    - ◇ 1000 watt PEP would be around 400/500 watt key down.
- Are you going to use tuner on just coax or do you want to match open wire also?
  - ◆ This will determine placement and if a matching torrid is needed.
- Some tuners allow antenna switching and by-passing.
- Some tuners have forward/reverse watt meters and SWR Bridges.
- Some tuners are manual tuning.
  - ◆ On the variable capacitors:
    - ◇ They can be direct tuning of components or have a variable drive which makes it much easier to adjust.
  - ◆ On the coil,
    - ◇ They can have switch taps which some like better due to being faster and a more solid contact.
    - ◇ They can be a roller inductor which some like better due to being able to constantly adjust coil and not just switch settings.
    - ◇ There are good roller coils and there a bad ones.
    - ◇ Roller coil must have a turns counter so you know where the coil is adjusted. Again some tuners have excellent turn counters that stay adjusted, so change setting each time you use it and have to go to end to reset counter. Try to stay away from this type.

**Now you can look —** b -- W5LFL transmitted from the space shuttle in 1983.      A.

- More expensive tuners are full automatic and adjust by the push of a button or sample the RF inserted into the circuit.
  - ◆ These cost more.
  - ◆ Very fast tuning with memory settings.
  - ◆ Use drive motors and/or relay switching of the components.
  - ◆ Allows placement out at the antenna.

T Match – most common design.



C1 Tunes the transmitter

L1/L2 through switch settings adjust the inductance.

C2 Tunes the antenna

**Note:** Some designs used a roller inductor instead of switch settings. There are pros and cons to both. Switch is fast, but jumps turns of the inductor coil. Roller covers all the turns of coil, but connection of roller can be troublesome if not of very high quality. Roller must have a turns counter so you know setting of connection on coil.

Other components can be added to enhance tuner.

- Forward Reverse Watt / SWR Meter
- Antenna Switch
- By Pass Switch
- 4:1 Torrid Coil

At the station of WB8YWA, I have a in-the-rig automatic 100 watt tuner and I have the one pictured below which is a T-Match and capable of handling 1.5 KW PEP or 800 watts key down.



When do I use my tuner?

- To broaden my low band frequency antennas.
  - ◆ My 5-BTV vertical antenna.
    - ◇ On 80 meters only 30 KHz wide where SWR is below 2:1.
      - ⇒ By using the tuner I can use this antenna for most of the bands.
    - ◇ On 40 meters only 70 KHz wide where SWR is below 2:1.
      - ⇒ This tuner allows me to adjust so I can use all of this band with this antenna.
  - ◆ My Long Wire Antenna. It is 117 foot long and was put up so I could use it on the 160 through 30 meter bands.
    - ◇ Allows me to get on 160 meters living on a small city lot. By far not the best antenna but I have worked both coasts and have enjoyed some great rag chews.
    - ◇ Gives me an 80 meter wire to use which outperforms my 5-BTV vertical.
    - ◇ Was my go to antenna for the 40 meter morning group. I have since installed an inverted vee for 40 that out-performs the wire.
  - ◆ If you have an antenna cut for CW / Digital end of band and want to use it for voice end.
  - ◆ If my SWR isn't above 2:1 I bypass the tuner. Most times unless I am on my wire antenna the tuner is not used.

Automatic vs Manual.

I have an automatic 100 watt tuner built into my HF rig. You cannot beat it until you want to run your Amp. They make 1.5 KW Automatic antenna tuners that run from \$350 to over \$1500. They are nice. But I purchase my manual one used for \$150. I have preset settings for the frequency and band I want to use it on and can change bands pretty fast. Automatic would be nice, but there is something to be said for getting it done without spending the farm.

As mentioned earlier if possible it is nice to mount your automatic tuner at the antenna. At WZ5TM's station he is not allowed to have much of an antenna at his apartment. Although he does have many feet of metal rain gutter. By installing an automatic tuner at the base of the rain gutter Tim can match his rig to this rain gutter giving him access to the outside world of ham radio. By far not the best antenna, but he is on the air making contacts. Below is a picture of tuner used at WZ5TM's QTH.



Remember, a resonate antenna is far better than any antenna you have to use a tuner on.

## Information and Tips – 144/440 MHz J-Pole Project (Bonus Article)

By: Jim WB8YWA via Dave Marble KD8UCF

Wednesday evening on the Information and Help Net we discussed this project a little and some folks wanted me to publish this in this issue of the LARA Newsletter. So here it is.

Dave, KD8UCF from Michigan who is on the morning group (7.281 MHz) mentioned that their local club did this project and he passed it on to me. Mike, W5EVT found a local (DFW area) shop that had the solid 3/8" rods and angle needed. Only hard item to find is the SO-239 to 3/8" 24 thread adapter. Radio Shacks are a thing of the past but, you can obtain these on line for under \$5 and at any ham fest.

(Ed. Note: For ease of viewing and/or printing the two sheets of the drawing are printed on individual pages following the article.)

The first SWR test showed low SWR on both bands. One trick is to elevate the antenna before test. Four/six feet off the ground shows odd readings; 10 feet is good.

Notes:

1. You will need two bolt taps.
2. Not mentioned but, the middle rod (rod that goes into the SO-239 x 24 Thread) is tapped for just that, 3/8" by 24 thread.
3. Other two rods are tapped for 3/8" by 16 thread.
4. Purchase stainless Steel nuts and washers.

This can be mounted on a 10' or higher mast, or top of tower, or in your attic. It was a fun project.

# DUAL BAND J-POLE 144/440MHz

Original Plans By: Allen Lowe (N2QIMW)

Simple to create yet effective 144/440 Mhz Antenna.

Materials Needed (Refer to parts list below)

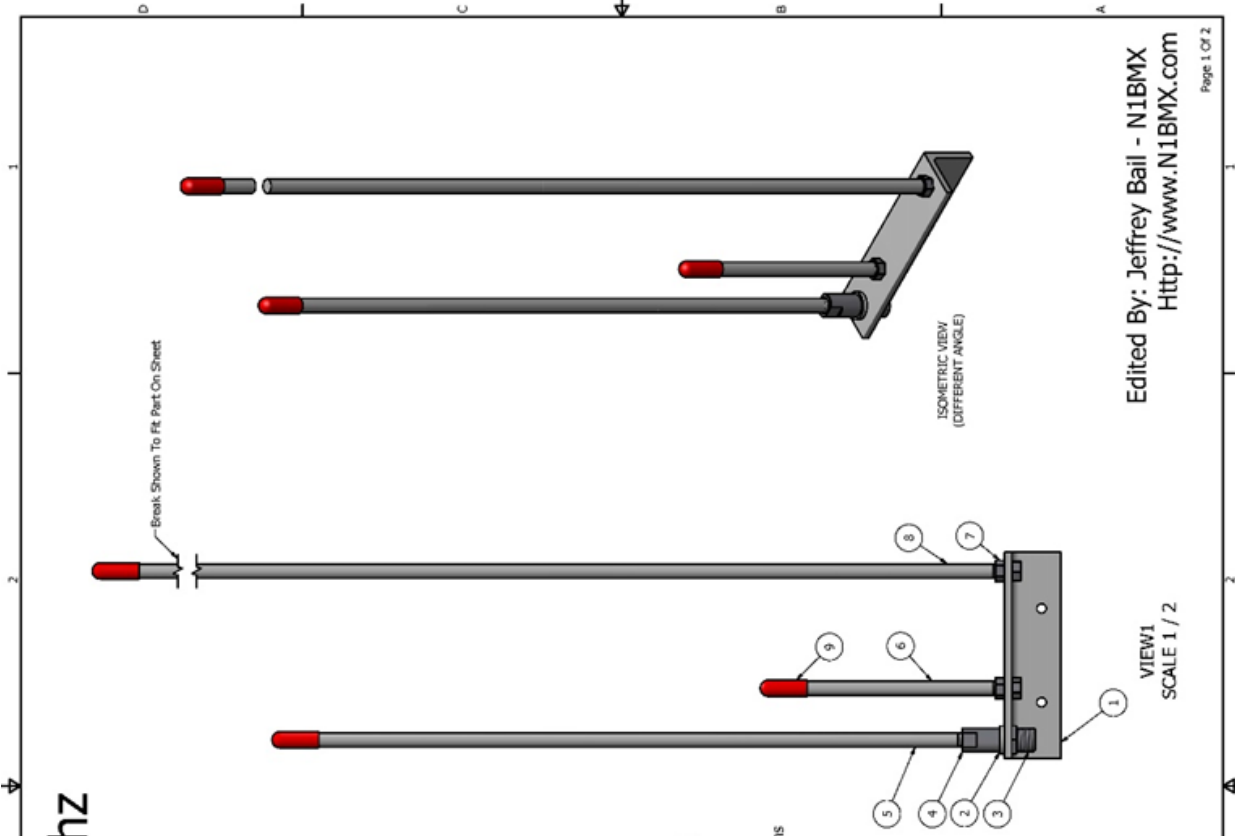
- 8ft (96in) of 3/8" Aluminum Rod
- 1 5-1/2" of Aluminum Angle (1-1/2"x1-1/2"x3/16" THICK)
- 1 SO-239 Female to 3/8"-24 Thread (Available At Radio Shack)
- 4 3/8"-24 Stainless Steel Nuts
- 3 Pliable Vinyl Caps (Optional)

Tools Needed (Basic Version)

- Tape Measure (Vernier/Caliper preferred)
- Marker (Automatic center punch preferred)
- Drill w/ Drills bits (up to 1/2")
- Saw (Hacksaw or Bandsaw with metal blade)
- File And/OR Sandpaper
- 3/8"-24 Tapping Die (With holder)
- 3/8"-24 Tapered Tap (With holder)
- Vise Grips with protective caps (Can use a rag instead of caps)

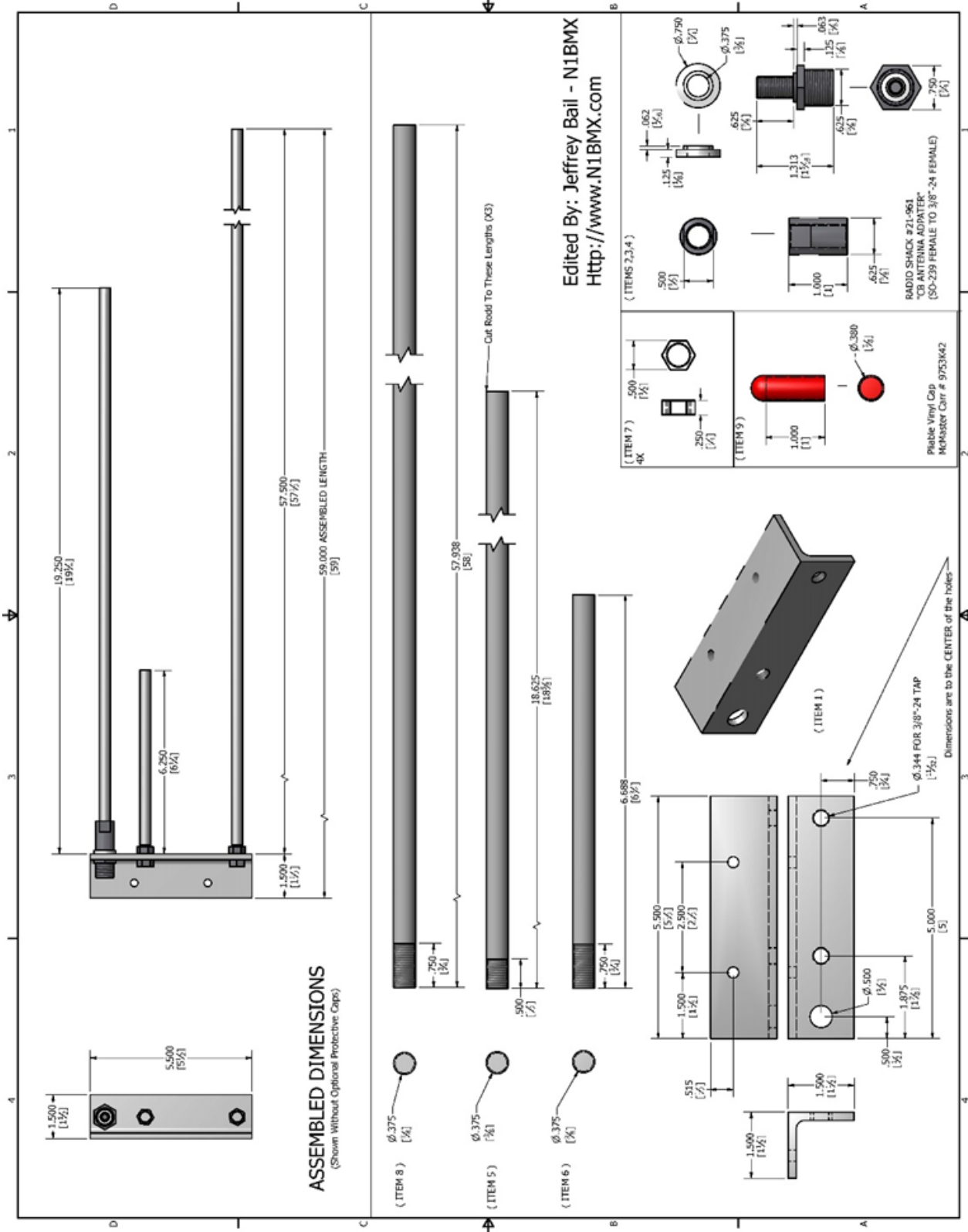
Instructions (Instructions are not exact, please use good judgement and safety)

- 1.) Using your measuring device and marking device layout the holes on the angle as shown on page 2.
- 2.) Drill the holes to 1/8" as pilot holes. Then drill to hole sizes listed on page 2. If your using a different SO-239 Than what is listed here, please check the dimension of the plastic washer that fits into the angle and check it's size (It might differ from each manufacture) If different please change the 1/2" hole to the proper size for the plastic washer to fit snug.
- 3.) Use the 3/8"-24 Tap and thread the two smaller holes in the angle
- 4.) Using the saw cut the aluminum rod to the dimensions of 58", 18-5/8" and 6-3/4" These Dimensions Might vary a little bit depending on the Jam nuts that are being used.
- 5.) Using the threading DIE, Thread the ends of the aluminum rod to around the dimensions listed on page 2. Try not to over make the threads.
- 6.) Using a file/sander to take off any sharp edges or metal burrs.
- 7.) (Optional) Place protective caps over the 3/8" Rods
- 8.) Assemble the antenna to the pictures shown. Maintain lengths of rod to the dimensions shown



PARTS LIST		
ITEM	QTY	DESCRIPTION
1	1	1.5X1.5X.188 ALUM ANGLE
2	1	SO-239 SPACER
3	1	SO-239-STUD
4	1	SO-239-COLLAR
5	1	19-1/4" Long Alum Rod
6	1	6-1/4" Alum Rod
7	4	3/8"-24 Stainless Nut
8	1	17in Alum Rod
9	3	Optional Protective Cap

Edited By: Jeffrey Bail - N1BMX  
[Http://www.N1BMX.com](http://www.N1BMX.com)



Edited By: Jeffrey Bail - N1BMX  
 Http://www.N1BMX.com



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**VARIOUS TIDBITS**

**W5LVC Business Cards**

LARA business cards are available for all members. The front of the card contains all of the pertinent mailing address and social media information. On the back of the card you can print your name, call sign and phone number. This is a great way to advertise the club and have a personalized business card all in one. Contact Ron, KF5OMH for a supply.

**W5LVC**  
**LEWISVILLE AMATEUR  
RADIO ASSOCIATION**  
Email: [w5lvc.club@gmail.com](mailto:w5lvc.club@gmail.com)  
Web Site: [W5LVC.org](http://W5LVC.org)  
Facebook: [www.facebook.com/w5lvc/](http://www.facebook.com/w5lvc/)  
Twitter: [@w5lvcclub](https://twitter.com/w5lvcclub)



P.O. Box 282292  
Lewisville, Texas  
75029



(OVER)

Monthly meetings are held the 3rd Saturday of each month at 8:00 AM at the Lewisville Central Fire Station, 188 N. Valley Pkwy.

Member Name: \_\_\_\_\_

Call Sign: \_\_\_\_\_

Phone: \_\_\_\_\_

**Skywarn Training**

The next SKYWARN training class in Denton County is scheduled for Saturday, February 24 at the TWU MCL Bldg. located at Bell Ave. and Administration Drive in Denton, 9:00 AM-12Noon (Basic session) and 1:00-4:30 PM (Advanced session). If you are a member of Denton County ARES you are required to have the Basic portion of this training at least every two years. To verify your currency check the member listing at <http://www.denton-ares.org/membership.php>

**146.920 Repeater**

For several years now, DCARA has experienced interference on the 146.920 repeater. Please assist the repeater team in identifying the source(s) of this interference. When you detect interference, report it on this [Google](#) page.

**Contester Note**

The Canadian province of Ontario now consists four RAC sections: Ontario North (ONN), Ontario South (ONS), Ontario East (ONE) and the Greater Toronto Area (GTA). Make sure your contest logging software and "country" (CTY) files have been updated so that those abbreviations are recognized and credited properly.

View a [map of the VE3 sections](#).

**Special Events**

**11/24/2017 Steamship PORTLAND Commemorative Special Event**

**Nov 24, 1200Z-1900Z, W1P**, East Falmouth, MA. Marconi Radio Club. 14.260 7.260 3.997. QSL. Henry Brown, 19 Sao Paulo Drive, East Falmouth, MA 02536. Event Commemorates the sinking of the Steamship PORTLAND in November 1898 off the Massachusetts coast with the loss of 200 lives. QSL via K1WCC. See QRZ.com. SASE required. [k1wcc@arrl.net](mailto:k1wcc@arrl.net) <https://www.grz.com/db/k1wcc>

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**12/14/2017 | Anniversary of Dreamliner First Flight**

**Dec 14-Dec 18, 0000Z-2359Z, W7D**, Seattle, WA. L Greg Magone. 146.52 14.275 14.250. Certificate & QSL. L Greg Magone, 27492 254th PL SE, Maple Valley, WA 98038. This is the December special event station that is part of the 2017 KB7QPS Air, Space, and Technology operating event. [air-spacetechnology.webs.com](http://air-spacetechnology.webs.com)

**Turkey Day Net (reprint from QRZ.com)**

Turkey Day is almost her, so it's time to get ready for the annual Turkey Day net. It's time to get your gear in order and start thinking up your excuses for not visiting the mother in law. We'll try to use the usual frequencies if the bands cooperate. So, be there or be square.

28.450, 21.310, 14.245, 7.200, 3.850, + / - QRM  
Look For The CW TDN activity -50KHZ + / - QRL  
From The Bottom Of The Most Used Voice Band

## **Operations DIRECTOR'S CORNER**

BY: MIKE, W5EVT

### **LFD OPEN HOUSE**

On Saturday October 14th, the Lewisville Fire Department celebrated their 17th Annual Open House. Members of L.A.R.A. were on hand to showcase their talents as amateur radio and emergency coordination operators.

We had two H.F. stations set up in the Mobile Command apparatus where visitors could witness first hand radio communications and the role hams play in cases of disasters and emergency operations. 26 contacts in 18 states were logged during the event. Certificates of contact were made available to all who made contact with our stations and helped to celebrate this event.

Many thanks go out to Ron Ford for his work in organizing and promotion of this event. Thanks to the following members for their help in setting up, furnishing and manning their stations and greeting and explaining to the visitors our role in communications. Ron Ford, Jim Horton, Bryan Jarvis, Ron Bath, Ron Swain, Clark and Ben Highsmith.

Without your help this would not be possible.

### **60TH ANNUAL JAMBOREE ON THE AIR BOY SCOUTS OF AMERICA**

On Saturday October 21st LARA, along with 12,000 world wide stations and 1.5 million participants hosted it's 2nd JOTA event at Connor Pavilion on Lake Lewisville. Two HF stations along with VHF capabilities were available for scouts to experience first hand making contacts with other scouts and hams around the country.

Stations were operated by Jim Horton, Steve Kline and Ron Ford where they provided instructions, and demonstrated methods of operation for youth to make contact with other stations.

Dale Finley KB5NFT was on hand with his visuals and equipment to provide mini merit badge sessions for boys who were interested in obtaining their Radio Merit Badge. He also held demonstrations on D Star, EchoLink and ARDEN networks.

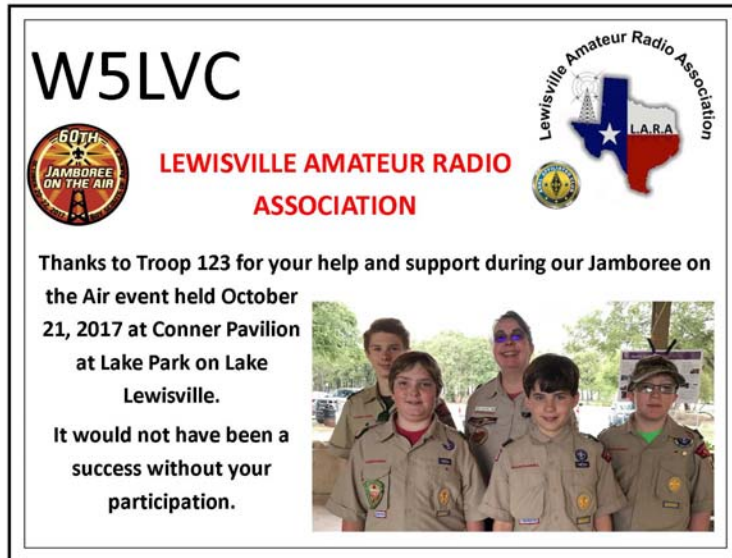
Members of Flower Mound Troop 123 from were on hand to help with greeting visitors and provide support throughout the day.

There were 26 visitors and 23 scouts in attendance from Lewisville, Carrollton and surrounding areas. 29 contacts were made covering 23 states. Certificates of participation were given out to all who participated in the event.

The day was filled with fun and excitement by all who attended. We have received numerous emails, Facebook and personal responses thanking us for our efforts in this event.

Congratulations to Jim Horton WB8YWA on being posted on the K2BSA national website and Facebook page demonstrating to youth the operation of ham radio.

Many thanks to all who made this a great day and successful event; Troop 123 BSA, Ron Ford, Jim Horton, Steve Kline, Dale Finley, Ron Bath and Ron Swain.



Certificate of Appreciation presented to Troop 123



A great time was had by all

## **Meeting Minutes**

Recorded by: Steve, W5JK

Meeting was chaired by Vice President, Jim Lavin, K5VZ and called to order at 8:12AM. Attending new licensees Ron Bath and Ron Swain were recognized and congratulated.

### **Officers Present**

Jim Lavin, K5VZ  
Ron Ford, KF5OMH  
Jim Horton, WB8YWA  
Mike Reitz, W5EVT

### **Voting Members Present**

Steve Kline, W5JK  
Lonnie Pringle, KG5KNT  
Clay Brewer, W5CEB  
Ron Bath, KG5VIS  
Ron Swain, KG5VIV (now a voting member)  
Dale Finley, KB5NFT

### **Non-voting Members Present**

None

Vice president Jim Lavin asked if there were any questions or comments regarding September meeting minutes posted in monthly news letter. There were no comments or questions. Request made to accept September meeting minutes. Motion made by Jim Horton WB8YWA to accept September meeting minutes and seconded by Clay Brewer, W5CEB.

### **Treasurers Report**

Next order of business was the Treasurer's report presented by Ron Ford, KF5OMH.

As of October 19th, checking account beginning balance was \$2,385.16. Total income was \$41.50, total expenses \$1.69. Checking account September ending balance \$2,424.97.

Savings account beginning balance was \$31.66. There were no deposits or withdrawals. Savings account ending balance \$31.66.

Club assets total \$2,990.98. Total LARA net value is \$5,447.61.

Ron Ford is working on getting the club signed up with Amazon, Kroger, and SubWay as contributors to club for percentage of club spend with these retailers.

Motion to approve Finance report was made by Mike Reitz, W5EVT, seconded by Clay Brewer, W5CEB.

### **Technical Report:**

The 145.170 repeater is working fine. The club "220" machine antenna and repeater was removed from Jim Lavin's QTH and relocated to Mike Reitz QTH. The "220" transmitter PA's recently burnt up due to keying malfunction. A new transmitter has been ordered for \$129.00, no tax and shipping included.

It was mentioned and noted that the club should keep an eye open for a heavier duty transmitter for the "220" machine.

An inventory of the 220 machine will be performed and documented. Club also has some quantity of HT's on hand which also need to be audited and documented.

Motion was made to accept technical report by Lonnie Pringle, KG5KNT and seconded by Clay Brewer, W5CEB.

Operations Report

Open house at Lewisville Central fire station was held October 14th, all who participated were thanked.

Two new activities coming up:

- LARA Christmas party will be held on either 12/9 or 12/16. Need to pick one of these dates. Preference is 12/9 with fall back to 12/16 date if finding location for the 9th becomes an issue.
- Winter field day is the last weekend of January.

**Old Business:**

Technician class was held October 7-8. There were four participants. Test session was conducted on October 8th, all four participants passed their Technician class test. It was noted and reviewed with club that members of the VE team cannot test and participate in the same exam session.

**New Business:**

One junk box was returned by Ron Ford, Clay Brewer, W5CEB took box home.

Mike Reitz, W5EVT would like to see the club allocate funds to obtain window decals and possibly club business cards. Motion was made by Mike Reitz to allocate funds of up to \$100.00 for the purpose of purchasing decals and business cards. Motion was seconded by Jim Horton, WB8YWA. Ron Ford will design business cards and purchase. Mike Reitz will purchase club decals.

Ron Bath volunteered to step into the club Public Information Officer (PIO) role.

Motion made by Lonnie Pringle, KG5KNT to adjourn meeting and seconded by Mike Reitz, W5EVT.

**Meeting adjourned at 8:36 AM.**

**Treasurer's Report**

By: Ron, KF5OMH

**LARA Treasurer's Report - October 2017****Checking Account**

Beginning Balance \$2,385.16

## Income

Dues \$62.50

Donations \$19.00

ARRL \$2.00

Shirts \$125.00

Total Income \$208.50

## Expenses

Fees \$3.75

Repeater \$0.00

Miscellaneous \$59.99

Total Expenses \$63.74

Ending Balance \$2,529.92

**Savings Account**

Beginning Balance \$31.66

Deposits \$0.00

Withdrawals \$0.00

Ending Balance \$31.66

**CLUB ASSETS**

For Sale \$275.00

Stock (Not for Sale) \$375.98

Loaner Equipment \$ 2,040.00

Repeater Equipment \$ 389.59

\$3,080.57

**LARA NET VALUE**

\$5,642.15

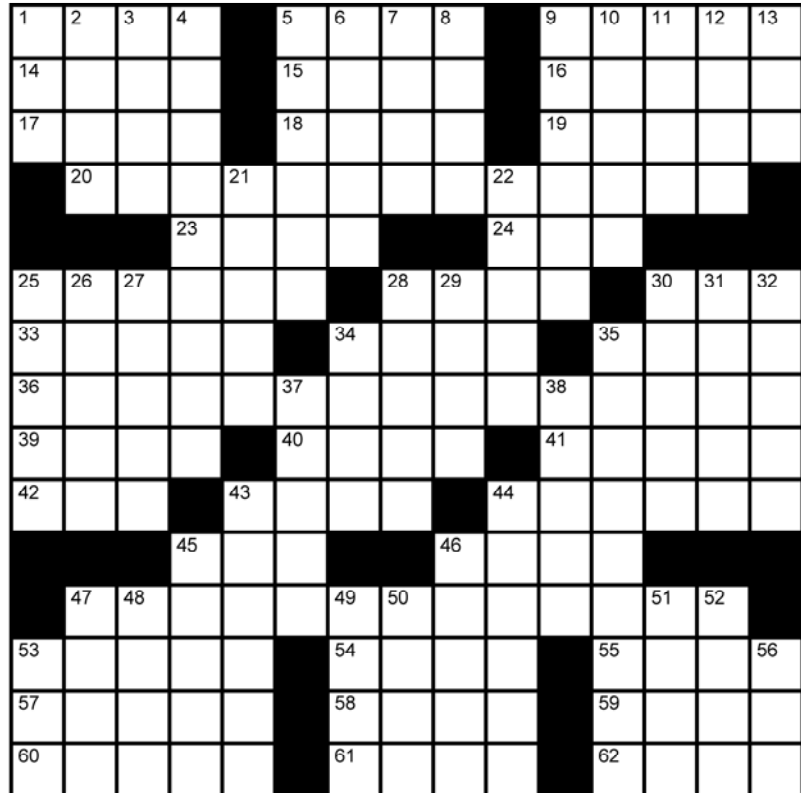
**Crossword**

By: Chris Codella, W2PA (used with permission)

Answers elsewhere in this newsletter

**Radiogrammar****Across**

1. Sea eagles  
 5. 1950s car maker  
 9. Face-to-face exams  
 14. Ham's OM  
 15. Director Preminger  
 16. Come again  
 17. N N, on 7.007, say  
 18. Start of a conclusion  
 19. It might be airtight  
 20. Four and four ninths?  
 23. Coax adapters  
 24. Revr ckt  
 25. Squirrel food  
 28. KH6IJ (SK)  
 30. Smart or Bond  
 33. QRS sending, not  
 34. FD abode  
 35. Joint with a cap  
 36. 1, 13, 53 and 56-down, and a puzzle sub-theme  
 39. Swimming power supplies?  
 40. Bit of trivia, slangily  
 41. A Czech Republic prefix  
 42. Driller's deg.  
 43. Tiny parts  
 44. Plates  
 45. W7 sect.  
 46. Flower tower?  
 47. Two-hundred ten?  
 53. Jeered  
 54. Surf sound  
 55. TA-33 part  
 57. Kazakhstan prefix  
 58. Gawk at  
 59. Dipole terminators



60. Dings  
 61. SU river  
 62. Compass symbol
- Down**
1. FB RST., in the DX test, say  
 2. Easy antenna place  
 3. Smaller than a micro  
 4. Popular beef cuts  
 5. Meaning of 17-across  
 6. Monk Apollo's QTH  
 7. R followers  
 8. Nozzle site  
 9. Three on a resistor  
 10. Museum piece  
 11. Label on a DC supply, say  
 12. Garage job  
 13. Apologize, on 30m, say  
 21. Big gain  
 22. Bob Marley fan  
 25. Flashed over  
 26. Crowed  
 27. Milky gems  
 28. V4 place  
 29. "Put a lid \_\_\_!"  
 30. Hair net  
 31. Edible tubes  
 32. C C, on 7007, say  
 34. Be inclined  
 35. KM, on 7.007, say  
 37. VU physicist and Nobel Prize winner  
 38. Copier stuff  
 43. SM ops  
 44. AM  
 45. Special \_\_\_\_\_ station  
 46. Play for time  
 47. Kind of wave  
 48. Like some piano keys  
 49. High-tech suffix  
 50. Cartoon bear  
 51. Start of a conclusion  
 52. What a long element does  
 53. Not bad, on 7.007, say  
 56. Word with QSL

**Area Repeaters**

Freq.	Shift	PL	Call	Name
145.1700	-.600	110.9	W5FKN	DCARA-Denton County EOC
145.2100	-.600	110.9	N5MJQ	Metrocrest ARA-Carrollton
145.4000	-.600	110.9	NETARC	Grapevine
145.4900	-.600	85.4	WD5U	Rosston Tower
146.9200	-.600	110.9	W5NGU	DCARA - Denton
146.6200	-.600	110.9	N5ERS	Flower Mound
146.7800	+.600	131.8	WQ5A	Wise County Skywarn
147.3800	+.600	110.9	K5LRK	LAARK - The Colony
224.000	-1.6	110.9	K5LRK	LAARK - The Colony
224.080	-1.6	110.9	W5LVC	LARA
224.920	-1.6	110.9	AF5RS	AF5RS
441.3250	+5.0	88.5	W5NGU	Portable DCARA repeater
442.7500	+5.0	110.9	KA5R	Trophy Club
444.5125	+5.0	123	KE5UT	Celina
442.1750	+5.0	110.9	NETARC	Southlake
442.600	+5.0	131.8	WQ5A	Wise County Skywarn
442.6500	+5.0	110.9	N5MJQ	Metrocrest ARA-Carrollton
443.3000	+5.0	110.9	K5LRK	LAARK-C4FM on/ly
443.5250	+5.0	118.8	WA5LIE	DCARA - Denton
443.7375	+5.0	141.3	N6LXX	Rosston Tower
443.8750	+5.0	110.9	NETARC	DFW Airport
444.0500	+5.0	110.9	W5NGU	DCARA-Denton County EOC
444.2250	+5.0	110.9	K5CFD	Coppell
444.7000	+5.0	110.9	NETARC	Southlake
444.8500	+5.0	110.9	N5ERS	Flower Mound
927.025	-25.0	D532	N5ERS	Flower Mound
927.4125	-25.0	432	N5LS	Denton
927.6125	-25.0	110.9	W5NGU	DCARA-Denton County EOC
927.1375	-25.0	131.8	W5FKN	Decatur
1253.6000	none	none	W5NGU-G	DCARA - EOC - D*Star "G"
1293.4000	-20.0	none	W5NGU-A	DCARA - EOC - D*Star "A"
442.9250	+5.0	none	W5NGU-B	DCARA - EOC - D*Star "B"
147.4500	-1.0	none	W5NGU-C	DCARA - EOC - D*Star "C"
1259.2000	none	none	KE5YAP-G	DCARA-Rosston- D*Star "G"
1293.2000	-20.0	none	KE5YAP-A	DCARA-Rosston- D*Star "A"
440.7125	+5.0	none	KE5YAP-B	DCARA-Rosston- D*Star "B"
147.4900	-1.0	none	KE5YAP-C	DCARA-Rosston- D*Star "C"
<b>DIGITAL</b>	=====	=====	=====	=====
144.9100	none	none	W5NGU-4	DCARA Digipeater-Denton
147.970	none	none	K5YX-10	WinLink Gateway
144.990	none	none	KC5GOI	DCARA Digipeater-Rosston
144.990	none	none	KD5EOC-10	DCARA WL Gateway