

# FOUR SEASONS BEAUMONT

## AMATEUR RADIO CLUB

### MINUTES OF MEETING OF MARCH 25, 2022

**Members Present:** Pete Hersey KJ6NRR, Fred Plenge K6FXP, Bill Taylor KM6CIU, John Enzler KN6FMM, , Harry Henderson AC2LZ, Laurie Larson KM6CIT, Al Blair AE6AL, Jim Peterson K6JWP, Rob Gardner KB6ROB, Rudy Garcia, Fred Weck KK6HBQ

Club President Pete Hersey opened the meeting with a discussion of soldering electrical components, including the materials needed, the techniques that prove successful, and the tools and solder materials that Pete has found to be successful. Pete prepared for the Radio Club members an excellent hand-out which outlined several key tips toward accomplishing successful soldering. The **main points** he emphasized are outlined below:

**Solder:** Pete recommended solder which is 63% Tin and 37% Lead eutectic, for best soldering and reliability. He said that this solder melts at 354°F whereas 60/40 solder is not eutectic and melts 20° higher. Pete said that ‘No-Lead’ solder is strong but contains enough impurities that the joint may become unreliable.

**Solder Structure:** The structure itself is very flexible until melted, when it forms a strong alloy. Typically, the solder contains flux within the core of the solder. The cost of the solder is normally around \$20.00/pound for 63/37 solder.

**Flux:** Flux can be brushed onto the material before soldering, or just use the rosin-core flux contained within the solder itself. Flux performs the function of cleaning the material to be soldered and prevents oxidation. Flux can be **acidic** (which must be cleaned off after soldering), or No-Clean (which can stay on the components without any problem). No-Clean flux is the standard nowadays. Acid-based is called Activated Flux, and requires TCE to clean. No-Clean flux is called Non-Activated Flux. Flux is always required for soldering copper pipes, but not usually for electronics.

**Difference between Soldering and Brazing:** Soldering is used for lightweight connections, whereas brazing is used where extreme strength is required. Brazing is like welding, but not as strong as a welded joint.

**Good Soldering Practices:** Don’t bend or twist a pre-tinned wire (a wire coated with a small amount of solder) as it will crack the solder on the wire strands. Don’t pre-tin a wire that will be mechanically connected. Both components must be heated, then remove the heat and apply a small amount of solder. Appropriate soldering irons: 30 or 40 watt irons are common with 17 watts for very fine work and 150 watts for large Heat Sinks. Apply solder **after the heat is removed from the joint.** After applying the solder, hold joint still until the solder ‘freezes’.

**The Soldering Process:** Clean the surfaces unless they are wire strands or they are already pre-tinned. Mechanically secure the two components, don’t rely solely on the solder. Secure the two components to prevent movement during the soldering process. Apply a drop of flux (if required) and then a small amount of solder to the tip of the soldering iron. Heat both components while testing the temperature by touching your solder to the joint (not the solder tip). Once it shows the joint is heated, remove the soldering iron and apply more solder to the joint. Don’t smother the joint in solder-the wire strands should be visible when done. Key tip: less solder is better. Let the solder ‘freeze’ and then inspect the joint and clean if necessary.

**More Key Tips from Pete:** Start heating the large mass component first, then the smaller mass component. Clean the solder tip regularly using a wet sponge or wet paper towel. If the tip doesn’t hold solder (it looks black), a new tip should be installed. Gently twist the wire strands before soldering; up to 1 broken strand is OK.

Thanks to Pete, John Enzler, Fred Plenge and others who brought equipment that we might learn soldering.

The meeting ended at 11:30 am and the next meeting of the Radio Club will be on April 29, at 10:00 am. These minutes were recorded and respectfully submitted by Fred Weck, Radio Club secretary.

