



P.O. Box 6421 Auburn, CA 95604

January 2019

<http://w6ek.org> [info@w6ek.org](mailto:info@w6ek.org)

**At The Key of SFARC:**

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Orion Endres, AI6JB  
AI6JB@ARRL.NET

**VICE PRESIDENT**

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AI6US@titaniumsattelite.com

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Greg Dolkas, KO6TH  
Gerry Brentnall, WA6E  
Dustin Yue, W6YUE

**FIELD DAY CHAIRMAN**

Gary Frerking, KC3PO

**REPORTERS**

Satellites: Greg, KO6TH  
Sunshine: Richard, WA6RWS

**GROUPS io**

Dennis Gregory, WU6X

**PIO**

Carl Schultz, WF6J

**REPEATERS**

145.430 (-0.6 MHz/PL 162.2)  
440.575 (+5.0 MHz/PL 162.2)  
223.860 (-1.6 MHz/PL 110.9)

**CLUB NET**

Thursdays, 7:30PM, W6EK/R  
145.430

**CLUB MEETINGS**

Second Friday of the month,  
7:30PM at the Auburn City Hall,  
1215 Lincoln Way, Auburn CA

**CLUB BREAKFAST**

Last Sat of the month at Mel's Diner  
1730 Grass Valley Hwy, Auburn 7:30AM

**NET CONTROL OPS**

Dave Jenkins, WB6RBE  
Casey McPartland, W7IB  
Bob Brodovsky, K6UDA  
Al Martin, NI2U

**NEWSLETTER EDITOR**

Barbara Anderson, W6EVA  
anderson51@wavecable.com

**WEBMASTER:** Herb Garcia, KM6JBI

**VOLUNTEER EXAMINER**

Al Martin, NI2U

**Calendar of Events**

**January 11<sup>th</sup>:**  
***Club Meeting***

**January 26<sup>th</sup>:**  
***Club Breakfast***

**January 26<sup>th</sup> & 27<sup>th</sup>:**  
***Winter Field Day***

**Inside this issue**

- *President's Message*
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- *60 Meters APRS Experiments*



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## President's Message

*By Orion Endres – A16JB,  
President*

### **Happy New Year everyone!**

2019 appears to be filled with plenty of fun and challenging amateur radio activities here at the Sierra Foothills ARC.

First off, we have many new faces on the SFARC Board which is guaranteed to bring new excitement and ideas to the table. But, before I introduce them, we need to say farewell to some folks who have made SFARC the great amateur radio club that it is.

Mark, W8BIT, served as a board member last year and he spearheaded our club's entrance into the social media world. Mark and Toni, KK6JPJ, have been members for years now and will be leaving the area in the near future. Thank you Mark for your service and dedication to SFARC and Ham radio. Best wishes to you and Toni.

Mike, KK6GLP, served as our Vice President last year. He brought some very exciting and interesting programs to our general meetings, Foxhunting and Joe Spier, President of AMSAT, to name a couple. While Mike may be leaving elected office, he will remain on as our Volunteer Event coordinator. Thank you Mike for adding so much to our club.

Sharron, KK6RGV, has been our treasurer for the past three years. Even while watching the books, she found time to handle refreshments and a Christmas Party when we needed someone to step forward. Thank you Sharron for your hard work and loyalty to SFARC. You will be missed.

Bruce, K6BAA, has been our secretary for the past four years. He is also our defacto "assistant" newsletter editor. Barbara, W6EVA, and Bruce are responsible for the always interesting and informative newsletters you get to enjoy every month; despite the fact your president can't always get an article together. Bruce is the guy at virtually every event and is always there to help out. Bruce, you are going to be sorely missed on the Board. Thank you for being there and always willing to help.

Our new board has some familiar faces and some you may not know. We have a mix of new and longtime members, young and old, and new and veteran hams. Let me introduce them to you:

As Vice President, we have Brian, AI6US. He has been a ham and member for three years and a returning board member. He has already shared an exciting list of programs for our general meetings and many of you have experienced his enthusiasm to ham radio and our club. Clear your calendars and get ready for an awesome year! Thank you Brian for your service as a Board member last year and for stepping up to VP!

New to the Board and a member for a couple of years is our Secretary, Michele, WH7QC. Michele and her husband, Roy, WH7DH, are regular members on the nets, ARES, and our meetings. I am glad to see she will be sharing her excitement with the Board.

New to the Board and a new member is our Treasurer, Jeff, KM6RGO. He joined our club last year right after he got his ticket, attended the W6SFM CW class in September, and jumped right in to a Board position. The last two guys to do that, I am aware of, are Bob, K6UDA and me. Jeff looking forward to great things!! 😊

We have three elected Board members. Greg, KO6TH, is a returning member, longtime member of SFARC, and satellite guru. Thank you Greg for your hard work and guidance on the Board!

Gerry, WA6E, is a longtime member and is coming on as a new board member this year. He is already hard at work on a project. Thank you Gerry, we look forward to your advice and guidance in the New Year.

Dustin, W6YUE, has been a ham for a few years and is one of our youngest members. As you may have noticed, our members and the Ham radio community are aging. We need younger members to ensure the health of our club and our hobby. Thank you Dustin for getting involved. We look forward to hearing and implementing your ideas.

What's in store for the New Year at the Sierra Foothills ARC?

Our club is great, and we are recognized throughout the Section as one of the most active and growing clubs. I repeatedly hear from folks we are the friendliest and the most inviting club people visit. I also hear we do not do enough for new hams or do enough to Elmer new hams into the hobby. Brian, AI6US, started arranging Elmer's for new folks last year.

This year we need to devote more for meeting time to new hams. We need your help to do that. If you have a beginner or new ham topic or interest you would like to share, or have an idea on the subject, please let me know.

We all can expect a phenomenal year ahead. I look forward to enjoying the journey with you!!

Orion, AI6JB  
President





# Sierra Foothills ARC ARRL Winter Field Day

## Fly In or Drive In

Georgetown Airport Campground  
6245 Aerodrome Way  
Georgetown, CA 95634

*Special Instructions: Stay to the left inside the main airport gate and pass through a second gate (Gate E). Close this 2nd gate behind you as this is a controlled access area of the airport. Campground is about 1/4 mile on this siding road on West side of airport. Remember: Do not drive on or across the runway.*

**January 25<sup>th</sup> - 12 noon set-up**  
**26<sup>th</sup> - 11am FD begins**  
**27<sup>th</sup> - 11am Wrap**

Plenty of space for planes, RVs, tents, and antennas. Operation center will be in the club's 10x20 pop-up canopy with walls and small space heater. We are planning on running two or three stations (Voice/FT8/CW), depending on the turnout.

Coffee and a campfire provided. AI6US will cook a pancake and sausage breakfast on both Sat/Sun @ 9am for RSVP attendees ([ai6us@titaniumsatellite.com](mailto:ai6us@titaniumsatellite.com)). Friday night will be a pasta dish with potluck side dishes, Chip in for hot local pizzas on Sat. evening. Feel free to bring snacks, sodas, water, firewood, smores, generators, etc.

**Please RSVP!!! Questions? Contact Orion - AI6JB or Brian AI6US**

Best Regards!  
Brian Gohl - AI6US  
(916) 770-7751 cell




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## 60 Meters APRS Experiments

*By Stephen H. Smith, WA8LMF*

For many decades now, long-range HF APRS operation has been done almost exclusively on 30 meters. It will beam APRS posits over long distances (2000 miles/3000 Km or more), but it does have a problem. At 10 MHz, there is little to no NVIS (high angle) propagation. As a result, 30 meters has a skip zone of 250-300 miles (400-500 Km) most of the time. In other words, you normally DON'T HEAR stations closer than this on 30M.

For some time now, I have felt that NVIS (Near-Vertical Incidence Skywave) propagation (high take-off angles that will bounce signals back to earth close to the originating station (but on the other sides of mountains) would be useful in large areas of the Great Basin/inter-mountain west. During numerous trips between Los Angeles and the mid-west over the past several decades, I have frequently noted the difficulty in being heard out of deep canyons and from secondary roads on the other side of mountain ridge lines from major Interstate highways.

Propagation on 60 meters is almost the exact opposite of 30 meters in this respect. 60 meters does NVIS propagation very well, and will provide coverage from 0 to 300 miles (500 Km) most of the day quite consistently. This summer, I tested the potential of 60 for APRS applications on two road trips. The first was from my QTH in central Michigan (East Lansing) to Rice Lake, Wisconsin about 400 miles (640 Km) to the northwest. The other was the annual 1100 mile (1700 Km) trek to the Evergreen (Colorado) Jazz Festival.

The mobile setup was a Yaesu FT-891 transceiver running into a MFJ monoband whip for 60M (that appears to be a rebranded HamStick) mounted on a split-ball body mount on the left-rear part of the body of my 2006 Jetta TDI. The transmit power was about 15 watts. [I could have run the FT-891 at a full 100 watts output.. However, since the 60-meter channels are shared ham/non-ham use, I wanted to keep the ERP low enough that others could talk over my beacons if necessary.]

The APRS application running on the mobile Panasonic Toughbook was G4HYG's "APRS Messenger". This soundcard modem application can function as a mobile tracker, beaconing alternately on 300-baud classic AX.25 HF packet, and on MFSK16. Messenger's MFSK mode actually sends the payload of an APRS-style AX.25 packet, including the packet-style path headers and checksum at the end, over MFSK16. For an additional comparison, I had a TinyTrack 3 set for HF 300-baud mode and Mic-E format to evaluate the relative effectiveness of the longer plain-text posits sent by Messenger and the shorter Mic-e packets sent by the TinyTrack. The callsigns were WA8LMF-6 for the AX.25 mode, WA8LMF-66 for the MFSK mode and WA8LMF-2 for the TinyTrack Mic-E beacons. [I was also beaconing WA8LMF (no SSID) on conventional 144.39 two-meters APRS with my Kenwood D700.]

The fixed station/igate at my East Lansing QTH was a Yaesu FT-857D connected to a 105' (32 meter) center-fed dipole fed by 450-ohm ladder line and an Icom AH-2 auto-coupler. The software was identical to the mobile (APRS Messenger and Ulview) running on an Acer E3-111 "netbook" mini-laptop that runs Win 7 on a dual-core Pentium 4. [I like these mini-laptops for APRS applications, where you leave computers running 24/7 for weeks at a time, because they consume only 9-10 watts.] I also had the TightVNC remote control program running on the Acer so I could view the machine's screen and tweak settings remotely while on the road. The beacons successfully found their way to [findu.com](http://findu.com) and APRS.fi, courtesy of my igate.

These tests took place on US "Channel 5" of the fixed-frequency channelized 60-meter band. This is 5403.5 KHz USB. Partly because it is the shortest wavelength channel on 60M so the mobile whip is the

"least inefficient". And partly because by informal convention, "Channel 5" is the "data channel" on 60. [There is no segregation between voice and non-voice modes on 60 as there is on the other HF bands. You can legally use any mode on any of the 5 channels.]

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The results more than met my expectations. The trip to Rice Lake, WI was a loop - outbound "over the top" of Lake Michigan via Michigan's Upper Peninsula, while the return was via Madison WI and Chicago around the "bottom" of Lake Michigan. The 60-meter coverage was essentially continuous. In remoter parts of the Michigan UP and north-eastern Wisconsin, where two meters heard nothing, the 60-meter posits just kept coming in.

Another variable comes into play. Propagation on 60M does change with the time of day and day vs night. On the outbound trip, the shortest hops from the mobile to the igate were in daylight, starting at about 0800 EDT (local time). I arrived in Rice Lake (greatest distance) at about 2100 EDT; i.e. just after dusk. On the return trip, exactly the opposite with the longest hops in the AM daylight, and the shorter hops well after dark as I approached home. The closer hops (under about 150 miles/240 Km) started failing on the return trip because it was now well after sunset; i.e. 2200 - 2400 hrs EDT.

The trip to Colorado was perhaps more interesting because 1) It was a much greater distance from home and 2) The route was much closer to being a constant latitude. [Since HF propagation is the result of the upper atmosphere being ionized by solar radiation and particles, and because those particles are deflected by the earth's magnetic field, HF propagation effects are quite sensitive to latitude north or south. By driving a nearly straight east-west line, one keeps at least one variable in the test more-or-less constant.] After driving from central Michigan to Chicago and joining I-80, the rest of the trip was almost due west along I-80 to the Colorado border.

The 1100 mile trip from MI to Denver takes two days. The mid-point of the trip is at the west side of Des Moines, Iowa, where I always spend the first night about 550 miles (880 Km) from home. All along the route, I would periodically stop to connect to WiFi at gas stations and fast-food joints to check my own UI-Webserver via VNC and APRS.fi to see if I was reaching my solitary 60-meter igate in Michigan. [The ultimate convenience is in Iowa, where every rest area on the Interstate has free WiFi beamed into the parking lot from a 9' fiberglass 2.4 GHz collinear whip on top of the building. You can easily get WiFi from a laptop inside your parked car.]

I had expected that the signal would start dropping out at 300-400 miles ( 500-650 Km) from home, but I had constant coverage on 60M for the entire day's drive.. To my surprise, the signals were still booming into my Michigan igate when I arrived in Des Moines at about 1900 hrs EDT. After check-in, I left the gear running in the parked car, while I played with the Internet in my motel room. [I have 110 AH of sealed AGM batteries in the trunk of the car, isolated from the starting battery, so I can safely leave electronics on for many hours after engine-off.] The Michigan igate's reception started failing about 2300 hrs EDT. (At this point I was in US Central time where it was 2200 hrs local.) Most striking, I noticed the AX.25 beacons starting to fail about 45 minutes earlier than the MFSK16 ones. It dramatically demonstrated the enormous superiority (10-15 dB advantage) of MFSK16 over classic two-tone FSK 300-baud packet under weak-signal conditions.

I had assumed that I would be out of range of my home station on 60 meters well before the end of the first day, and had intended to switch the mobile setup to 30 meters that evening, for the rest of the trip. (I had an identical HamStick for 30 meters stowed in the car.) Instead, I kept the setup on 60 meters the morning of the second day. When I departed after breakfast at 0900 hrs EDT (0800 local), no beacons were being heard by my Michigan igate. By the time I stopped at another Iowa WiFi rest stop about an

hour down the road, in the Avoca, Iowa area, the MFSK beacons were coming in again. By the time I arrived in the Omaha, Nebraska area, the AX.25 FSK beacons were coming in also. Both formats continued to be received until I reached the Lincoln, NE area, about an hour west of Omaha. At this point, I did switch to 30 meters.

On the return trip, the last night on the road was in Avoca, Iowa where I switched from 30 meters back to 60. Again, I saw no evidence of my beacons reaching my igate in the morning until about 0090 hrs local (1000 hrs EDT). . Again, the MFSK16 beacons "opened the band" with the AX.25 ones starting to appear about an hour later.

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The final conclusions are: 1) 60 meters CAN provide quite consistent APRS coverage from 0 to 400 miles (640 Km) or so. 2) The MFSK mode has a huge advantage over classic 300-baud FSK, providing nearly two more hours a day of usable propagation. Sometime this fall, I will be making a trip EASTWARD on I-80 crossing the Appalachian Mountains to Philadelphia. This will be an opportunity to try NVIS propagation out of some smallish valleys in the eastern mountains. Ultimately, I would like to try absolutely maximizing the NVIS receive performance by building a turnstile antenna consisting of two 60-meter dipoles crossed, supported as inverted-Vs on the same mast, and fed in quadrature with coax phasing lines. Stay tuned!

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Stephen H. Smith [wa8lmf@aol.com](mailto:wa8lmf@aol.com)  
Skype: WA8LMF  
EchoLink: Node # 14400 [Think bottom of the 2-meter band]  
Home Page: <http://wa8lmf.net>

Live Off-The-Air APRS Activity Maps  
<http://wa8lmf.net/map>

Long-Range APRS on 30 Meters HF  
[http://wa8lmf.net/aprs/HF\\_APRS\\_Notes.htm](http://wa8lmf.net/aprs/HF_APRS_Notes.htm)

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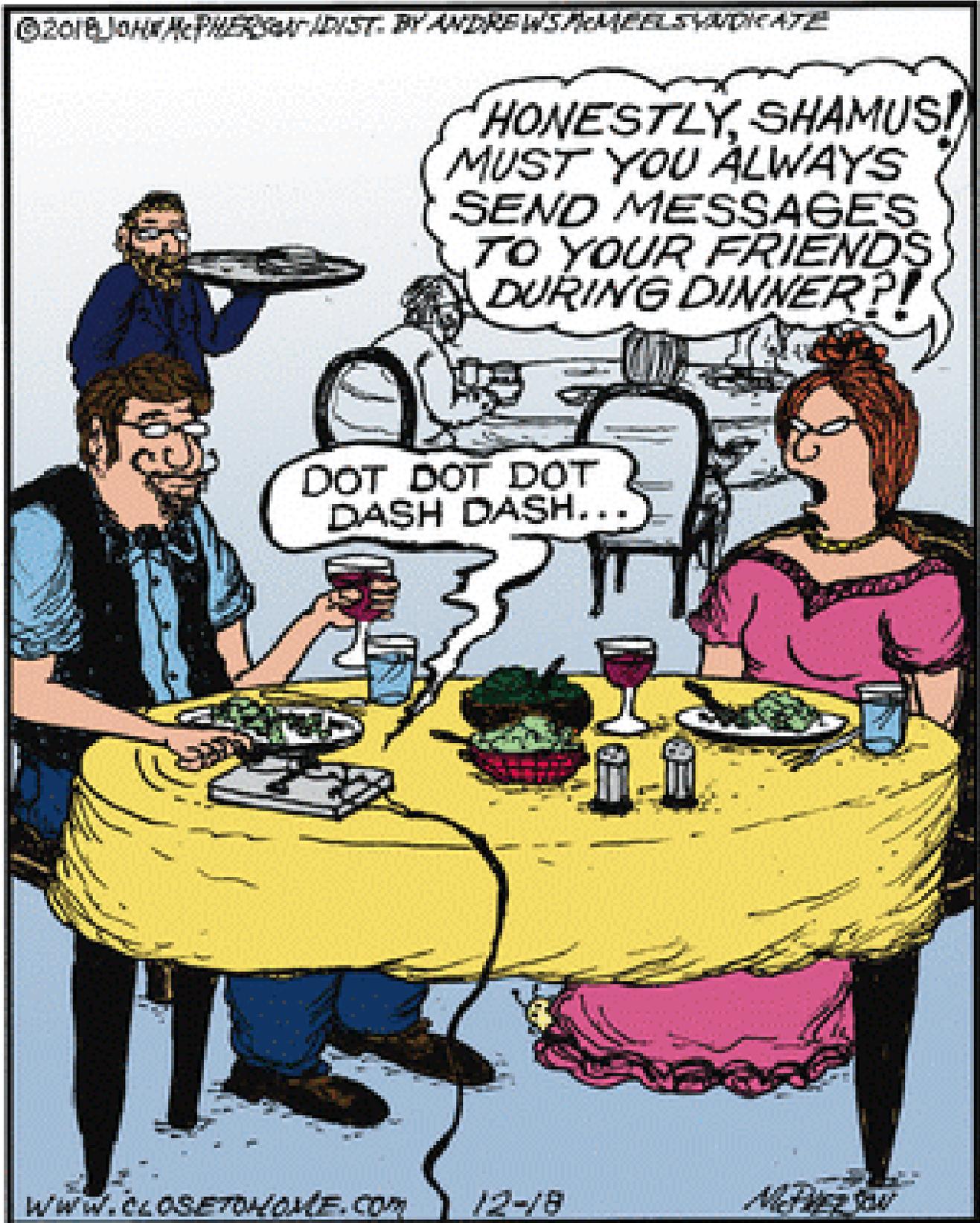


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\*Prorated dues for NEW Members/Associates Only

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August	\$ 18/5	November	\$ 12/2+ following year
September	\$ 16/4	December	\$ 10/1 + following year

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