

March 2018

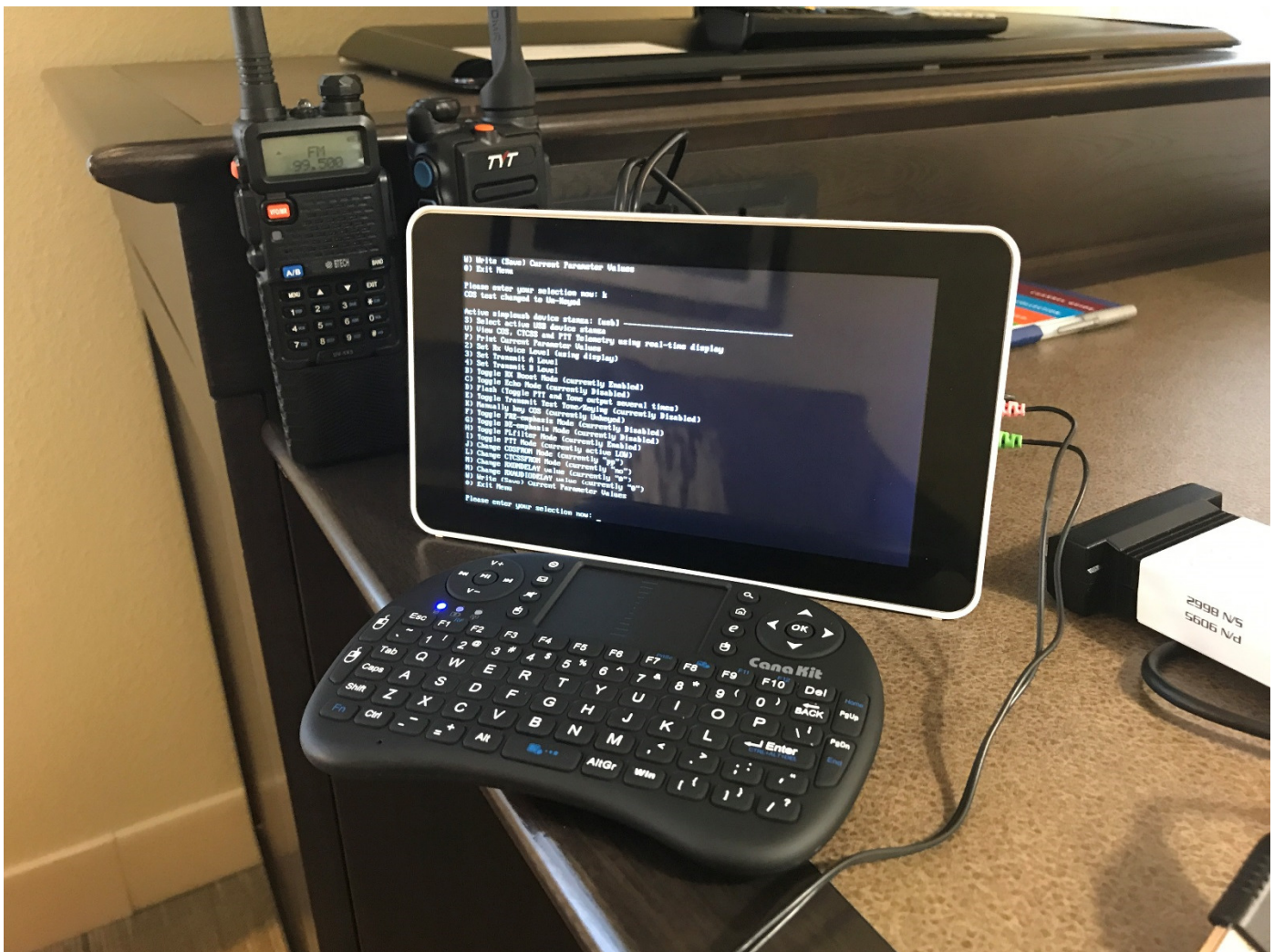


A BIG MONTH! Lots of things to tell about and LOTS OF pictures, so let's get started!

From my great friend and fellow EMF Engineer Shane Toven KØSDT, he leads off the March edition with this:

Item 1: Portable Allstar node using a 7" LCD touchscreen (and matching case) for the Raspberry Pi along with a small wireless keypad for control. This setup allows manual operation without a node radio using a standard USB audio interface and headset. The display and keypad are also handy for troubleshooting. The Pi, case, LCD, headset, and audio interface were all sourced locally from MicroCenter. I used the latest Allstar node image for the Raspberry Pi posted at hamvoip.org, which made it really easy to get started. Oddly, the display needed to be flipped 180 degrees. The appropriate Linux magic was simply adding the line `lcd_rotate=2` to `/boot/config.txt`.

I also purchased a USB Radio Interface (URI) from DMK Engineering (<http://www.dmkeng.com/Products.htm>) and plan to press one of my handhelds into service as a node radio. The next challenge will be finding a good way to power it from my truck in a mobile environment without introducing electrical noise. At some point in the future I will look at ways to permanently integrate a node into my truck.



Item 2: Super simple APRS tracker using a Raspberry Pi, GPS "hat", and Baofeng handheld. This project is a fun one and requires minimal work—no special TNC and radio cable or modifications required! The Baofeng is set with both VFOs tuned to 144.390 and VOX enabled. A simple 3.5mm audio cable is connected from the headphone jack on the Pi to the microphone connector on the Baofeng. Once the GPS is locked, the Pi begins playing properly formatted APRS beacon

packets from its headphone jack, which triggers VOX on the Baofeng for transmission! Is it perfect? No—but it works surprisingly well! I used the “Ultimate GPS Pi HAT” from Adafruit, but any GPS (USB or serial) which will output NMEA compatible data should work just fine. This makes for a very compact all-in-one solution (just add radio). Since this particular GPS uses the Pi’s onboard serial port (which is initially configured for terminal access) it required a few small tweaks to disable that feature, but I’ve found it to be rock solid. An onboard battery maintains the last known position and real-time clock to avoid the full 30 minute “cold start” acquisition. There is a connector for an external antenna, but I have found the internal “patch” antenna to be more than sufficient in most cases. That said, you may want to attach an external antenna or place the unit outdoors in a clear area to obtain the initial fix. A bright red LED on the board clearly indicates the status of position fix. As a bonus, breadboard space is provided for additional modifications and experimentation. While there isn’t a pre-built “image” for this setup (yet) most of my information was drawn from here:

<http://midnightcheese.com/2015/12/super-simple-aprs-position-beacon/>

Information on the Adafruit “Ultimate GPS Pi HAT” can be found here:

<https://learn.adafruit.com/adafruit-ultimate-gps-hat-for-raspberry-pi/>



Ultimate GPS Pi HAT

Lately Kenny K4KR and I have been talking a lot on the DMR Brandmeister link from the Chattanooga Tennessee area to the WØTX Brandmeister DMR repeater locally here in the Denver area. It is a great system when you are in good range of the repeater, but digitally glitches or is not there at all if you don’t have a good signal into it. The digital audio when the signal is strong though is really amazing.

Repeater Info	
Number	310804
City	Jefferson County
Country	US
Website	Click here
Sysops	K0HTX W6QAV N0HH W0GV
Hardware	Motorola XPR8400
Firmware	R02.40.12
Power (EIRP)	162 Watt
Status	Slot 1 & 2 linked
Master	BM3102

Frequency Details	
TX	446.7875 MHz
RX	441.7875 MHz
Shift	-5.000 MHz
CC	1

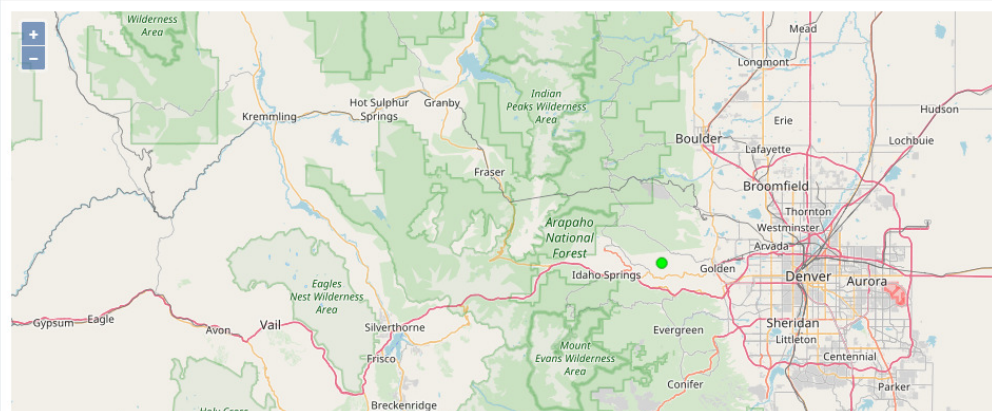
Slot details	
Timeslot 1	+ 3100
Timeslot 2	310804
Reflector	Disconnected

W0TX-Denver

Time	Master	My call	Destination	Options	RSSI
3 Minutes	3102	KE0ER [Carl V] (1108396)	USA - Nationwide (Bridge) (3100)	TS1 DMR	S7
25 Minutes	3102	KE0VH [Jack E] (1108048)	Disconnect (4000)	TS1 DMR	S8
26 Minutes	3102	KE0VH [Jack E] (1108048)	Colorado (3108)	TS2 DMR	S8
27 Minutes	3102	KE0LRB [Rick A] (1108049)	Colorado (3108)	TS1 DMR	S8
27 Minutes	3102	KE0VH [Jack E] (1108048)	Colorado (3108)	TS1 DMR	

Showing 1 to 5 of 5 entries

Location



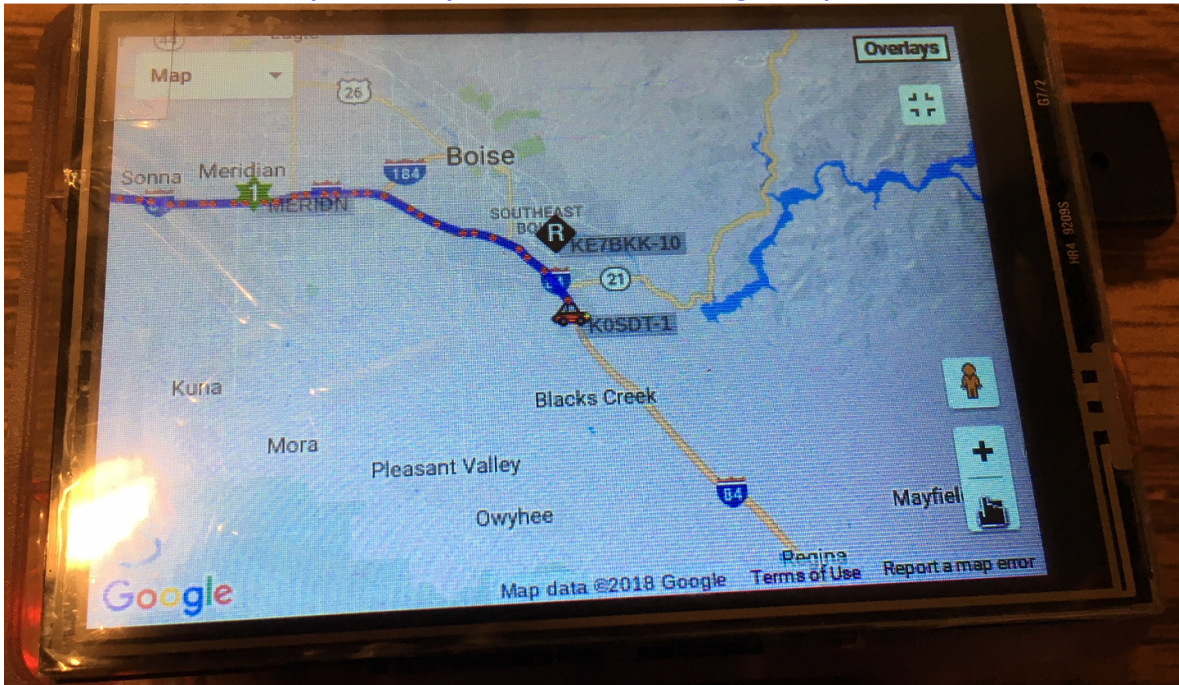
From Harold, W6IWI who lives just a little north of me, he and I both experience high levels of noise making 40 meters and 75/80 very hard if not impossible to hear stations on HF. I encourage you to check out his information and links on his website: <http://www.hallikainen.org/org/w6iwi/> And here is a direct link to the form from the ARRL on reporting noise and getting it mitigated. <https://fs26.formsite.com/mbdHCx/form2/index.html>?



Setting up my 3.5 inch screen on my Pi3

Another project for the month was setting up a display for the Raspberry Pi 3, which in the next evolution I will use on my portable AllStar Node instead of having to use a program called Terminus on my iPad to communicate and control the node. There is a great video on YouTube that I used to install the program on the Pi and get it running. I will work on the next version soon. In the instructions in the video I had to change one line from his instructions and you will see where this is if you go thru the setup. That line is: "sudo bash LCD35-show". You will see where this is and if you have any questions let me know.

<https://www.youtube.com/watch?v=gVK9MpPzK44>



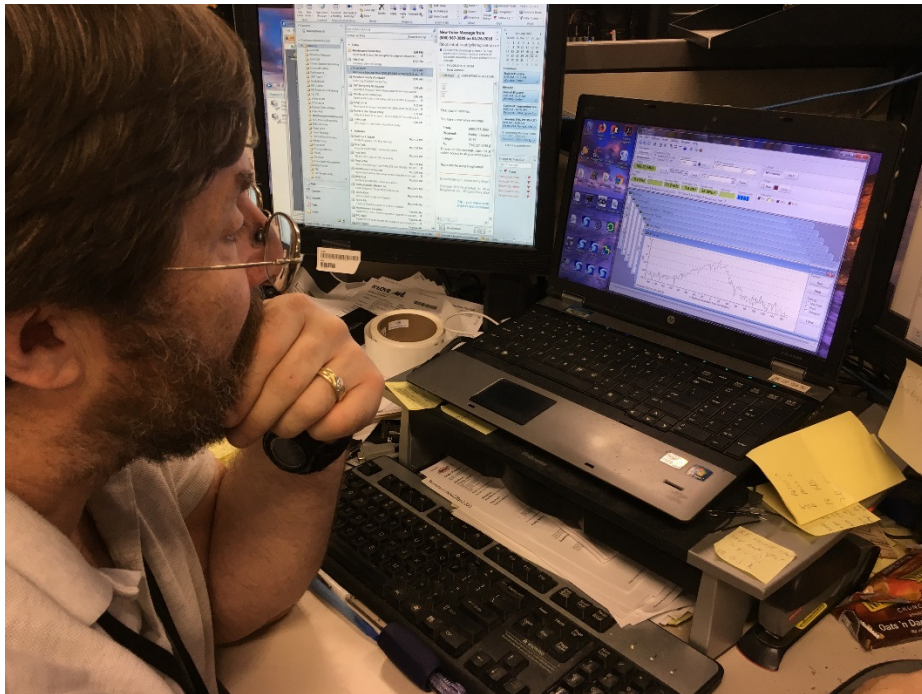
Here is the Pi 3 Display showing APRS.fi tracking KØSDT-1 (Shane) in Montana

Here is my latest find! Partially due again to Shane KØSDT



The Pira CZ P275 FM Modulation analyzer

This portable Modulation analyzer does a great many things including RDS monitoring and that is very handy to have in such a small package. It analyzes all aspects of the modulation of a FM radio signal. Read about its capabilities here at: <http://pira.cz/shop/> This company also manufactures RDS Encoders. There is free software such as our guy in Rocklin, Dave is looking at in the picture below that's really extends the versatility of these units. I actually own an older model and use it to look at our signals when I am at one of my sites. These are re-motable as well via serial USB, and can be set with alarms to let you know when an issue crops up if you leave one setup at a site. The price is really reasonable as well, and the only drawback though is you have to order them from Czechoslovakia and it takes about 3 months to get here, and so it would follow that any tech support would be an issue. I certainly hope that maybe they become more available to the US market thru local distribution.



My buddy David Leishman back in the EMF Shop in Rocklin I looking at the Pira CZ software interface



Cris Alexander W4WCA Flight Simulator setup

As I included in last month's article I have been "flying" a lot and learning how to navigate and use ILS to land aircraft in Flight Simulator X. With getting into flying drones and getting my part 107 certificate to commercially fly them I really want to learn all I can about piloting AND have fun. I even had the chance to go flying with Cris Alexander W5WCA in a Piper Cherokee Arrow III one day as he took us on a flight from Centennial airport in south Denver out to the south east to the little town of Limon's airport, did a touch and go, then flew back to Centennial. It was great to see Cris in action (a video will be coming soon) and fly with him. I have been flying from (in FSX) all over the country with a 737-800 as seen in my previous video's (see them on YouTube at KE0VHJackTV) landing so far in Kansas City, St. Louis, and Nashville as of this writing. Flight dynamics, weather, air traffic control, all are very realistic and you can download scenery that really looks great and like the area you are interested in.



Cris with the Piper Arrow III we flew in at Centennial Airport

Cris and I talk just about every weekday on the 449.450 repeater locally here in Denver and just about all we talk about anymore is flying.

Using FSX Software, watch what a Southwest pilot would do during pre-flight and pushback from the gate then a whole flight from San Diego to Phoenix. This is really interesting!

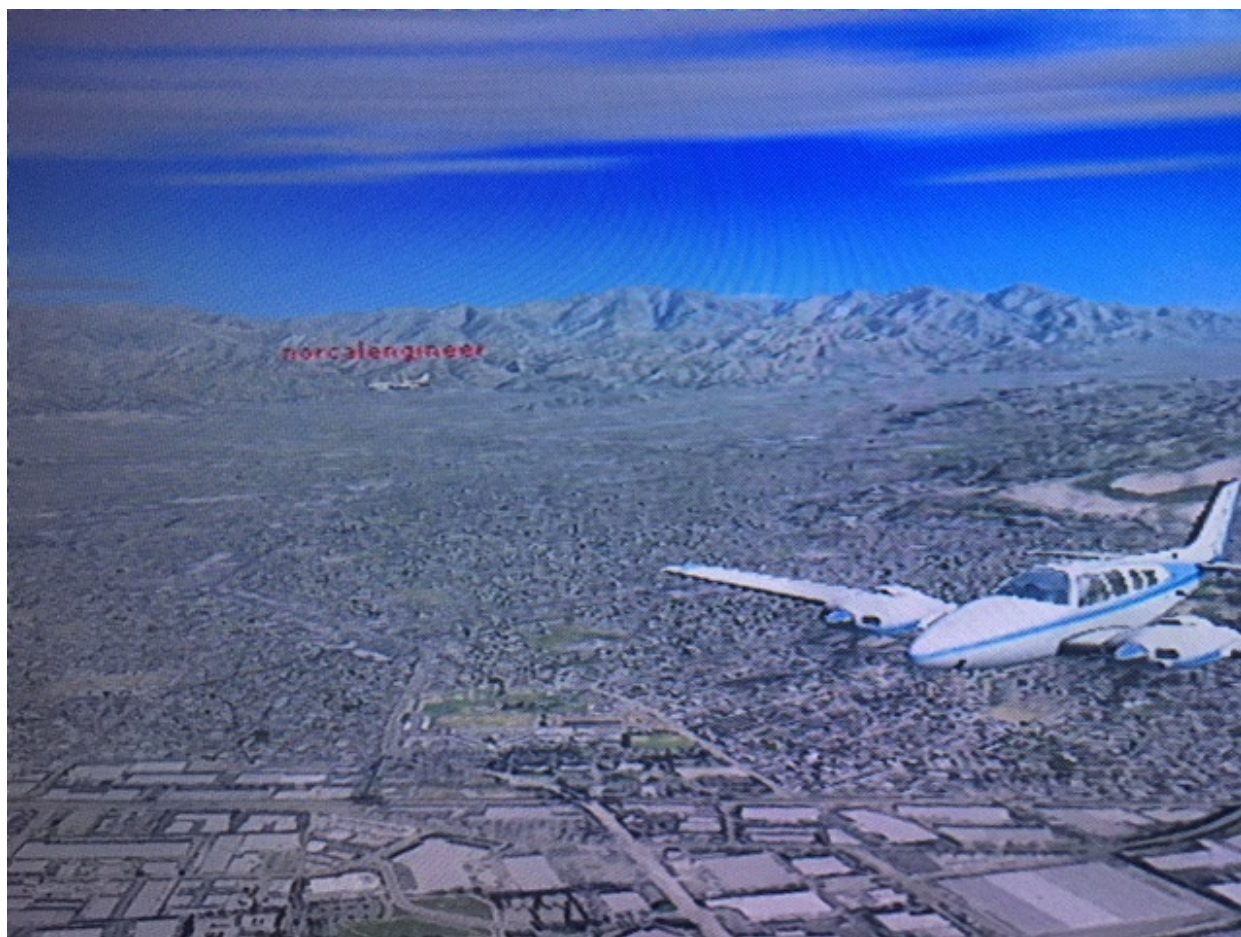
<https://www.youtube.com/watch?v=L8j09rUsQzk>

One of the cool things about the Microsoft Flight Simulators is the ability to get online and fly with other people, both those that fly and those that want to be air traffic controllers and the whole bit. So one night Jeremy N6JER, ("norcalengineer" Flight Sim screen name) and I joined up on the FSX servers and "flew" together over southern

California. In the picture below Jeremy is flying his Beech Baron over the LA area on the way to KSNA (John Wayne) airport & I am flying the aircraft of his right wing at 2 o'clock labeled "KE0VH" of course!



I am still learning how to take pictures in the Steam version of FSX, so the below are just with my iPhone camera pointed at the monitor.



I am flying the plane in the foreground in this shot, Jeremy at 4 o'clock off my right wing.



This one is out my right passenger window, seeing Jeremy's plane! OK, I am HOOKED on this.

As far as being a real pilot like Cris, this is as close as I will probably ever get, unless when flying sometime the pilot becomes incapacitated, and they yell "is there anyone who can fly the plane"? Well, even then I am not so sure, but at least I will understand it. LOL!!!!!!!!!!!!!! Hey I can regularly routinely land my FSX 737-800 so.....

Speaking of flying though, at least I AM a FCC Certified UAS Pilot! So I can call myself one anyway! Here are some pics from flying the Phantom 3 at one of our sites last month! It was a very windy day, so it was good practice as well as getting some pictures I needed. The tower was about 330 feet or so AGL, and it allowed me to really test my current skills and learn how the drone behaved. My handheld anemometer said that the wind was in the 20-25 MPH range, the drones top speed is in the 35 MPH range, so it was able to hold its own in the wind, but the tilt at which it was operating was pronounced but these DJI machines are really able to hold position well in the wind. They are satellite and GPS navigated so they are really very smart and stable camera platforms to be able to take the look at our towers and antenna's without having to risk a tower crew. Below is a drone "selfie"!





The view of the whole site looking NE from the Phantom at about 250 feet!



And at 350 feet, the top of the tower. Notice the drone arm upper right. The Phantom here was tilted into the wind holding position. It wasn't moving in this picture!



BTW, my buddy Lee NØVRD sent this picture to me of a lamp created out of tower side lamps. Great idea, wonder if wives would think it matches a room..... Well great idea anyway!

As a top 40 jock from way back, (glad I got that out of my system!) I LOVED using Cart machines. See this great article in RadioWorld about how the cart machine made the Top 40 format possible at:

<https://www.radioworld.com/tech-and-gear/be-cart-machines-the-first-and-the-last>

AND YES, something HAM RADIO! Have you tried using the WebSDR yet? This on web HF receiver can really help you to hear some stations that you might just have in the noise at home. Really awesome tech! Check it out and listen in maybe even to your own signal at: <http://websdr.org/>

Here are the links to my article archives

<http://www.ke0vh.com/hamshack/archives/TheKE0VHHamshack201701Jan.pdf>

<http://www.ke0vh.com/hamshack/archives/TheKE0VHHamshack201702Feb.pdf>

<http://www.ke0vh.com/hamshack/archives/TheKE0VHHamshack201703Mar.pdf>

<http://www.ke0vh.com/hamshack/archives/TheKE0VHHamshack201704April.pdf>

<http://www.ke0vh.com/hamshack/archives/TheKE0VHHamshack201705May.pdf>

<http://www.ke0vh.com/hamshack/archives/TheKE0VHHamshack201706June.pdf>

<http://www.ke0vh.com/hamshack/archives/TheKE0VHHamshack201707July.pdf>

<http://www.ke0vh.com/hamshack/archives/TheKE0VHHamshack201708Aug.pdf>

<http://www.ke0vh.com/hamshack/archives/TheKE0VHHamshack201709Sep.pdf>

<http://www.ke0vh.com/hamshack/archives/TheKE0VHHamshack201710Oct.pdf>

<http://www.ke0vh.com/hamshack/archives/TheKE0VHHamshack201711Nov.pdf>

<http://www.ke0vh.com/hamshack/archives/TheKE0VHHamshack201712Dec.pdf>

<http://www.ke0vh.com/hamshack/archives/TheKE0VHHamshack201801Jan.pdf>

<http://www.ke0vh.com/hamshack/archives/TheKE0VHHamshack201802Feb.pdf>

TWO YEARS AGO:

<http://www.smpte-sbe48.org/wp/2015/03/>

THREE YEARS AGO:

<http://www.smpte-sbe48.org/wp/2014/03/>

**Don't forget the SBE Chapter 73' Of the Air
AllStar (and Echolink) Hamnet, every MONDAY EVENING
At 7pm Mountain time (9pm Eastern) for radio discussions, both
Broadcast engineering and amateur radio.
Details on how to join us are at
<http://www.ke0vh.com/net/net.html>.**

**I hope
You will be able to join us and share your engineering and
Ham exploits!**



73' from "the Shack"& God Be With You!