~~G31-5-1~~ G31-3-1

modulation levels to less than 100%--we might even be able to do some DX'ing from our urban locations.

Further Performance Notes (NHP)

Tune-up procedure:

1) Tune radio to desired channel with tuner bypassed and tune C3 to minimum capacity (plates unmeshed)

2) Switch in tuner. If no signal noted, increase C3's capacity until some signal is heard. Tune C2 to peak; tune C1 to peak. Reduce C3's capacity if attenuation (for better signal handling in radio) is required; retune C1 for peak.

My homebrew toy radio has reasonable signal handling ability in the city using a loop, but a 50' random wire makes it useless without some sort of tuner. Don's tuner really makes a worthwhile addition to the radio in this case. Before sunset at this location, CKDA-1220 can make mincemeat of KFBK-1530 (2x1220 - 2x455 = 1530) using a random wire straight to the receiver. With the tuner, there's just the slightest birdie on KFBK. My own homebrew preselector (described in DX Monitor Jan 27, 1979) can eliminate the last remnants of the birdie, but in general, there's little to choose between the two circuits.

Another good examplw was Belize-834 which was inaudible one evening when using the random wire directly--all that could be heard was intermodulation distortion (IMD) from locals. With the tuner, the IMD was gone and Belize was heard at fair strength using the same wire. Even using a 1000' Beverage out in the sticks with this tuner made my radio handle signals a lot better.

Are there any drawbacks to the preselector? Other than adding a few more knobs to turn, there is some loss of signal on some parts of the band when using the tuner. In general, this shouldn't be a problem as most modern radios have plenty of sensitivity to spare on MW. If the loss worries you, try adding a "loading coil"--another loopstick will do--between the antenna and the input of the preselector. C3 will then peak a signal as do C1 and C2, though it will still interact with C1. Different adjustments of this loopstick slug may be needed when using different antennas, but in general there will now be no loss of signal through the tuner. Also, the loading coil/C3 combination will provide another stage of tuning between the antenna and receiver which will reduce overload problems further.

If constructing such a preselector looks too challenging to you, write SW Horizons, 6815 12th Ave., Edmonton, Alberta T6K 3J6 for a price on making one up for you.

* * * * *

The "Select-a-Tenna" booster antenna reviewed in these pages by Randy Tomer on Jan 2, 1982 is available from Intensitronics Corp., P.O. Box 562, Hales Corners, WI 53130. The model 541 is $24.95 postpaid, while the model 541M (with external antenna terminals) is $29.95. Write to Intensitronics for a brochure on the Select-a-Tenna if interested.

* * * * *

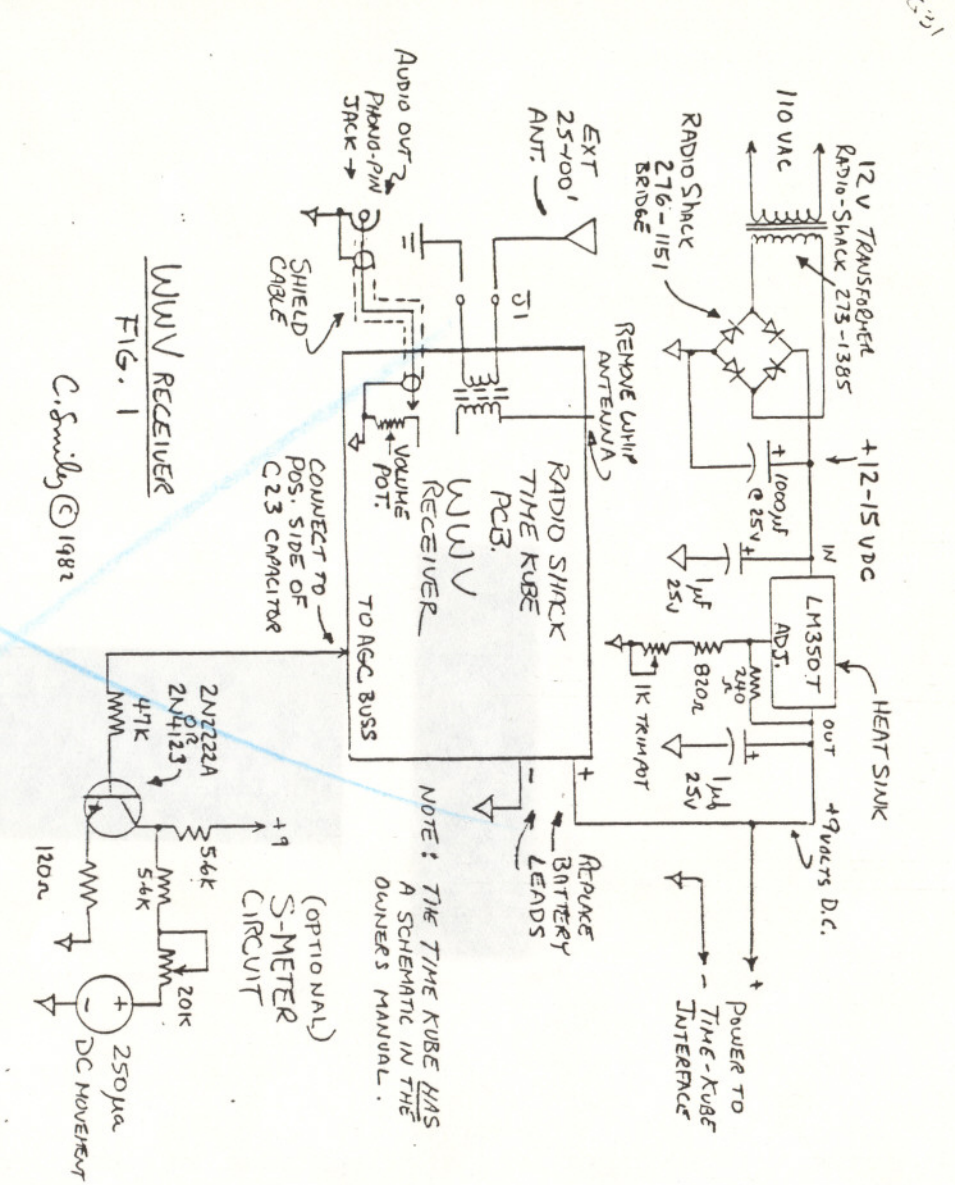
Time Documentation of DX — by Charles R. Smiley Jr.

Early morning DX is great, especially towards the sunrise period. The problem is that most of us would rather sleep than DX. If we could shift the best DX period at will to the time available, we could harvest more new stations. Western DXers benefit greatly by sunrise conditions, and sunrise time is our only real means of hearing eastern daytimers when their sign-on period edges into darkness.

To accomodate my desire for sleep and still DX the early morning period, I employed my reel-to-reel recorder and several special innovations. The recorder I used is an Ampex AX-300 stereo model, aging, but in good repair, and one that is blessed with many useful features. Stereo decks are a natural for using the second, and otherwise unused, audio channel to record WWV in parallel with the DX channel. A second receiver is need to accomplish this. My first scheme used a Radio Shack "Time Kube", a small solid state crystal controlled receiver tuned to either 5, 10, or 15 MHz. Its part number is 12-159 and its price is currently US$34.95 (see review in the Technical Column of March 13, 1982). I pulled the printed circuit board out, with the front bezel, speaker and push button assembly left intact. A square hole was cut in a 5¼" high rack panel plate for it.

Other assemblies were also installed on the panel, such as a 9 volt regulated power supply and digital clock module with large size LED numerals. The LED clock module is a National Semiconductor MA1026 model that is sold

~~G31-5-2~~



by Radio Shack and other hobby outlets, for between 15 and 25 dollars. The latest Radio Shack catalog does not list this assembly, but this may be an oversight; they also offer a matching small transformer for the clock, part number 276-1734, and a well detailed application guide, part number 277-1006. Jameco Electronics, 1355 Shoreway Blvd., Belmont, CA 94002 carries the MA1026 and transformer also. A rectangular hole needed to be cut to mount the clock as well. The clock has provision for driving a relay which may be used to turn on a remote controllable tape recorder at a specific "alarm" preset time, but this is rather complex to put into practice.

The WWV Receiver Interface Scheme

The Time Kube's value for under 35 dollars is great. Three small buttons select the WWV frequency and one larger one is used to turn the receiver off. It comes with a whip antenna, but I preferred to use an outside antenna

as it has external antenna terminals. I have a McKay Dymek DA-100 all band vertical amplified antenna, on a 20 foot high mast, that feeds the Time Kube and at times my main receiver. Connecting an audio RCA phono-pin style jack across the top (signal end) of the Time Kube's volume control with the shield referred to the common ground will produce a line-level audio signal for the tape input. See figure 1 on the previous page for the complete modified Time Kube. The 9 volt supply is needed because this module is left on for hours at a time.

The WWV interface has its shortcomings however. If you select one of WWV's three frequencies on the Time Kube, there is no guarantee that this frequency will remain the right choice for 3, much less 6 hours. Frequently during the night, 5 MHz loses all its audio here, making 2.5 MHz the desired WWV frequency. Unfortunately, the Time Kube doesn't have this channel at its disposal.

The Vox Clock Interface Scheme

The Vox Clock is a synthesized "talking clock" available from Radio Shack (#63-902) which eliminates the potential problems using the Time Kube. I mounted it on my panel with the other units, but it requires additional circuitry to interface it to the second audio tape channel. The push button on its front panel must be pushed to cause it to "speak". The Vox Clock does have an "announce" on/off mode switch that causes the unit to announce the time each hour without the push button contact closure, but this is not frequent enough for our needs. The schematic provided here (Fig. 2) shows how a NE-555 Timer IC and a Hewlett Packard 6N138 Opto-Isolator IC are used to connect the push button connections together at a regular rate (approximately once every 3 seconds). Since neither push button connection is referenced to either supply lead, it was necessary to have a common connection that floated as well, hence the opto-isolator. The LM7805 regulator IC supplies 5 volts to the two IC's, and through the 1N4001 diode, about 4.5 volts to the Vox Clock module (replacing the 3 AA cells required). A 600 ohm 1:1 ratio audio transformer was purchased from Radio Shack but there doesn't seem to be a listing for it in their catalog. This transformer converts the floating speaker leads such that the secondary refers to ground to produce a normal audio line level output. If the transformer is equipped with a center-tap lead, it should be ignored. (See figures 2 and 3 below for details)

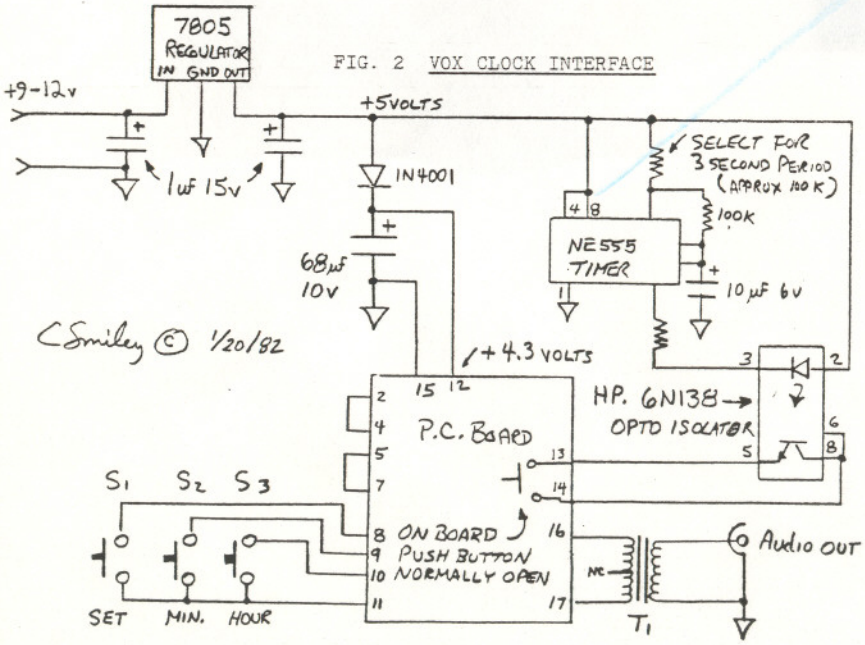


FIG. 2 VOX CLOCK INTERFACE

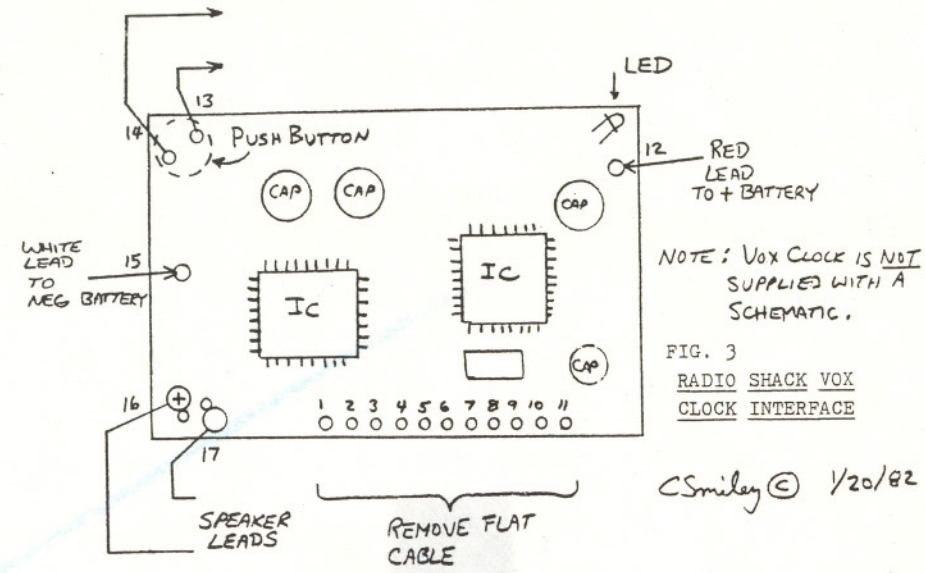


FIG. 3
RADIO SHACK VOX
CLOCK INTERFACE

Before building this circuit, the flat flex-cable attached to the Vox Clock circuit board should be removed with care using de-soldering braid (Radio Shack #64-2090) and an iron of 30 watts or less. Three momentary push buttons with normally open contacts, such as Radio Shack #275-1571 are used for panel mounted set controls.

One problem with the Vox Clock is that it produces radio frequency noise that can be picked up by a loop antenna within 4 or 5 feet. Installing the Vox Clock module in a die-cast metal box (about 3-5 dollars) and using bypassed feed-thrus for power and the audio output leads will cure the problem. The switches should be mounted such that only the toggle levers or push buttons are outside the box. If the module is rack panel mounted, the user only needs to place a metal cover box over the area that mounts the module (see Fig. 4 below). A SPST toggle switch in series with the LED inside of the Opto-Isolator can be included to disable the noise if the user suspects the clock. For extremely weak DX, it might be best to leave the switch off and use the WWV method alone.

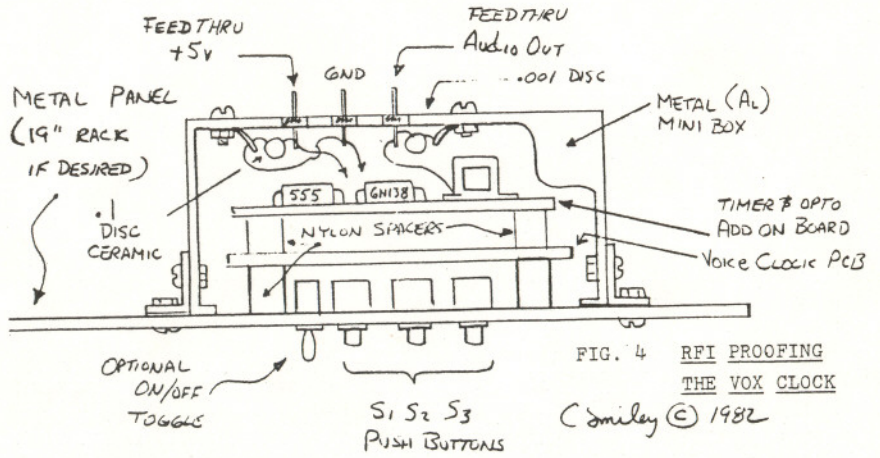


FIG. 4 RFI PROOFING
THE VOX CLOCK

~~Q31-5-5~~ Q31-3-3

Operational Considerations

The usual reel-to-reel recorder with 7½ inch reels running at 3 3/4 IPS can record for over 3 hours, if a 3600 foot reel of tape is used. 3M Scotch Dynarange tape, part number 214-7R-3600, is used here and the usual price per reel is $15 or more. I have used the same reel for over a year now, running almost 6 hours every night average and the tape is still in excellent condition. This is very thin tape however, and the tape drive must be in good repair and basically a gentle tape handler. Some reel-to-reels will run at 1 7/8 IPS, such as the old Ampex AX-300. This provides over 6 hours of record time in one direction. Some reel-to-reel recorders can "auto reverse" in the record mode and if recording at 3 3/4 IPS can also run for over 6 hours non-stop. The larger machines with the 10½" NAB style reels can achieve long record times at 3 3/4 IPS when loaded with the thin tape.

Now, if we have 3 to 6 hours of record time, we need a way of finding specific times on tape. Sign-on times are usually in 15 minute increments and nearly always right on the dot. This makes a one minute period each 15 minutes a likely place to check for call signs and sign-on routines. This way we can compress a full morning's DX into a much shorter period of time. The WWV scheme co-recorded on the tape will locate these points with obvious accuracy. I remember reading an article by a West German who drew up tape counter vs. elapsed time charts, since the tape counter is not a linear counter. This method, while less expensive, is cumbersome to me. It's a good idea, however, to make up such a chart to find areas on tape as a first order approximation.

Although I have both the Time Kube and Vox Clock mounted on my panel, you may consider using just one or the other. The WWV receiver costs less than the Vox Clock and can also bring the user conditions of propagation. This is for far less than buying a second general coverage receiver and its accuracy is unquestionable. My Vox Clock is as accurate as any clock in the house and doesn't require any antenna, thus it is never victimized by poor reception conditions.

Either method will document your DX while you're sleeping, or while you're actually listening. This way you can write very accurate reception reports by reviewing your DX catch over and over if necessary. My tape edit scheme runs the reel-to-reel outputs to a cassette recorder (Technics M21), also robbed from my stereo system. The M21 has the "cue and review" feature which makes repeating short phrases, such as ID's, very easy. If you decide to buy a cassette deck, this is one feature worth considering. With a flip of the finger you can "loop" on a faint ID until you either figure it out or give up on it. A switch to effectively connect both earphone channels to the DX track of the tape in one position, and split the earphones between the DX channel and the time track will be needed. Some reel-to-reel decks have this feature (Mono R, Mono L, Stereo RL) in addition to a headphone output for stereo headphones.

The DXer will find that planning a sleep period tape session adds to the strategy. A frequency is picked based on a hunch, tip, or a known DX test. The DXer points the antenna in a logical direction and starts the tape. The next day the tape is scanned and harvested for new ID's. Other uses involve blind recording of a frequency when a pesty NSPer leaves the a air on the rare Monday morning. I give this situation top priority and yet, can still start the work-week properly rested.

Lately, eighty percent of my DX is performed in this fashion. It forces me to plan things a little better but increases my yield. One more benefit, when I'm DXing from tape and the phone or doorbell rings, I press the pause button and miss nothing.

DXING DICK TRACY STYLE

(From Electronic Enginnering Times, ca. 7-82)

CHICAGO — If several of the new products displayed at the Consumer Electronics Show (CES) here are any portent of the future, wrist "watches" will soon do a lot more than just tell time. They'll also be entertainment centers that provide news, music or late-night talk shows, television soap operas, sports or specials or the action of electronic games. And if the wearer is in a foreign country where radio or television aren't much fun because the language is a mystery or wrist-worn games are boring there'll be "watcnes" to help with the translation needed to order a good meal.

Apparently spurred by the reception given Sanyo's prototype AM radio/wrist watch earlier this year at the winter CES, several manufacturers are striving to move electronic gadgetry out of the pocket or off the table and onto the wrist. Sanyo itself used last week's CES to show the first commercial version of its AM radio/wrist watch.

The watch radio has volume and station-selection controls and features the usual LCD display to show the date and time. A pair of headphones plug into the watch, and a pair of user-replaceable lithium cells, one for the timekeeper and one for the radio, provide the power. Playing time is 50 to 60 hours.

An AM-radio watch is apparently only the first in a line of products from Sanyo. The company also displayed, but without much fanfare, the prototype of an AM/FM version that may be on the market before the end of this year