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The SB-34

When the SBE 33 came out, I knew that it was the ideal transceiver for me. I was looking for a rig that would be convenient for use on a cabin cruiser. Boat mobile is a bit different than car mobile. The boat is not usually kept at home. Once you get on it you stay at least for the weekend. This means that you have to lug most transceivers out to the car with the speaker and two power supplies and then everything from the car to the boat. Two power supplies are usually necessary because commercial power is used dockside and batteries are used when underway. But a 250 watt inverter was already installed on my boat, so with the SB-33 all that had to be carried was the one little 18-pound package and the microphone, as the speaker and AC power supply are built in.

The SBE 33 is a fine transceiver and has some real clever design features. It was covered quite well by W1CUT¹ some time back. But as with any piece of ham gear, the user will wish for improvements. Several had been thought out and were considered for a winter project when SBE came along and announced the SB-34. Here were all the improvements you could ask for: slower tuning rate, incremental tuning, provisions for a calibrator, a dial corrector and best of all, a built-in 12 volt DC power supply, and all this at no increase in size or weight and no sacrifice in any of the plus features of the SBE 33. The new dial is marked in 5 kc division and the set covers 50 kc more of each band.

The dial corrector is a much needed improvement. It uses a varactor diode (voltage variable capacitor) in parallel with the VFO

coil and tuning capacitor. Varying the voltage on it with a conveniently located pot varies its capacitance enough to shift the frequency as much as 10 kc. The delta tuning is effective only in the receive position. The same varactor diode is used by changing the voltage a bit more for about 1 kc change in the receiver tuning. Properly biased diodes cut out the effect in the transmit position so that the transmitter is always on the same frequency as originally set. This is an ideal feature for round tables and when working other transceivers that are not as stable as they might be.

The most unique feature of the SB-34 is the method of switching from receive to transmit without the use of a relay. This is real tricky. Two transistors perform this function. The base of one is coupled through a resistor to the cathode of the driver tube. In the receive condition, because of the high negative bias on the grid of the driver tube, no current is drawn and therefore the base of the first transistor is at ground potential and it too is cut off so that its collector is at +12 volts. This voltage is applied to the receive control line. This same 12 volts is supplied to the second transistor which causes it to conduct to saturation so that its collector is at ground potential. This ground potential is applied to all the controls requiring ground potential.

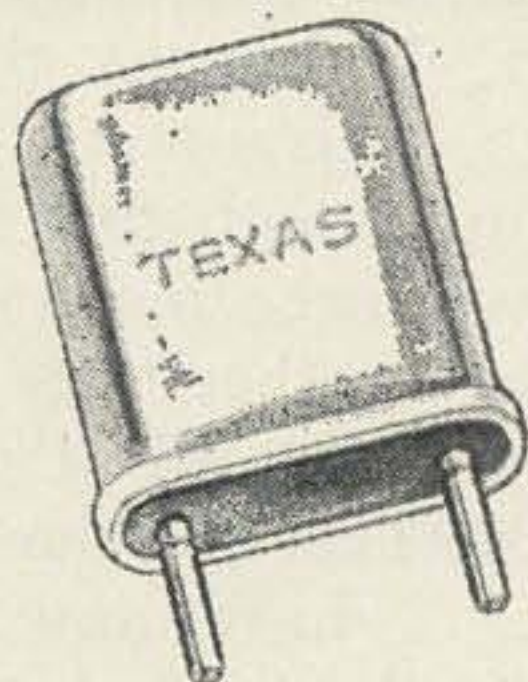
When the push-to-talk button is depressed, the high negative bias on the driver is grounded so that the tube begins to conduct and build up to about 6 volts at its cathode. This voltage will now cause the first transistor to conduct and thus reduce the 12 volts to zero to cut off the receiver. With zero volts on the second transistor, it will be cut off so that its collector is now at 12 volts for the transmit

1. The SBE 33, E. L. Campbell W1CUT, QST, April 1964, p. 52.

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function. A third transistor will energize an external relay to control a linear amplifier. Clever, huh?

The main feature of the power supply is that it will function on either 115 volt 60 cycle or 12 volt DC. Changing power cords does the switching. This feature makes the SBE 34 a truly universal transceiver that can easily be used mobile or fixed. And it will eliminate the fuss I had with Virginia, out in the middle of Lake Erie, as to who got to use the inverter on the boat—she to watch the noon time soap operas on TV or me to keep a 1200 sked. Incidentally, there was no TVI even on the small boat.

Just to see how really good the SBE 34 is, Ray Abain K8NBQ and I took it over to Rowe Industries and put it through its paces on the Panaramic Corp. Panalyzer, the Bird watt-meter, the distortion meter and all the other good things. Here is what we found using a single cycle tone:

Power Output—80 meters	62 watts
40 meters	77 watts
20 meters	78 watts
15 meters	57 watts

Carrier Suppression—56 db down from output signal

Unwanted Sideband Suppression—58 db

down from output signal

Distortion Products—28 db down from output signal

Spurious Responses—42 db down from output signal

Sensitivity—0.9 mv for 10 db signal plus noise ratio

Selectivity—2.1 kc at 6 db down 4.6 kc at 60 db down

The SBE 34 has a dual speed Jackson Brothers tuning drive that moves the dial at a high rate of speed in one direction, then goes into a fine tuning speed when backed up. The high speed is 90 kc per turn and the low speed is 20 kc per turn. The slow speed moves the dial 17 kc then goes back into high speed. For someone who likes to scan the bands as I do, I think the Jackson Brother continuous 6-to-1 dial drive would be better.

The usual accessory items are available, the most important of which is the 100 kc calibrator. This is a small two transistor unit that plugs in the back and only sticks out about $\frac{3}{4}$ of an inch. A switch on the front panel turns it on and off.

Dollar for dollar you will have to look a long way to find such a small package with so many features as the SBE 34 for under \$400.

... W8QUR