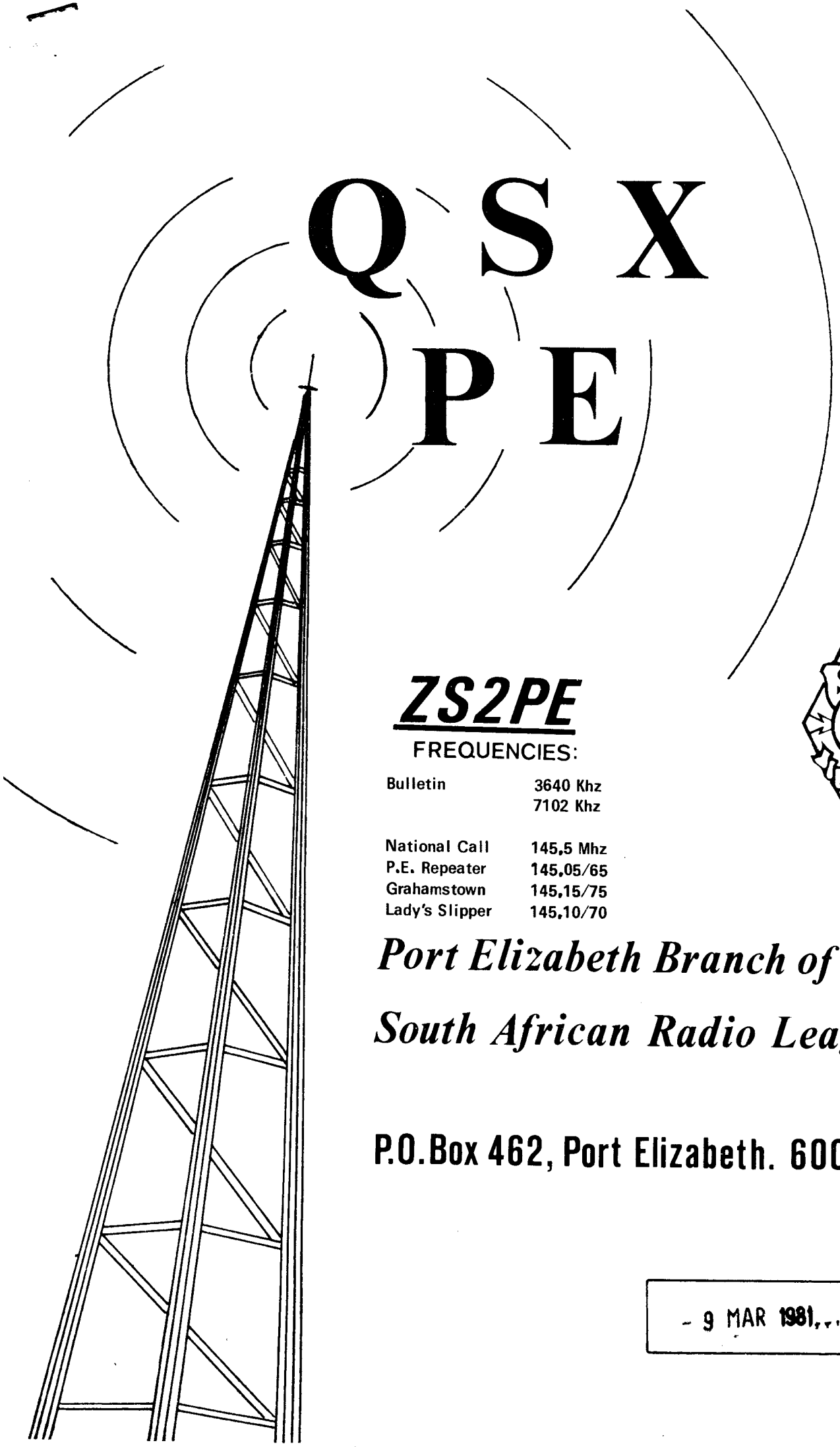
Q S X
P E



ZS2PE

FREQUENCIES:

Bulletin	3640 Khz
	7102 Khz
National Call	145,5 Mhz
P.E. Repeater	145,05/65
Grahamstown	145,15/75
Lady's Slipper	145,10/70

Port Elizabeth Branch of the South African Radio League

P.O.Box 462, Port Elizabeth. 6000.

PORT ELIZABETH BRANCH

SOCIAL GET-TOGETHER IN GRAHAMSTOWN - 15th MARCH, 1981.

Please don't forget this important occasion. The East London, Kaffraria and Algoa Branches have been invited to join in with us, as have all the hams in the Eastern Cape, whether they belong to the League or not. The venue will be at the QTH of Alan Armstrong ZR2DM. This is on the road to Port Alfred, 1 km. past the Southwell turnoff, on the right hand side of the road, from the Grahamstown side. There will be fun and games organised for the children, we will be setting up an HF station and all braai facilities will be organised by the Grahamstown Hams. There are still a few seats on the bus at R2 each, and there will be a lucky seat number, and the winner will get a Bonus Bond.

THE BUS WILL BE LEAVING FROM THE CHECKERS HYPERMARKET PARKING AREA AT 8.45A.M. ON SUNDAY 15th MARCH. DON'T BE LATE. PLEASE LET MARGE ZS2OB KNOW - PHONE 3O2334 - IF YOU INTERESTED IN JOINING US. IT IS SURE TO BE A GREAT DAY. PLEASE BRING YOUR OWN EATS AND DRINKS.

****

BECAUSE OF THE SOCIAL GET-TOGETHER, THERE WILL BE NO GENERAL MEETING FOR MARCH.

****

C.W. TAPES - The Branch was donated a set of c.w. tapes recorded by the A.R.R.L. with speeds from 5 to 13 w.p.m. If you would like a copy of these, please let Brian ZS2AB have two C 60 tapes and he will make copies for you. A donation of R1 to cover costs will be gratefully accepted. Phone 303498.

****

BULLETIN ROSTER:
22nd March ZS2PS Peter
29th March ZS2TJ Trevor
5th April ZS2RS Dick
12th April ZS2AB Brian
19th April ZS2OB Marge.

****

PLEASE REMEMBER THAT BECAUSE OF THE EASTER WEEK-END, THE APRIL MEETING WILL BE HELD ONE WEEK EARLY - 10TH APRIL. WE WILL BE HAVING A GUEST SPEAKER, MR. A. SCOTT, WHO WILL GIVE US A TALK ON THE TELEPHONE SYSTEM. PLEASE ATTEND THE MEETING.

****

CONGRATULATIONS: To Alan Armstrong who passed his c.w. exam and is eagerly awaiting his ZS call. Well done Alan and we hope to hear you soon on HF.

Dick ZS2RS has really been enjoying himself lately working the Dx from his Mobile rig and is pleased that the cards have started to come in.

They say one man's loss is another man's gain - well recently, Andy ZR2CW was down in Lainsburg and managed to buy an almost new aeroplane from a farmer who had been badly affected by the floods, and after a few more hours practice, Andy will be able to fly around to his various places of business and also visit his children at Stellenbosch University.

****

S T O P P R E S S.

At a meeting of Grahamstown Hams during the week, they decided that as their contribution to the social get-together, they would be providing tea and coffee for those who would like them. They are also providing braai grids, the wood and charcoal for the fires, and all they ask is that you bring along your own braai forks and cups and spoons.

THIS IS GOING TO BE A GREAT DAY - LET'S SEE YOU ALL THERE.

THE WADLEY LOOP.

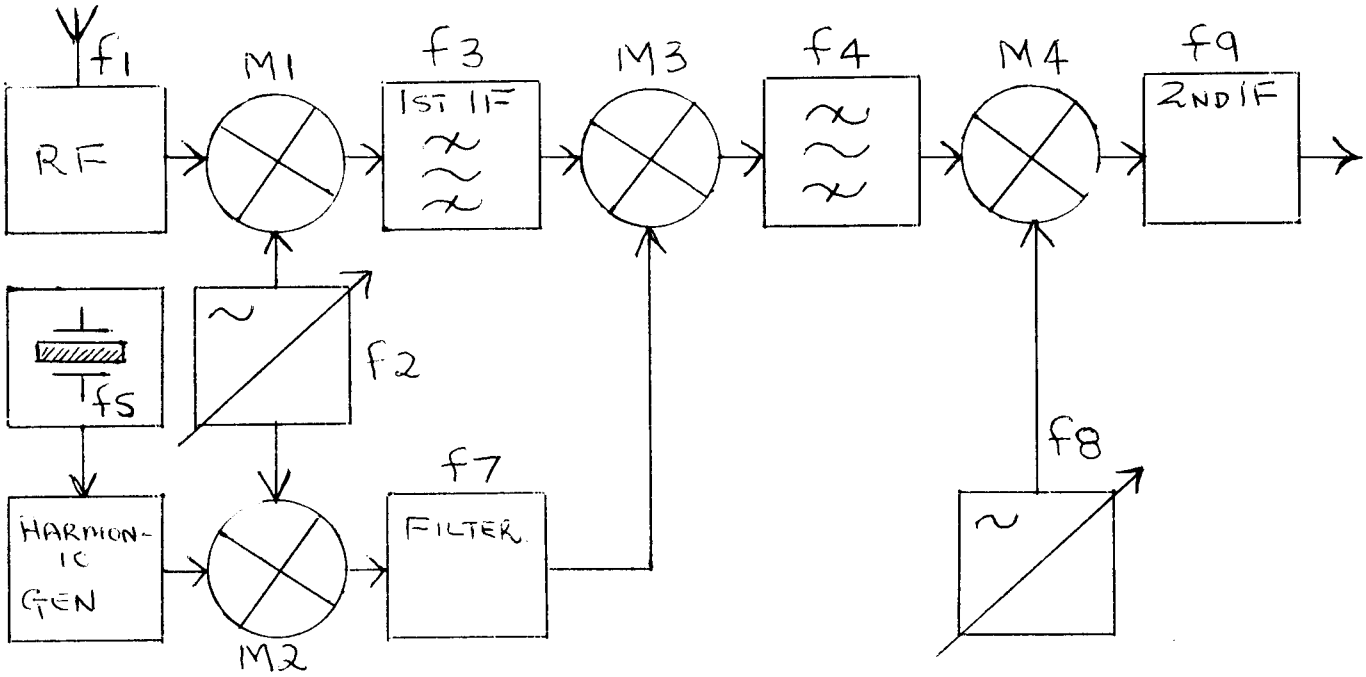
Most of our readers are probably acquainted with the small Barlow-Wadley receiver which has been on the market for a number of years. One of the receiver's outstanding features is its wide frequency coverage coupled with good frequency stability, to such an extent that SSB reception requiring extreme frequency stability becomes possible.

Before going into the technical details, a bit of historical review would be in order, as the principle of the Wadley Loop, which is used in the receiver, is a South African invention and had considerable impact on the HF communication technology in earlier days.

Before 1954, the generation of stable frequencies was done by means of quartz crystals, which were more or less custom-made for particular channels, and were strictly fixed frequency. If a choice of frequencies was desired, banks of crystals would have to be supplied. This technique led to expensive and/or inflexible systems, and new ways had to be found. Dr. Wadley, who was at the time working for the C.S.I.R., came up with a simple but revolutionary system which would provide full frequency coverage over the H.F. spectrum, while improving frequency stability very considerably.

The idea soon caught on and several prototype receivers were built. Overseas interest was stimulated and the then young English company called RACAL applied the technique in their now classic RA 17 receiver. Later, transistorised receivers were produced, culminating with the Barlow-Wadley. In the meantime, other technology has not stood still and eventually the Wadley Loop has had to bow down to the digital frequency synthesiser which is now in general use in professional communications equipment. In certain aspects, however, the Wadley Loop still has distinct advantages and is still being used where special requirements must be met.

As regards the working of the Wadley loop, this can easily be explained by means of the following block diagram:



Firstly the principle of drift cancellation:
Assuming frequencies to be arranged such that f2 - f1 = f3 being the frequency which can pass through the first IF filter, and also that f7, which is passed through the filter at the bottom of the diagram is equal to f2 - f4.
Now, if we allow f3 and f7 to be subtracted from each other in mixer M3, then:

f4 = f3 - f7.
but f3 = f2 - f1.
and f7 = f2 - f4
so that f4 = f2 - f1 - (f2-f4)
and f4 = f4 - f1.

Up Your Code Speed

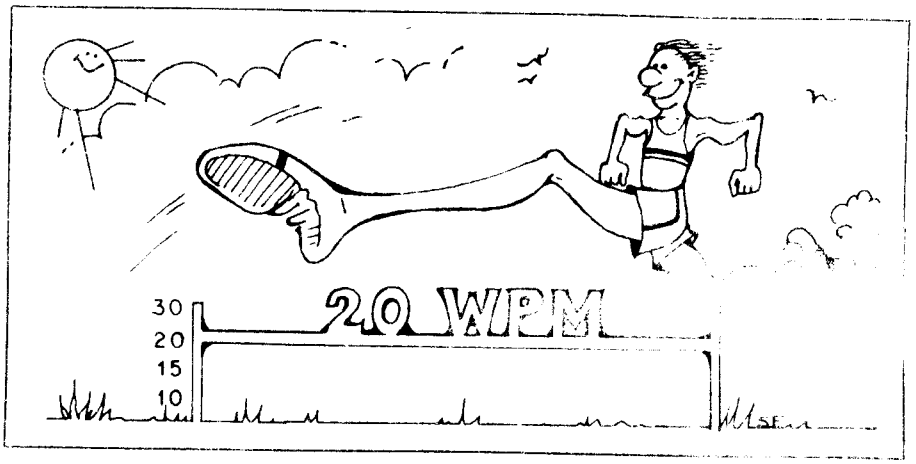
How to leap over 20 wpm with a — "Wuh, wuh . . . wee, wee . . . wes, wes . . . west, west!"

By Roland J. McMahan * K7CD

Hams who enjoy working cw do not write down every letter. They sound out the words in their heads as the letters arrive. The letter W is not a "double U" to them. It is "wuh, wuh." The word *west* would be sounded out this way: "wuh, wuh . . . wee, wee . . . wes, wes . . . west, west!"

These cw operators enter log data, sometimes make a note or two, and then sit back and enjoy a ragchew. You can do it, too. Receive phonetically. Cw is fun!

This unique teaching aid consists of a two-way word game between the instructor and a student. It can be carried out on the air with a licensed ham, or by using a code-practice oscillator rigged up with two keys.



How the Game Works

The instructor sends a word and the student, instead of writing down the word, sends it back immediately. The student does not attempt to remember the letters in the word, but instead "sounds out" the word as the letters build up. When a W is received, he does not think "double U" but "wuh, wuh." If the next letter is A, he thinks "way, way." If the last letter is S, he thinks "was, was." Now he has the word "WAS," so he sends it back immediately.

I start with two-letter words for students who are copying five words per minute or less, and with four-letter words for those copying over 10 words per minute. Longer words and greater speed go hand in hand in this game. When the student returns three words successfully in any series, longer words are sent, a little faster.

When five-letter words are returned, I start sending the names of states, starting with the simpler ones and building up to Connecticut or Illinois. When the longer names of states are returned, the student will have successfully leaped over his code barrier. Never again will he try to retain the letters in a word; just the sounds of those letters in the word.

Some amateurs can send much better than they can copy. This word game seems to coordinate the incoming and outgoing telegraphic code portions of their brains so that the two activities become equally easy. One student I was instructing could easily send 14 wpm, but could receive only five wpm, and that with very poor comprehension. As he returned the simple words, it became obvious that he was having trouble with certain letters. I used three-letter word groups as words until the F, L, M, N, C and Y problems were eliminated. His speed jumped to 12 almost immediately.

Tried and True

Although the word game may be new, the phonetic method of copying is not. A blind student told me that he was taught to copy code by sounding out the word. High-speed operators who appear to copy words are actually putting the sounds represented by the letters together as they come in. One student had a great deal of trouble at 16 wpm. After 30 minutes of the word game, he was copying more than 20 wpm! Now he is copying 25 and occasionally 30 wpm.

Here's another typical example of how the word game works. The student this time was WB7BXR's OM.

Friday morning, we worked at 10 wpm on the words, "the, tree, barn, fence, horse, house." We then went on to states and I gradually increased the speed to 16 wpm. At this point he quit — "in hysterics," WB7BXR told me. I asked her to explain to her OM that I have to press him to his limit all the time for the game to work. Reluctantly, he came back on and we picked up again at about 16 wpm.

Saturday, we were at it again. However, he had to start at 14 wpm as students tend to lose touch overnight. He was up to 20 wpm by the time we quit.

Monday, we worked for 30 minutes, and he got up to 24 wpm where he copied accurately many new states.

That's the way it works.

If you have a cw speed block, try the word game with a friend. Copy the code in your head, sounding out the words. It's fun and the results will amaze you. QST

*Rte 3, Box 155, Hayden Lake, ID 83835

The Wadley Loop - contd.

This now means that f4 is independent of f2, i.e. the first oscillator frequency, but differs from the incoming frequency f1 by an amount f6. f6 is derived from a crystal oscillator at a frequency of 1 MHz and is therefore accurate and stable.

In practice, care must be taken to choose the correct frequencies and band widths for the various filters and oscillators. At least one practical design has the following parameters:

RF range (f1) = 1 - 30 MHz
1st Oscillator range (f2) = 41,5 - 70, 5 MHz
1st IF range (f3) = 39,5 - 40,5 MHz
crystal frequency (f5) = 1 MHz
crystal harmonics (f6) = -------- MHz
output range of M3: (f4) = 2 - 3 MHz
M2 output (f7) = 37,5 MHz
range of 2nd oscillator(f8) = 2,5 - 3,5 MHz
2nd IF (f9) = 500 KHz

Assuming now, that we would like to receive a frequency of 10 000 MHz. For this we would adjust the 1st oscillator frequency (f2) to 50,5 MHz, yielding a 1st IF freq. of 50,5 - 10 = 40,5 MHz. This falls within the 1st IF bandwidth. f2 would also mix with the 13th harmonic and 1 MHz (13 MHz) to produce a difference of 50,5 - 13 = 37,5MHz.

f3 and f7 would mix to produce a 2nd IF frequency of 500 KHz.

To allow some drift of f2 both the filters passing f3 and f7 would have to be made wider by, say, 200 KHz. This would not affect the operation of the receiver.

Note that all harmonics (up to the 30th) of 1 MHz exist at the same time at the imput of M2, so that the filter passing f7 may not be wider than 0,5 MHz at the very maximum. If a wider filter were used more than one mixer product would bepassed through the filter, and RF frequencies 1 MHz away could, under certain circumstances arrive at the detector, causing spurious outputs.

In summing up, it turns out that adjustment of f2 allows us to choose a 1 MHz band from the HF spectrum, while f8 is used to choose a particular channel within the 1 MHz band. The good overall stability of the system is thus achieved by cancellation of the drift of the 1st oscillator (f2) and by arranging the 2nd oscillator to work at a low frequency, and with a relatively small frequency span.

(with thanks to Johan Czanik and WATTS - Pretoria Branch. Johan is not a radio amateur but has spent many years in the communications field and has met Dr. Wadley personally. He is at present working in the Systems Division at Kentron).

HAMADS

FOR SALE: A KP 202 Handheld Portable 2 metre rig, with carrying case, spare battery pack, battery charger. Crystals for National call and 4 repeaters. Contact Peter ZS2PS - phone 71362 for further details.

FOR SALE: Power transformer 625 - 0 - 625 200 MA tapped 550v and 475 V with 5V filament winding and 10 henry LF choke to match. R20. Contact Dudley, ZS2AW, 10 Bromwell Street. Grahamstown.

SMILE A WHILE:

Balanced modulator - mezzo-soprano on a tightrope.
Load resistor - teetotaller.
Trimpot - weight reduction plan.
Integrated circuit - nonracial athletic track
Square wave - conventional hairstyle
Discrete device - little white lie.
Automatic Gain control - wage and price regulations.

Mayday!

Newcomers to Amateur Radio often wonder why Morse code is still required for attaining a ham license. I can tell them why.

Disaster struck on what was supposed to be our "dream of a lifetime" fishing trip. Three of us took off in a Cessna 180 float plane bound for a small lake in Manitoba's north country, 260 miles away.

At first, luck was on our side. Within two hours, each of us had caught trout weighing about [illegible] pounds. Our rocky fishing point was [illegible], however, and we were having trouble keeping our lines untangled. To ease the congestion, Chuck fired up the Cessna and taxied to the other side of the lake to fish.

That's when our luck started to change. Dave's new rod cracked during a cast, his line broke, and half of his rod sailed into the water. Then came the bugs. An exotic mixture of black flies, mosquitoes and other insects began devouring a rare dish — us. We summoned Chuck back across the lake with the insect repellent, which was in the plane. Right when we thought things couldn't get any worse, they did — much worse.

As Chuck started the plane to taxi over to us, an unseen current gripped the aircraft and pushed it out into the middle of the lake. In an effort to break free of the current, Chuck applied more power. With a sickening crunch, the plane struck and stuck to rocks hidden beneath the foaming water. Eventually, Chuck managed to pry his plane loose and taxi to shore to check the damage. A hole gaped in the right float which was quickly filling with water. A crude patching job failed to close the hole, and the waterlogged plane would not take off. In one final, desperate attempt to lift the damaged plane out of the water, the left float was punctured by another rock. We were trapped! Our secluded fishermen's paradise had become a watery prison.

Chuck immediately began calling "Mayday," but the only response was silence. We built a signal fire and alternated calling "Mayday" at 30-minute intervals hoping to contact a commercial flight on the polar route. Still, our calls got no reply. The elt (emergency locator transmitter) was screaming its electrifying siren on 121.5 MHz, the same frequency as our vhf radio. I turned off the elt after each distress call to listen for replies.

Just as the light and our hopes were dimming, we got a response. A Pan American pilot answered and accurately copied our position as 59° 20′ north by 97° 40′ west. Later another pilot radioed that a rescue helicopter was on its way.

When the chopper pilot estimated that he was 40 miles south of our location, we refueled the signal fire so he could see it on his approach. Convinced that our rescue was near, we began packing our gear. We stowed away the adf (automatic direction-finding receiver), but left the vhf gear in the plane for any last-minute communications.

After more than an hour of billowing smoke and nerve-racking waiting, the helicopter had not shown up. I decided to use the vhf unit to see if anything was wrong. Before I could get to the rig, it began squawking. An airline pilot was asking if 57° 20′ north by 97° 40′ west was the correct location. I couldn't believe it! The search was taking place two degrees south of us; approximately 120 miles away.

I grabbed the microphone to send the correct coordinates. The pilot reported that he was receiving only a carrier, no voice. I tried again, but got the same result. Apparently, when I removed the adf from the plane I had broken a wire under the panel in the audio circuit. We were without communications. Or were we?

I put the microphone on my knee and hit the button with my finger in the familiar staccato of Morse code — SOS SOS [illegible]. The airline pilot said to someone else, "That guy down there sure knows his Morse code. He's telling us something, but none of us knows Morse code." My heart sank. What good was code if the guy at the other end couldn't copy it?

As I had done so many times on the ham bands, I began to send very slowly while the pilot looked up each character in his flight manual. Finally, he confirmed our correct position. The next morning, a Canadian Forces Hercules search and rescue plane zeroed in on us. A few hours later, a helicopter arrived and, thanks to Morse code, we were transported back to civilization. — *Jim Prentice, VE4JI, The Pas, MB* QST

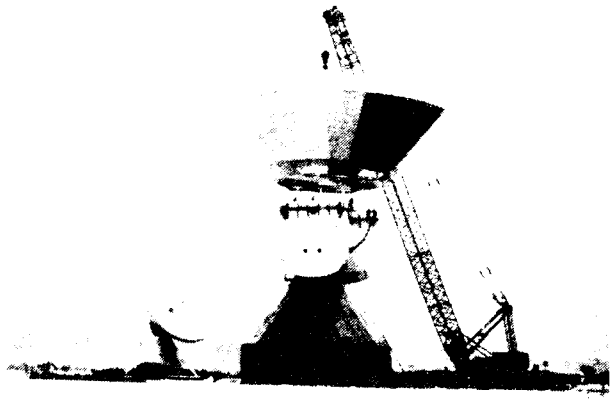
Germany to have world's largest satellite station

The Deutsche Bundespost's satellite earth station at Raisting will become the largest in the world when two new antenna systems go into operation early in 1981.

Siemens AG, who supplied Raisting 1 to 3, is again the prime contractor for the construction of both of the new installations, with MAN responsible for the steel structure.

The revolving steel structure weighs 300 t, including counterbalance weight. Both antenna systems operate at 4 GHz on the receive side and at 6 GHz on the transmit side.

The new feed system is already equipped for different transmit and receive polarisations, permitting re-use of the frequency range. After antenna 3 has also been fitted with the



The dish is lowered onto antenna 4.

The DBP's decision to extend the earth station was prompted by the heavy increase in international telecommunication traffic. Raisting to-day provides intercontinental communication links to over 40 countries via the Intelsat satellites above the Atlantic and Indian Oceans.

The antennas of Raisting 4 and 5 both have reflectors 32 m in diameter. The revolving steel structure weighs 300 t, including counterbalance weight. Both antenna systems operate at 4 GHz on the receive side and at 6 GHz on the transmit side.

The new feed system is already equipped for different transmit and receive polarisations, permitting re-use of the frequency range. After antenna 3 has also been fitted with the new feed system, antenna 2 will be converted to this system.

The Raisting earth station is thus ready to operate with the future Intelsat V satellites which are planned to go into intercontinental service early in 1981. Each of these satellites will have a capacity of 12 000 telephone channels and 2 TV channels.

TS-130S/V

"Small wonder"... processor, N/W switch, IF shift, DFC option

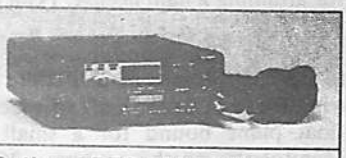
The compact, all solid-state HF SSB/CW mobile or fixed station TS-130 Series transceiver covers 3.5 to 29.7 MHz, including the three new bands.

TS-130 SERIES FEATURES:

- 80-10 meters, including the new 10, 18, and 24-MHz bands. Receives WWV.
- TS-130S runs 200 W PEP/160 W DC input on 80-15 meters and 160 W PEP/140 W DC on 12 and 10 meters. TS-130V runs 25 W PEP/20 W DC input on all bands.
- Built-in speech processor.
- Narrow/wide filter selection on both CW (500 Hz or 270 Hz) and SSB (1.8 kHz) with optional filters.
- Automatic selection of sideband mode (LSB on 40 meters and below, and USB on 30 meters and above). SSB REVERSE switch provided.
- Built-in digital display.
- Built-in RF attenuator.
- IF shift (passband tuning).
- Effective noise blanker.

OPTIONAL ACCESSORIES:

- PS-30 base-station power supply.
- YK-88C (500 Hz) and YK-88CN (270 Hz) CW filters.
- YK-88SN (1.8 kHz) narrow SSB filter.
- AT-130 compact antenna tuner (80-10 meters, including three new bands).
- SP-120 external speaker.
- VFO-120 remote VFO.
- MB-100 mobile mounting bracket.
- PS-20 base-station power supply for TS-130V.

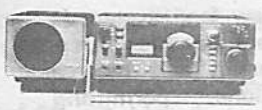


Optional DFC-230 Digital Frequency Controller
Frequency control in 20-Hz steps with UP/DOWN microphone (supplied with DFC-230). Four memories and digital display. (Also operates with TS-120 and TS-830S.)

PS-30 SP-120 TS-130S VFO-120

FOR BEST PRICE – FAST DELIVERY

KENWOOD
...pacesetter in amateur radio



Kenwood R-1000
The R-1000 is a highly advanced communications receiver. Up-conversion, PLL circuitry and other new technology provide optimum sensitivity, selectivity, and stability from 200 kHz to 30 MHz. Featuring easy-to-operate single-knob tuning and digital frequency display, it's perfect for listening to shortwave, medium-wave, and long-wave bands. Even SSB signals are received perfectly. Included is a quartz digital clock and timer.

R-1000 FEATURES:

- Continuous frequency coverage from 200 kHz to 30 MHz.
- 30 bands, each 1 MHz wide.
- Five-digit frequency display and illuminated analog dial.
- Quartz digital clock and ON/OFF timer.
- Multi-modes . . . AM (wide and narrow), SSB (USB and LSB), and CW.
- Three IF filters . . . 2.7 kHz for SSB and CW, 6.0 kHz for AM narrow, and 12 kHz for AM wide.
- Effective noise blanker, built-in speaker, three antenna terminals, rf step attenuator, tone control, recording terminal.
- Remote terminal, for access to timer relay ON/OFF circuit and muting circuit.
- SSB sensitivity of 0.5 μV from 2 to 30 MHz.
- More than 60 dB IF image ratio.
- More than 70 dB IF rejection.

KENWOOD

TR-2400

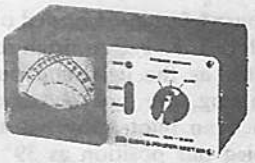
Call for SPECIAL PRICES

KENWOOD TR-2400 1.5w 2m hand-held transceiver. Keyboard frequency entry with LCD readout

CN-720 and CN-620
Frequency Range: 1.8-150 MHz
SWR Detection Sensitivity: 5W min.
Power: 3 Ranges (Forward, 20/200/100W) (Reflected, 4/40/200W)

Save on Coaxial Cable

RG 213 50 ohm Co-ax 89c
OR
100 metres for R79 gst exc



CN-620

SUMMIT DISTRIBUTORS (Pty.) Ltd.

25/27 Reed Street
PORT ELIZABETH
P.O. Box 500
6000

Telephones:
541461/2
Telegraphic Address:
"SUMMIT"