

# Q S X P E

*Port Elizabeth Branch of the  
South African Radio League*

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



P.E. Repeater	145.05/65
Grahamstown	145.15/75
Lady's Slipper	145.10/70
Cockscomb	145.00/60
Rtty Mailbox	145.35

## ZS2PE

**Sunday bulletin: 08h40**

**HF - 40M - 7098 KHz (1sb)**

**80M - 3640 KHz (1sb)**

**VHF - 145.700 MHz (fm)**

JUNE 86

We like being your branch!

# Port Elizabeth Branch

## >NOTICE OF MONTHLY MEETING<

MEMBERS ARE REMENDED THAT THE MONTHLY GENERAL MEETING OF THE PORT ELIZABETH BRANCH WILL TAKE PLACE AT ST. MARTIN'S CHURCH, GREAT WEST WAY, KABEGA ON FRIDAY 20TH JUNE, 1986 AT 8.15p.m.

THE FIRST OF A SERIES OF TALKS ON THE USE OF TEST EQUIPMENT WILL BE GIVEN. LIONEL ZS2DD WILL SPEAK ON THE USES OF A GRID DIP OSCILLATOR.

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### COMMITTEE -

CHAIRMAN:	Brian ZS2AB 303498	VICE CHAIRMAN:	Lionel ZS2DD 321770
SECRETARY:	Marge ZS2OB 303498	TREASURER:	Dick ZS2RS 322111
AWARDS:	Bill ZS2-157 512580		Trevor ZS2AE 321746
QX-PE:	ZS2OB and ZS2AB	LIBRARIAN:	Colin ZS2AO.

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### BULLETIN ROSTER -



22nd June	Dick ZS2RS	From the middle up
29th June	Trevor ZS2AE	From the top down
6th July	Bill ZS2-157	From the bottom up
13th July	Brian ZS2AB	From the middle down
20th July	Lionel ZS2DD	From the middle up

0-0

## THIS and THAT

**WELCOME** A hearty welcome to Sam Abrahams ZS2SI who has joined the Branch, and we hope your association with us is a long and happy one, Sam. Hope to see you at our meetings sometimes.

**CONGRATS** Special congratulations to Brian Gross ZS2BG and his XYL on their recent marriage. May you have a long and happy life together.

### COCKSCOMB REPEATER -

On Saturday 7th June, an intrepid band of P.E. amateurs went up the Tierhook mountain in the Cockscumb range to repair the repeater originally installed several months ago. Those involved were Trevor ZS2AE, Wolf ZS2WG, Owen ZS2HZ, Alan ZR2BL, Etienne ZR2L and Andrew ZS2G and they braved the biting cold and wind and misty conditions. After a steep climb they took down the mast, repaired the antenna, replaced the repaired repeater, re-installed the solar panels and re-erected the mast in almost exactly two hours. The performance of the repeater with the new antenna is much better and Dick ZS2A from Bedford, a distance of 150 Great Circle kilometres and Frank ZS2WU/mm from 80 nautical miles south of Port Elizabeth, put in good signals. Several stations using hand-held rigs with rubber-ducky antennas from Port Elizabeth made good use of the repeater also. Many thanks are extended to all the amateurs concerned for their splendid co-operation and to Jimmy Catt of Sigma for the use of the four-wheel drive vehicle.

### DATE TO REMEMBER -

**HOBBIES FAIR:** 30th June to 5th July at the Showgrounds. Helpers will be needed to set up the stall and operators, especially during the day are requested. Please let us have your names and times available so we can make up a roster.

We are still looking for slides that are radio-orientated for use on a continuous slide show at the Fair. They will be returned.

MINUTES OF THE GENERAL MEETING OF THE PORT ELIZABETH BRANCH OF THE SOUTH AFRICAN RADIO LEAGUE HELD AT ST. MARTINS CHURCH HALL, KABEGA PARK, PORT ELIZABETH ON FRIDAY 16th MAY, 1986.

PRESENT: 24 members.

APOLOGIES: ZS20B, DT, DK, JS, RM, FM, GW, and ZR2L.

The Chairman welcomed all to the meeting and extended a special welcome to Tony ZS2TD, Andre ZS2AL, John ZR2AAA, Andrew ZS2G and Robbie ZS2RB.

MINUTES: The Minutes of the general meeting held 25th April, 1986, having been published and circulated in QSX-PE were taken as read, proposed by Colin ZS2AO and seconded by Viv ZS2VM.

ARTSING: It was announced that the Hobbies Fair this year was to be held at the Showgrounds and it would be possible for us to erect HF antennas as well.

FINANCE: There was nothing to report apart from the fact that we had letterheads printed.

GENERAL: (a)Robbie ZS2RB said he appreciated the Construction Hints in QSX which were submitted by Viv.

(b)The subs renewal notice was being posted with Radio ZS and this must be returned to the Branch with the subs as they were required in HQ for the update of the Callbook and mailing list. If anyone wanted any changes made, such as the name they were known by on the air, or address changes, please fill these in before returning the form. Subs to be sent to the Branch and not to HQ. Cheques and postal orders can be crossed, but do not register or certify the envelopes as this entailed too much back and forth at the Post Office for the person who cleared the box.

(c)A call had been received from HQ about the use of a special call ZS2J for use by branch or club stations from 18th May to 14th June to celebrate the 25th anniversary of the Republic.

(d)A suggestion had been made that the Branch might issue a certificate for 25 contacts with ZS2J stations.

(e)The idea of a new cover for QSX-PE was raised. Members were asked if they had any ideas which they could submit to the Committee.

(f)Advertisements were required for the back cover of QSX-PE, as the present advertisements expired at the end of June. Was there anyone who could help?

(g)Bill Hodges was able to get plastic name tags made with the call sign and the cost of these was R5. They could be worn for Hobbies Fairs, JOTA, etc. Please talk to Bill.

(h)If members wanted shirts silkscreened with the League Badge, please contact Dick ZS2RS. The cost was R5, but provide your own shirt.

(i)The P.M.G. exam was held on 15th May and Noel Staples from the Branch had written the exam.

(j)As stated, the Hobbies Fair was being held at the Showgrounds and as the Branch was the 4th applicant, we were able to choose our site early and the Committee would endeavour to get us a position favourable for antennas and public viewing. The call of ZS2HFE had been applied for. Helpers would be needed for the setting up of the stand and for operating during the Fair itself. Jeff ZS1VS would be coming up from Cape Town during that time and would be helping out.

(k)Pete ZS2PJ now had the call of GØETR.

(l)A regular net controller would be on duty on VHF on Sunday mornings after bulletin, most probably on Ladies Slipper Repeater. The operator would be announced shortly.

(m) Several suggestions were made by Viv ZS2VM. If possible to have a series of talks at meetings on the use of test gear. Brian said that these will be arranged. If construction articles were printed in QSX, these could be handled as Branch projects, e.g. GDOs etc. and the kits of parts provided. Members should let the Committee know whether they would be interested.

(n) Brian said he had a garage full of used spare parts all in mint condition. These had been made available by Andre ZS2BK. After sorting in categories, they would be offered for sale, with preference being given to local members. It was hoped to be able to advertise nationwide in Radio ZS, with perhaps a full page advert, this could net substantial funds for the Branch. Many thanks were extended to Andre for his donation.

(o) Thanks were extended to Lionel ZS2DD and Doris for the cats at the general and Committee meetings this month.

There being no further business, the meeting was closed and tea was taken.

sgd: B.A. Weller ZS2AB  
Chairman

sgd: T.N. Scarr ZS2AE  
Acting Secretary.

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**DON'T QUIT!**

When things go wrong, as they sometimes will,  
When the road you're trudging seems all uphill,  
When the funds are low and the debts are high,  
And you want to smile, but you have to sigh,  
When care is pressing you down a bit,  
Rest if you must, but don't quit.

Life is queer with its twists and turns,  
As every one of us sometimes learns,  
And many a fellow turns about  
When he might have won had he stuck it out.  
Don't give up though the pace seems slow,  
You may succeed with another blow.

Often the goal is nearer than  
It seems to a faint and faltering man;  
Often the struggler has given up  
When he might have captured the victor's cup;  
And he learned too late when the night came down,  
How close he was to the golden crown.

Success is failure turned inside out,  
The silver tint of the clouds of doubt,  
And you never can tell how close you are  
It may be near when it seems afar;  
So stick to the fight when you're hardest hit,  
It's when things seem worst that you mustn't quit.



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=====  
CQ DX --- CQ DX --- CQ DX --- CQ DX  
=====

The following information has been passed onto us by Percy ZS2RM, for which many thanks.

LIECHTENSTEIN: DA1WA/HBW is expected to be active from June 2, 7000kHz at 0100Z. QSL via Hugo Jacobloevich, AM Weinberg 10, D6200, Weisbaden, Auringen, West Germany.

QATAR: Look for A71BK from 2100 UTC at 1940 kHz.

SAO TOME AND PRINCIPE: 592LB is occasionally active on 14185 kHz from about 2000 to 2300Z.

FRANZ JOSEF LAND: UV100 is active from around 2300Z on 14201 kHz.

KERMADEC: Chris ZL80Y has been active on 14 mhz 3SB. He will be leaving the island this summer. QSL via ZL80Y.

ANNONON: Six operators from Gabon are planning to operate from Annonon from June 15 to July 5. They will be operating all bands and modes. This is 300 Pagala Island.

ARGENTINA: In commemoration of the IARU Region 2 conference to be held in Buenos Aires from October 20 to 25, twelve local clubs in Argentina will be signing AZ1ARU/1 through AZ1ARU/12 until October 31. QSL's for AZ1ARU/5 go via LU6FAZ. QSL information for the others is not available yet.

SOUTH GEORGIA: VP8WTW and another operator reportedly have permission to operate from South Georgia. They are awaiting transportation but inclement weather may prevent the operation.

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JAPANESE AMATEUR SATELLITE.  
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The launch of JAS1 is now scheduled for 2000 UTC on July 31. Further details will be given when available.

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ROUND THE WORLD YACHT RACE.  
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The following letter was received by Percy ZS2RM. If anyone would be interested in helping out with communications, please let us know so we can pass on the information.

-----  
Starting in August 1986, the Capital BOG Around the World sailing race will start from Newport, Rhode Island with the initial port of call in Cape Town, South Africa. Radio control will be supervised by K1WFW which is the Raytheon Corporation Radio Club. I have been asked to help them since I have been active in DX in Rhode Island.

I wonder if you would be willing to work with us or suggest other South African amateurs with 20 meter 3SB capability who might be interested in daily schedules in the fall of 1986. This would particularly be true on the initial route to Cape Town and from Cape Town to Sydney Australia, the second leg of the race. I would appreciate hearing from you in the near future. If you can identify such amateurs for me, we would be willing to send them as soon as possible the necessary frequency information and coordinated time schedules as further plans are developed.

sgd: C.J. Ashworth, W1R1G, 235 Plain Street, Suite 202, Bayside Medical Building, Providence, Rhode Island, 02909. United States of America.

=====  
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=====

# Test Equipment

## How High Will It Go?

### A TRANSISTOR POLARITY, GAIN & FREQUENCY CHECKER

Basically this new tester will do the following:

- 1) Test itself for run-down batteries.
- 2) Determine whether the transistor is an npn or pnp type.
- 3) See how high in frequency the unknown transistor can go and still maintain a reasonable current gain.

The complete circuit is shown in Fig. 1, but for simplicity's sake Fig. 2 shows each of the three above functions separately. The circuit in Fig. 2A shows the battery-test feature, which merely taps a no. 47, 6-volt lamp across the battery. Since this lamp draws 150 mA from a 6-volt source (the usual transistor draws far less), you can assume that if the batteries light the lamp to full brilliance, they are live enough to handle the average small transistor. Fig. 2B shows the circuit for transistor-type testing. Its operation is based on the fact that the emitter-base

junction (or for that matter, the base-collector junction) of a transistor is equivalent to a crystal diode, and hence will conduct current in one direction only. Which direction the current flows depends on the transistor type. In Fig. 2B, the two Type-Test sockets are connected in parallel with each other, and in series with the meter and two current-limiting resistors. If a pnp transistor is placed in the npn socket its emitter-base diode will be in the nonconducting direction and the meter should read zero. Placed in the pnp socket, however, the transistor's diode will be in the conducting direction, and the meter should read a current. Similarly, an npn transistor would show current when placed in the npn socket, and would show none in the pnp socket. If you get a transistor that shows current in both sockets, you have a shorted (or at least a leaky) transistor. Better throw it out!

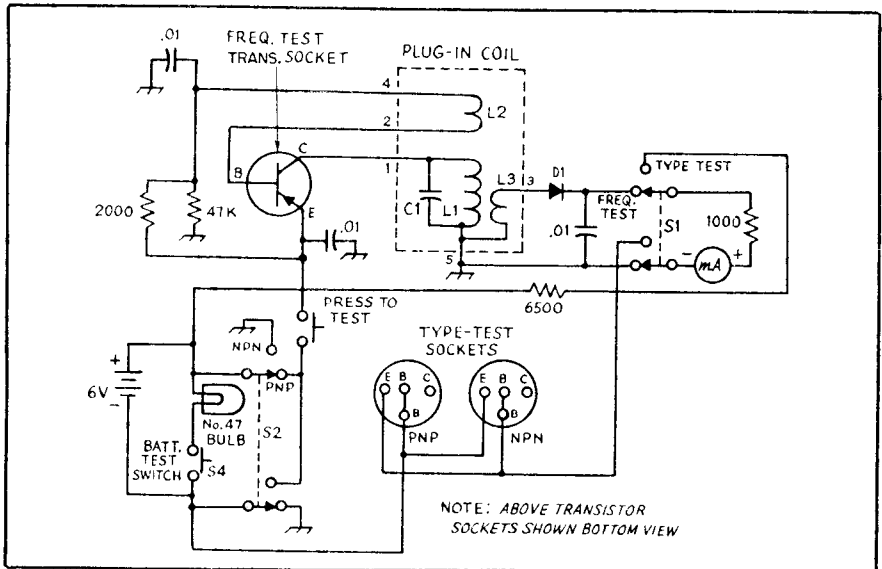


Fig. 1 — Schematic diagram of the transistor tester. Capacitors are disc ceramic; resistors are 1/2-watt composition.

D1 — Germanium diode, 1N34A or equiv.

L1, L2, L3 — See Table 1. Different numbers of turns will have to be used for forms other

than 3/4 inch.

S1, S2 — Dpdt slide switch.

Fig. 2C shows the circuit for determining the frequency limitations of the transistor. Basically, it amounts to a self-excited oscillator (tickler-coil type) with the frequency being determined by the plug-in coil used. If the transistor is capable of operating on the frequency of that particular plug-in coil it will oscillate. Some of the rf energy will be drawn off by coil L3, rectified by the diode D1, and will actuate the meter. This author used five plug-in coils, representing frequencies of 1, 3, 12, 31, and 60 MHz, respectively. These frequencies correspond to the labelings of the various compartments of a spare transistor tray. One that tests good on a dc beta checker, but will not actuate the meter on this checker with any of the coils is considered an audio transistor.

Operation of the unit is simplicity itself. To check a transistor type, set switch S1 to the Type-Test position, and plug the unknown transistor into each of the Type-Test sockets in turn. To test frequency capabilities, set switch S1 to Freq Test. Set switch S2 to pnp or npn, depending on transistor type, and plug the transistor into the Freq Test socket. Plug in the highest frequency coil (in the writer's case 60 MHz) and press test switch S3. If the meter reads, the transistor is capable of handling 60 MHz, and probably more. If the meter doesn't read, remove the plug-in coil and substitute the second highest frequency coil. Press switch S3 again, and check for meter indication. Continue to use lower and lower frequency coils until finally one is found that will cause the transistor to oscillate. You now know the approximate frequency limit of that particular transistor.

If you suspect weak batteries, merely press S4, the Battery Test switch and check the lamp for full brilliance. This can be done regardless of the settings of the three switches.

### Construction

Construction of the unit should pose few problems. A hint on drilling the square holes for the slide switches — drill two holes with a 1/4-inch (6-mm) drill and file the corners with a small square file.

The parts layout is not critical; the one used by the writer need not be followed

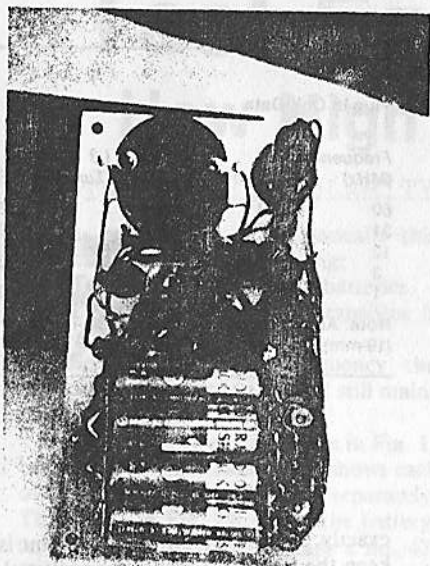
**Table 1**  
**Plug-In Coil Data**

Frequency (MHz)	L1 (Turns)	L2 (Turns)	L3 (Turns)	C1 (PE)
60	3	3	3	25
31	7	6	4	25
12	12	7	6	80
3	22	10	9	270
1	34	20	8	1000

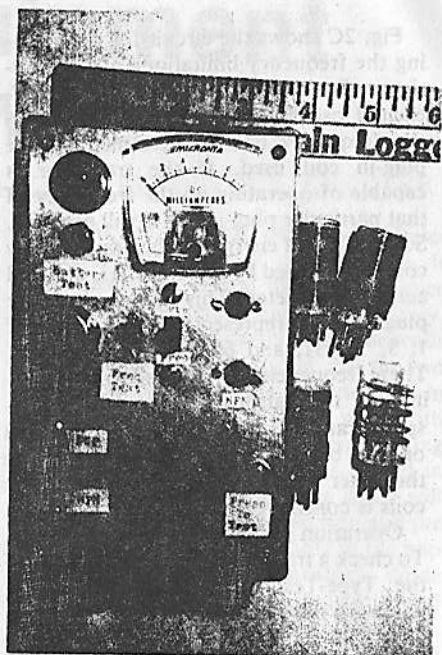
Note: Above coils close-wound, 3/4-inch (19-mm) diameter.

exactly. About the only requirement is to keep the Freq Test transistor socket close to the plug-in coil socket so as to allow short rf leads. It's also a good idea to locate S3 far enough from the coil-form socket that it can be pressed without getting the hand too close to the coils.

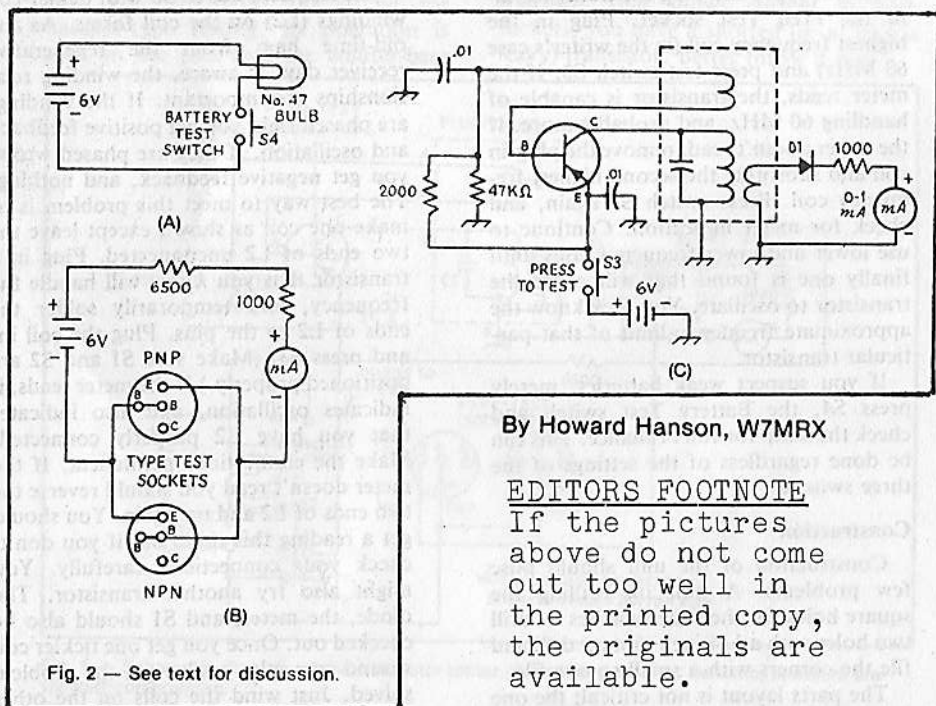
The last item has to do with tickler-coil windings (L2) on the coil forms. As any old-time ham from the regenerative receiver days is aware, the winding relationships are important. If the windings are phased right you get positive feedback and oscillation. If they are phased wrong you get negative feedback, and nothing. The best way to meet this problem is to make one coil as shown except leave the two ends of L2 unconnected. Plug in a transistor that you *know* will handle the frequency, and temporarily solder the ends of L2 to the pins. Plug the coil in, and press S3. (Make sure S1 and S2 are positioned properly.) If the meter reads, it indicates oscillation, and also indicates that you have L2 properly connected. Make the connections permanent. If the meter doesn't read you should reverse the two ends of L2 and try again. You should get a reading this time, but if you don't, check your connections carefully. You might also try another transistor. The diode, the meter, and S1 should also be checked out. Once you get one tickler coil wound correctly, you've got the problem solved. Just wind the coils on the other forms in the same direction.



Construction of the tester.



Photograph of the assembled transistor tester.



By Howard Hanson, W7MRX

EDITORS FOOTNOTE

If the pictures above do not come out too well in the printed copy, the originals are available.



Once an operator hears a complete set of call signs, he can send the unknown information along with calls. A common system used for years is the S report. A report from S0 to S5 is given based on the burst duration. Unfortunately, the standard for what the different S numbers mean in terms of burst duration have become muddled over the years. As a result of this, the Central States VHF Society, a group of serious VHFers throughout the United States, has advocated the exchange of state or province name in place of an S report. Each system has its merits, but the important thing is for scheduling stations to agree on a particular system. (Random contact seekers don't have that luxury. It adds to the challenge.) In any event, the 15-second transmit period would sound something like this: K5YY K1JX S2, K5YY K1JX S2.

Call signs must be sent continually until you copy the signal report from the other station. You know that the other station has received your call signs when you begin to hear a signal report. A signal report can only be sent upon receipt of complete call signs. Except for an occasional call-sign announcement to satisfy FCC identification requirements, calls needn't be sent from this point on; they only waste burst time.

When you receive a signal report, you can start to send the acknowledgment. This is simply sent in the form of ROGER on voice or R on CW. You must continue to send signal reports until you receive acknowledgment. Then, only the acknowledgments are required. The process is continued until the acknowledgments are received in both directions. The contact is then complete.

Description of the contact sequence may make the process seem difficult and complicated. In practice, it isn't. Since an example is worth something less than a thousand words, here is how a typical schedule between K1JX and K0ALL might go. In this case, K1JX receives during the first and third 15-second sequences (00 to 15 seconds and 30 to 45 seconds after the minute) and transmits during the second and fourth.

(As heard at K1JX)

(RX) 0900 (00)-0900 (15)—“Hiss ...”  
 (TX) 0900 (15)-0900 (30)—K0ALL K1JX, K0ALL K1JX, K0ALL K1JX, BREAK ... (momentary hiss) ... K0ALL K1JX, K0ALL K1JX, K0ALL K1JX

(RX) 0900 (30)-0900 (45)—“Hiss ... 0ALL K1JX ... Hiss ...”

(TX) 0900 (45)-0901 (00)—K0ALL K1JX, K0ALL K1JX, K0ALL K1JX, BREAK ... (momentary hiss) ... K0ALL K1JX, K0ALL K1JX, K0ALL K1JX

Some time later

(RX) 0911 (00)-0911 (15)—“Hiss ... JX K0ALL K1JX K0 ... Hiss”

(TX) 0911 (15)-0911 (30)—K0ALL K1JX S2, K0ALL K1JX S2, BREAK ... (momentary hiss) ... K0ALL K1JX S2, K0ALL K1JX S2

(RX) 0911 (30)-0911 (45)—“Hiss”

Continues like this until sometime later  
 (RX) 0913 (30)-0913 (45)—“Hiss ... K1JX K0ALL S2 K1JX K0ALL S2 K1JX K0 ... Hiss”

(TX) 0913 (45)-0914 (00)—ROGER S2, ROGER S2, ROGER S2, ROGER S2, BREAK ... (momentary hiss) ROGER S2, ROGER S2, ROGER S2, ROGER S2

(RX) 0914 (00)-0914 (15)—“Hiss ... S2 S ... Hiss”

(TX) 0914 (15)-0914 (30)—ROGER S2, ROGER S2, ROGER S2, ROGER S2, BREAK ... (momentary hiss) ROGER S2, ROGER S2, ROGER S2, ROGER S2

Continues until some time later


(TX) 0917 (15)-0917 (30)—ROGER S2, ROGER S2, ROGER S2, ROGER S2, BREAK ... (momentary hiss) ROGER S2, ROGER S2, ROGER S2, ROGER S2

(RX) 0917 (30)-0917 (45)—“Roger Roger Roger Roger Roger Roger ... 73, 73”

(TX) 0917 (45)-0918 (00)—73, 73 RON BREAK; “73 Clarke”

Calling CQ for random contacts on 2 meters is a similar process. The time sequences are the same, except that you call CQ instead of another station during the appropriate 15-second period (CQ K1JX, CQ K1JX ... ). The greater challenge here lies in identifying the caller, exchanging reports

and acknowledging, all without any prior knowledge. Usually, random CQing is carried on at 144.200 and 5 kilohertz increments up and down from calling frequency (144.195, 144.190, 144.205, 144.210, and so on). There is so little 220 meteor-scatter activity that almost all work there is done by schedule.

You can get started by listening to 6 meters during any VHF contest or on most weekends. If you hear stations calling CQ, give them a call—just be ready for a quick reply. If you're only on HF, listen to 10 meters during the ARRL 10-Meter Contest. And you can try 2 meters during the meteor showers. No matter what your planned activity, remember one thing: Keep it short and sweet. 

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### What Kind of Equipment Do I Need to Work Meteor Scatter?

As with any weak-signal work, a sensitive receiver, legal-limit power amplifier and high-gain antenna will make meteor-scatter communications easier. If you don't have these things, not all is lost!

For 10-meter work, all you'll need for many meteor-scatter QSOs is a standard 100-W transceiver and a three- or four-element beam. If you have a kilowatt amplifier, you'll be able to work even more stations.

At 6 meters, you can use as little as 10 W and a small Yagi to work some of the "big guns"—if you're patient. You'll enjoy a slew of contacts with 100 W and a four-element beam. If you run high power and have a good receiving preamplifier, you'll practically be able to ragchew with other big stations.

On 2 meters, the average station consists of a multimode transceiver, 100- to 160-W amplifier and a single long Yagi. You'll be able to make many a schedule with a setup like this, but if you're interested in random contacts you'll probably want more. A good station for that type of operation might include a pair of long antennas, a low-noise preamplifier and a 500- to 1500-W power amplifier.

Signals at 220 MHz are much weaker, so a better station is desirable. You'll want a low-noise receive preamplifier and a pair of antennas. Although contacts are possible with a 100-W "brick" amplifier, a tube-type amp capable of 300-500 W or more is a big help.

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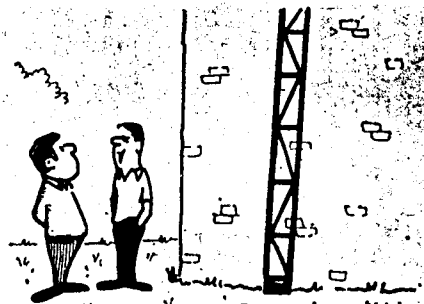
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### Just What Are Meteors?

Meteors are chunks of material usually associated with the debris from a comet. They travel in highly elliptical orbits about the sun. Every day, Earth encounters billions of these meteors. When the meteor's orbit crosses paths with Earth's orbit, the meteor is drawn by Earth's gravitational field into the atmosphere at speeds of about 22,000 to 220,000 miles per hour!

Any object moving at that high speed is bound to have an effect when it collides with an innocent bystander, such as an atmospheric air molecule. The large amount of kinetic energy possessed by the meteor is converted to heat from the friction of entry into the atmosphere. Atoms on the surface of the meteor are vaporized because of the high temperature. These vaporized atoms are contained by the air molecules. The interaction between air molecules and high-temperature atoms ionizes the air molecules and strips electrons from the vaporized meteor atoms.

A trail of free electrons and positively charged ions is left behind the meteor as it races through the sky. This ionized trail is parabolic in shape, with the burning meteor at the head. The size of the meteor and its velocity determine the size of the trail. A typical meteor is about 1 millimeter in diameter, about the size of a grain of sand. A particle of this size creates a trail head of about three feet in diameter and a trail length of between 12 and 40 miles, depending on speed.



"It's painted right on the building!"

# SUBMARINE COMMUNICATIONS.

Radio communication with submarines was always difficult. Up till recently it has been done on the VLF (Very Low Frequency) band (3kHz to 30 kHz), but then the antennas of the submarines cannot be more than a few metres under the surface of the water. So two transmission stations were set up in the U.S.A. to provide communications on U.L.F. (Ultra Low Frequency) - (30Hz to 3kHz). The signals can then penetrate deeper under the water. In this frequency range, the antennas are naturally a big problem, seeing the wavelength of a signal of 100Hz is equal to 3000 kilometres. In the U.S.A. at the two stations, one of the antennas is 45 kms long and the other is 90 km long.

These are only fractions of a wavelength and the efficiency is very low. For the input of a few hundred kilowatts, only a few hundred watts will be radiated, but the propagation on ULF is such that it will still reach the submarines. One other problem on ULF is the slow speed of the transmission of digital data. It will be 0,03 bits per second - the equivalent of about one c.w. dot per minute!

Thanks to ZS6UP. T.N.T. Newsletter.





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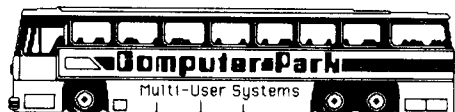
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VERVAARDIGERS VAN VRUGTE SAPPE  
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