

QRN

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OF AUSTRALIA TAS. DIVISION

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REMEMBRANCE DAY CONTEST

The R.D. contest will be held on August 18th and 19th. I am sure you all know just how much your presence is required and that this year, our Golden Jubilee year would be really complete if we had the Trophy in our midst. We will stand more than a good chance of winning if we all participate again as 29% did last year. However, this time we need an increase in points scored, any score is a great help but if you have the time let's try and exceed 300 points.

A reminder to our associates that would like a callsign of their own that the next exam is in August. Your application should arrive at Radio Branch before the 8th July. For those that need them, I have a few application forms.

JOHN VK7JV.

DATES TO WATCH

- | | |
|----------------|---|
| 3rd JULY | NORTH WESTERN BRANCH MEETING, LAKIN'S HALL, ULVERSTONE |
| 13th JULY | NORTHERN BRANCH MEETING A.E.B. ROOMS, HIGH STREET |
| 20th JULY | IREE ANNUAL MEETING, GAS COMPANY THEATRETTE. ST. JOHN ST.
(7.45 open to members only) VISITORS WELCOME AFTER 9.30 pm
at which time Technical films will be shown. |
| 7th JULY | GOLDEN JUBILEE DINNER, LAETARE GARDENS, HOPKINS ST. MCMAH |
| 7th & 8th JULY | ZL MEMORIAL CONTEST FROM 800 to 1200 GMT ON 80 METRES ONLY
THIS CONTEST IS OPEN TO VK STATIONS, THE USUAL RST AND
NUMBER LOGS TO ZL2GX |

The Monthly Branch Meeting of the Northern Zone held on June the 8th was attended by 50 members which is an all time record for an ordinary meeting. The opening of the meeting was rather a sombre affair when our chairman 7PF Peter called for a 2 minute silence in memory of our late patron Mr. Len Crocks 7BQ, or just plain Len as he was affectionately known. Following this tribute to Len the Treasurers report was presented and Kevin 7ZAH stated that the Branch had a credit balance of some \$812.00 - Sales to date that is from the time of his last report to todays date totalled just over \$597.00.

John 7JV reported that the club room account was just over \$760.00. Peter 7PF gave latest report on Oscar activities and played a tape recording of some recent contacts by the satellite. Mention was also made of Cc1 7LZ's editorial in Q.R.M. in which he called for more activity through the satellite and judging from the comments I have heard some members are making an effort to get equipment tuned to Oscar frequency.

Your scribe hopes to have 30 watts of CW on the go within the next fortnight.

Two new applications were received for student membership of the Institute, these were approved by members present and passed to council for action - we extend a welcome to Richard Tanner and Mark Corbould, and look forward to the day when they become full members.

The jubilee Dinner as has been advertised over the last couple of months will be held on July 7th. Tickets are available from Reg. 7KK but more important is the point that you should let Reg. or I know, NOW IF YOU ARE GOING! This is most important so that the catering arrangements can be finalised. Tickets \$5.00 a double \$10.00. The dinner will be preceded by a General Meeting of the Tas Division of the Institute. The agenda will be drawn up by Council and members are asked to discuss the items on it before plunging into "General Business" just in case time runs out.

Some discussion was held in regards to the R.D. contest and as this is our Jubilee Year it was thought that we should make a concerted effort to get the Trophy back. If we can get at least six operators to work through the 24 hours this would put us well in the running. Additionally to these 24 hour stations it would be appreciated if everybody could make an effort and submit a log in excess of 200 points each. Let's hope that again this year we can get the same support as we got last year from the VHF operators and I'm sure the HF workers will ensure regular contacts with them. Perhaps a high light of the evening was the auction sale so ably handled by John 7JV. For those who did not attend, the sale consisted of a sale of Bits & Pieces, I think that is the only way to describe the items donated. These were sold off to those who attended the meeting with a surplus of DBs. and although the final figure is not known to me I believe the amount was somewhere in the vicinity of \$95.00 so this fine effort should take us well on our way towards our first \$1,000.00 in the club room account.

I guess the preceding paragraphs are a fair report on the night's activities, and trust that we will see you all at the next Branch meeting, which will be held as usual, on the 2nd Friday of July.

73s.

NORMAN. 7NR.

MAX 7MX mentioned in a letter to me the other day he is now back on single band after curing a fault in the balanced modulator section of his rig. He is also well advanced in the installation of his mini beam so we can expect any day now a 20 metre signal in Launceston as strong as his 80 metre signal.

NORTH WESTERN BRANCH NOTES

Although this may not be the ideal place to talk about C.W. it has been in our local discussions lately. If more thought and reasoning is not applied to this area of Ham activities the day will come when the preponderance of Amateurs will be VHF CRYSTAL LOCKED BUTTON PUSHERS. Strong words you say, but think about it! Very little effort is required to take out the full call and it is in the main on h.f. where a lot of monitoring takes place and Ham activity is assessed. V.H.F. will not last long if our h.f. bands are lost through lack of activity. Shout me down in flames if you like but the truth is hard to evade. Give it some serious thought, you will find plenty of co-operation available.

One of our old N.W. members, Basil Barnes VE6BB will be returning to Tasmania for a vacation in early July and should be heard on 2M. He will spend some time in Hobart and some on N.W.Coast. He is looking forward to some "Australiann Rules" which his harmonics have never seen. What luck!

Doubtless by the time you see this, Les 7LH will be packing a fat SSB signal of h.f. My reputation is on the way out. On VHF it appears that a great deal of construction, modification, antenna work etc. is going on in our area. Reports are requested nightly and there will be more channel switching shortly. Tony 7AX and Ian 7ZIE are heard 6 meterwise frequently. I understand Graham 7ZAO has found out how to phase modulate without even trying.

There is also considerable activity around the few h.f. boys in Devonport. Antennas, coupling units, and associated equipment are in the news. We must give Burnie a shot in the arm.

The VK7 Jubilee Award is certainly creating some interest. Many contacts have been made from this area. A little difficult for V.H.F. hi.

Now for the story of the month! David 7MS explained that he had suffered a Kakattack the other day, per 2M. He said that it was something like a heart attack but more psychological. He had just climbed a 70 foot gun pole per steel spikes and freed a halyard. All systems are now normal. Much like a space walk but there is only one way to fall!

C.U:L.

7MX.

FOR SALE

L-55 FET VOLTOHMETER, USUAL RANGES, SIZE 5x3½x2 INCHES WITH LEADS AND CARRYING CASE. CONDITION NEW. FULL DESCRIPTION ELECTRONICS AUST. DEC. '72.
PAGE 129.A BARGAIN.....\$30.00

VK7JO, 2 LUXMORE PLACE, LAUNCESTON.

PROPOSED FM BAND PLANS

In passing on my opinion, in an attempt to help solve the FM band plan controversy, I have been able to draw on my experience with both FM and satellite repeaters. I have tracked all Oscars and put signals through Oscar 3, 4, and so far have QSO'd 58 stations via A06. I was primarily responsible for the establishment of VK7's only repeater, VK7RAA on Mr. Barrow, which has been licensed for 20 months.

Now we must look into the need to agree on frequencies to be used for terrestrial and satellite repeaters. The basic reason is that operating through repeaters precludes the frequency of transmission being monitored. The Post Office requires that the input frequency to terrestrial repeaters be not used by existing nets for this reason. No such control has been exercised for satellite operators and what we are trying to do is to prevent QRM between the two groups by voluntary control within the Amateur body. Even with simplex operation the incompatibility of FM with the modes used with present satellite makes QRM control difficult.

All parties apparently have agreed to move CH4 output from 145.9 mhz and leave at least 145.85 to 146.00 mhz clear for satellite use while some quarters would like it clear down to 145.8 mhz. Opponents to this wider plan continually quote Region 1 band plans, there being channels on 145.800 and 145.85 mhz. This is the concern of those in Region 1, but even so the recommended ERP Power of 15 watts and a deviation of 3 khz would not cause as much trouble as the power and deviation used here.

Let us now look at the various types of QRM which can occur.

1. FM stations can get into satellite repeaters. 2. Stations using the satellites can QRM FM stations. 3. FM stations can QRM the weak satellite output signals. With the first case much has been said about terrestrial repeaters getting into satellite repeaters but from my experience it is the simplex stations which have to be kept out of the way. I have heard four CH4 repeaters via A06 the only one to cause QRM to the beacon on 29.45 mhz is VK5WI/R1. The translated frequency of 145.9mhz is 29.444 mhz, VK5WI/R1 appears to be high in frequency by about 4khz. By far the strongest spurious signals to be heard are from Ch B stations, as many as five spread out over about 6khz. and from their strengths would be running high power and beams. The second form of QRM quite possibly hasn't been noticed in VK2 as the number of stations using A06 is small compared with other states. An SSB station can play havoc with FM receivers nearby. The third form of QRM will not occur till A07 but a local FM station would wipe any weak satellite signal. It stands to reason that both simplex and repeater stations must be cleared to prevent mutual QRM with satellite operators.

Now to the various band plans, all of these in VK and overseas are based on repeater in and out frequencies being spaced around simplex channels. The Albury plan maintained CH B (146.)mhz at one edge but recommended eventual change to five simplex channels between 146.45 and 146.65 mhz. A stated objection by VK2 of the Albury plan is the required width of acceptable receiver performance, 147.0 down to 145.85 mhz (CH A). Now this is a technical point which depends on the type of equipment used but a sinister conclusion arises because of it. The VK2 plan puts the satellite segment in the middle of the allocated frequencies, that portion usually used for simplex use. What can come from this. CH A (145.85) will be continued to be used, it has already been said to me that the operators on the present CH 4 in VK2 would take advantage of existing 145.9 mhz RX crystals and establish a new simplex channel. It would take very much foresight to see 145.95 mhz would follow and we would have simplex channels right across the satellite band. The only other frequencies for new simplex channels would be below 145.5 or above 146.4 mhz, either way would bring up the so called problem of acceptance bandwidth of equipment. I am therefore of the opinion that the only long term solution is to adopt the Albury plan which clears the frequencies below 146 mhz for satellite use, otherwise all the time and effort over the past year will have been to no avail.

P.D.FRITH. VK7PF. VHF OFFICER. OSCAR COORDINATOR
COUNCILLOR VK7 DIVISION W.I.A.

I WAS INFORMED by a ZL station the other day that there is a VK award based on the number of Electorates worked. Basically you need 25 confirmations consisting of 9 QSL's from VK2, 6 from VK3, 4 from VK4, 2 from VK5 and 1 each from VK1, 6, 7 and 8. A total of 125 Electorates are available, all contacts since 1st. January, 1973 are valid. Applications to go to VK3APU.

BASIL VE6BB and XYL will be arriving in Sydney on 4th July. He hopes to arrive in Tasmania around the 11th July where he'll stay with his brother in Devonport, for a few days before going to Launceston and Hobart. Basil will be mobile on 2 meters CH4 and B.

HEARD THAT the bottle drive should raise around \$35.00 our thanks to JOE 7ZGJ, GRAEME 7ZGG and STEVE 7ZSF for supplying the muscle and the transport and thanks to our members for the supply of empties! If they missed yours give JOE a ring - it's not too late!

NOT TOO MANY 2 metre AM or SSB transmitters around if Wednesday nights are any indications. So far the only ones heard are JOE 7ZGJ, KEVIN 7ZAH and JOHN 7JV. How about YOU next Wednesday night - say 8.00 pm.

WE ARE PLEASED to announce that since the threat of disbandment of the VHF group in Hobart attendances have increased to the point where at the last meeting 12 members were present.

7NR has got himself an automatic monitor every time he fires up on 80 metres one of the speaker boxes of the high-fi system in the lounge room talks back to him. This speaker box will even talk back when it is completely disconnected from the rest of the equipment. In other words with the box just standing there it will detect and rectify his 80 metre transmission and believe me, its not high-fi! The same character came up on 80 metres last Saturday evening and was immediately swamped by ZLs looking for Golden Jubilee awards. He was able to work ten of these gentlemen. So remember the award and do get on air if you can over the remaining few months.

REG. 7KK has now got his tower erected in the garden, and Wal. 7ZWX spent a good ten minutes at the top. We are not sure yet whether he was looking at the range to be expected at the top of this mast, (that is line of sight range for VHF use) or whether there was something interesting two or three gardens down the street!

BRIAN 7ZBY heard to remark the other morning that he may not be available because his XYL was appearing in Oscar; or perhaps he has never met Oliver, which naturally puts a wry twist on the story, doesn't it!

HEARD ABOUT the character on 52.525 FM who takes a break to allow local boob box viewers to watch the commercials!

TECHNICAL ARTICLE - VK7ZBY

A 250 MHZ FREQUENCY COUNTER

PART 3

Count Gate and Subtracting Decades

As the operation of the countgate and subtracting decades can at times affect each other, they will be described together. To fully understand this section, one must know how a "NAND" gate works as this is the type of gate used in this circuit. Fig. 5 shows the symbol and truth table for a 3 input "NAND" gate.

Fig. 5



A	B	C	Q
0	0	0	1
0	0	1	1
0	1	0	1
1	0	0	1
1	1	1	0

Logic "0" = .8 volt
or less
Logic "1" = 2 to 3 volts

It will be seen straight away that if any input is at Logic "0" the "Q" output will be at Logic "1". The circle on the output indicates that an inversion takes place as proved in the truth table. The circuit of the count gate and subtracting decades appear in Fig. 6.

It can be seen from Fig. 6 that the count gate is actually 1/3 of a 74H10, which is a high-speed triple three input "NAND" gate. The section which performs the operation of count gate is section "B". Section "A" controls the signal to the subtracting decades and section "C" allows for normal operation of the counter or for subtracting 455 KHZ from the incoming signal. The "BCD" (binary coded decimal) outputs of the three decade counters (7490) are fed to a dual 3 input "NAND" gate 7430 of which only one section is used. The way in which these "NAND" gates and decade counters work is as follows :

Assume switch "S1" in position 1 (normal counter operation) and a Logic "1" available from the count gate control circuit. With switch S1 in position 1 a Logic "0" will be applied to gates 2 and 3 of section C. A logic "1" from the gate control circuit is also applied to gate 3 of section A, and to gate 2 of Section B. Because we have not yet applied a signal to the counter the outputs from the three decade counters will be at Logic "0" and therefore the Q output from the 3 input "NAND" gate will be at Logic "1". This Logic "1" is applied to gate 2 of section "A" and gate 1 of section C. If we now apply a signal to the counter it is first shaped by the input board and passed on to the count gate as a series of positive going pulses, changing from Logic "0" to Logic "1" and back to Logic "0", and is applied to gate 1 of Section A and gate 3 of section B. As the signal pulse rises to Logic "1" the output of the count gate goes to Logic "0" and back to Logic "1" when the signal pulse falls to Logic "0". The output pulse train of the count gate will be therefore, an exact duplication of the input but inverted, and will be passed on to the main counting decades. This same shaped input signal will also be applied to gate 1 of section A and again cause an inverted pulse train to appear at the Q output, which will in turn be counted by the subtracting decades, but these decades and the 3 input "NAND" gate play no part in normal counter operation at this stage. Because gates 2 and 3 of Section C are held at Logic "0" by switch S1 its Q output will be at Logic 1 at all times and have no effect on the count gate.

TECHNICAL ARTICLE (Contd.)

The train of pulses to the main counting decades will continue to pass via the count gate, until the Logic "1" from the count gate control goes to Logic "0". This will cause the Q output of the count gate to go high and stay high until the next Logic "1" level from the count gate control circuit.

Now consider that we wish to use the counter to read the frequency to which a receiver is tuned. This is accomplished by operating switch S1 to position 2 (Logic "1"). The operation of the count gate is now under the control of section C because gates 2 and 3 are now high, and gate 1 is also high (Logic 1 from Q output 7430) and therefore its Q output will be at Logic "0" and no matter what the logic level of either the gate control circuit or signal the count gate cannot open until gate 1 of section C goes to Logic "0". The way in which this logic level changes to gate 1 of section C is accomplished is as follows: Gate 2 of section A is held high by the Q output of the 7430, gate 3 is held high by the logic "1" level from the gate control circuit and gate 1 is going from Logic "0" to Logic "1" and back to Logic "0" in sympathy with the shaped input signal. This train of pulses appear at the Q output of section A and is counted by the three decade counters. This continues until the Q outputs of the three decade counters reach a count of 455 (455 KHZ). This occurs as follows: The last counter reaches a count of 4, the second counter reaches a count of 5, and the first counter a count of 5. At this point all inputs of the 8 input "NAND" gate go high (gates 6, 7 and 8 connected to +5 volt rail). With all gates at Logic "1", the Q output of the 7430 goes to Logic "0". This Logic "0" is applied to gate 2 of section A causing the Q output of this section to go to Logic "1" and to be held there and therefore stop the pulse train to the three decade counters. This Logic "0" from the Q output of the 7430 is also applied to gate 1 of section C, which as explained before was required for the count gate to open. In this manner the input signal has had 455 KHZ subtracted from it before the count gate opened.

For example, a receiver tuned to 7 MHz, VFO tuned to high side of signal (7.455 MHz), IF frequency of 455 KHZ, the counter will subtract 455 KHZ from the VFO frequency leaving 7 MHz displayed which is what the receiver is tuned to. The circuit will work on any IF frequency (up to 999 KHZ) by selecting the decade counter outputs to feed the 8 input "NAND" gate. The count gate will remain open until, as before, the Logic "1" level from the count gate control circuit goes to Logic "0", thereby closing the gate. The subtracting decade counters are reset (all Q outputs to Logic "0" by the normal counter reset circuitry. This prepares all 74H10 sections and the 7430 for the next gate control pulse which will allow the whole procedure to be repeated. It can also be seen that the readout is to 1 KHZ, due to only three decade counters being used, therefore the gate control pulse width must be 1 M/S (1 KHZ). A gating indication is also provided on the front panel by means of an LED (Light Emitting Diode) which is driven by transistor TR1 (BC108), whose base is connected to the counter reset line. The LED will glow when the reset line is at Logic 1.

ERRATA

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The pulse shaper IC (F9582) on the input board was incorrectly described. Instead of being called a high-speed ECL dual D flip-flop, it should have been described as a multi-function line receiver /amplifier.

TECHNICAL ARTICLE (Contd.)

Fig. 6

