



BULLETIN ISSUED BY THE NORTHERN ZONES OF THE
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I believe that the talk and slide show by MR. BOB WOOLHOUSE was a great success and members indicated that they appreciate something non-electronic once in a while. This should be kept in mind when looking for suitable subjects, in the meantime if you have an interesting job, hobby or sport that you would like to tell us about why not tell REG 7KK our honorable secretary.

Lectures promised to date are:-

The T.V. Station on Mt. Barrow by Bill Carter 7AK

The Aluminium Industry by Chris. Walker 7UX

Skindiving and Underwater Photography (with slides) by Mr. Ken Atherton

M E E T I N G S

JUNE 6 th NORTH WEST ZONE AT LAMIN'S HALL, ULVERSTONE

JUNE 9 th NORTHERN ZONE A.E.D. ROOMS, 51 YORK STREET

Y. R. C. S.

Classes

JUNE 3rd - 17th - 10.00am ROOM 38 KINGS MEADOWS HIGH SCHOOL

JULY 1st 10.00am ROOM 38 " " " "

NORTHERN MEETING

This was held once again at the High Street A.E.B. rooms and there were three major issues discussed:-

- (1) Bill VK7AK reported on arrangements for the Federal Convention at Easter 1973. After some difficulty bookings were made at the Kings Meadows Hotel for accommodation and at the Launceston Hotel for the Convention facilities.
- (2) Some comments were forthcoming on the proposed Tasmanian Jubilee award to be available during the Tasmanian W.I.A.'s 50th Anniversary year 1973. Most discussion centred on the number of stations to be worked to qualify for the award. No doubt details of this award will be published in the Tasmanian W.I.A. Bulletin in due course.
- (3) After much debating it was decided to open a Northern Zone Clubrooms Account. Problems involved in holding money in such an account were highlighted.

The business session was followed by an interesting talk and slide show on Caving by Mr. BOB WOOLHOUSE. The serious attitude and safety angle of this sport was very evident, although funny situations can arise for instance when you meet a snake at the bottom of a 300ft. shaft and the only way out is UP!

A.C.C. satellite is now expected to fly in November.

BOB VK7MT having accepted a job back in England left Tasmania on May 17th. Bob hopes to be able to get his old call G3YQW back so if you hear him give him a call.

COL VKOJV is now back at Casey base after being out on a field trip for some 9 weeks. They were slowed by blizzards to 4 miles in 5 days on the way back. Col is quite active on 14.120 Mhz and looking for VK contacts.

N.W. ZONE NOTES

The most interesting news of the month is the acquisition of two new operators to our area. Graham Rand 7ZAO and Ian Ellings 7ZIE were successful at the last exam. Ian was fortunate to be operative on 2 metres in time for the big opening and became known interstate overnight. Although held up temporarily for crystals, Graham successfully modified a low band unit and is now making his presence felt in the area. It looks as though Ian has become the local watchdog and visitors will find it difficult to call and receive no reply. GOOD SHOW IAN!

Our meeting went off very well, attendance being a little better. I have had two reports from absentees whose cars were out of order on meeting night. In future please call the Secretary and he will arrange transport for you.

The meeting for September has been set aside tentatively for a ladies night.....so chaps warm your XYL, YL or both to have their hair frizzed up in readiness for a big night. ..

Recently was honoured to entertain SYD and XYL ANN VK2ZYD who were on their honeymoon in VK7. Syd was mobile on a piece of JA equipment with about 5 channels on 2M, and 20 watts out. It is unfortunate that they failed to make any contact in the South. It is lamentable that you missed such a delightful couple!

7KH has been hors de combat on his H.F. rig. It is possible that you transmitted too far Ken and strained the works. Hope repairs are quick.

Sorry to hear that our old friend 7BQ has been grounded in hospital. We all wish you a speedy recovery Len.

During VHF openings we had the opportunity of a yarn with Peter, was 7ZPW now 3ZPX. From breakin remarks it is obvious that Peter has done nothing to damage his local reputation.

Phil 3APO is filling "Sparks" job on the BURWAH, calling at Devonport once a week. Always welcome aboard if you can find the time.

73 Until next month.

7MX.

HAVE A LOOK INTO THE FUTURE.....

In 10 or 20 years' time will the Northern Zone of the W.I.A. still only offer:-

- (a) a monthly newsheet
- (b) a monthly social "get together" at a place unknown.

OR will it have more to offer, say

- (a) a definite meeting place
- (b) facilities for classes for beginners and more learners
- (c) a station installation and workshop for those lacking same
- (d) a necca for local and visiting electronics enthusiasts
- (e) a venue for extra social activities

SURELY

We want to achieve something by this time.

Other similar groups can obtain clubrooms. Why should we be too scared to try.

Our membership at the moment is at one of the periodic high spots. Instead of waiting for it to decrease, utilize the enthusiasm of our present membership.

The first step is \$1 - 2K for a block of land - then stand back and decide whether we can proceed to the next step.

A number of individual members have shown that they can easily earn, in the Institute's name \$200.00 in one month. The goal mentioned above then is not impossible to reach in 1 year without digging into our own pockets. As one member put it, "when you own land, the bank manager smiles on you".

SO

Let's knock the knockers and get on with the task by pouring in ideas to raise money and by assisting efforts suggested.

We've nothing to lose and plenty to gain.

THE FIBRE GLASS BLANKS HAVE ARRIVED SO IF YOU NEED ONE BETTER BE QUICK - PRICE IS APPROXIMATELY \$1.70 EACH.

(Cont. from last month) (COPIED FROM AMSAT NEWSLETTER)

Parameter	Unit	Parameter Range	Chan.No.	Approximate Calibration Data/Comments
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Spare	---	20	20	Spare
Transponder R.F. Power	W	0 to 10W	21	$P_{CUT} = 0.001 (N)^2 (W)$
Beacon R.F. Power	mW	0 to 1W	22	$P_{CUT} = 0.10 (N)^2 (mW)$
Transponder AGC	V	0 to 3V	23	$V_{AGC} = 0.03 N (volts)$
Midrange Cal.	V	0 to 1V	24	$N = 50 \text{ counts } \pm 1$

*N = Value telemetered
(omit most significant digit which identifies the data line number)

LIST OF COMMAND FUNCTIONS FOR A-O-C

1. 2M/10M Transponder CN
2. 2M/10M Transponder CFF
3. 435 MHz Beacon Transmitter CN
4. 435 MHz Beacon Transmitter OFF
5. Code Store - Run Mode
6. Code Store - Load Mode
7. Morse Code Telemetry Encoder - High Bit Rate (20 wpm)
8. Morse Code Telemetry Encoder * low Bit Rate (10 wpm)
9. Transponder A.G.C. Loop Enabled
10. Transponder A.G.C. Loop Disabled
11. Command Code-Store to Modulate 435 MHz Beacon
12. Command Morse Code Telemetry Encoder to Modulate 435 MHz Beacon
13. Command Code-Store to Modulate Transponder Beacon
14. Command Morse Code Telemetry to Modulate Transponder Beacon
15. Disable Commands 13 & 14/Enable Clock Sequence (Switches Between Code-Store and Telemetry once every 15 minutes)
16. Enable Command 13 or 14 (whichever was last commanded)/ disable clock sequence
17. Reset Clock
18. 2M/10M Transponder CN (Redundant)
19. 2M/10M Transponder CFF (Redundant)
20. 435 MHz Beacon Transmitter CN (Redundant)
21. 435 MHz Beacon Transmitter OFF (Redundant)

A 144MHz opening on Sunday 21st May gave us the best opening to VK5 this season. KEVIN 7ZAH, JOHN 7JV and JCE 7ZGJ managed to work VKSZDY, VK5ZDX and VK5ZK with good signals both ways. On the repeater scene JOHN worked VK3ZKN via the VK5 repeater.

PROPAGATION PREDICTION FOR AMSAT-OSCAR-C

by Raphael Soifer, K2QBW

Propagation through AMSAT-Oscar-C (A-C-C) will be much like that experienced with Australis-Oscar 5 (AC-5), the principal difference factor being A-C-C's higher power output --- about one watt as opposed to AC-5's 180 milliwatts when first launched. Ionospheric factors, not particularly pronounced with AC-5 on line-of-sight paths should be even less of a problem with A-C-C. During AC-5's lifetime in orbit, smoothed sunspot numbers held steady at 106, very close to the cyclical high of 111. By comparison, W3ASK predicts a smoothed sunspot number of 43 for July 1972, declining to 28 by July 1973.

The main operational difference, of course, is that AOC-C is a trans-later, and has an uplink as well as a downlink. Recent ground tests using the A-C-C receiver showed that a received signal level of -130 dBW will be required to drive the ten-meter transmitter to full power output in a single-signal condition. Assuming a slant range of 2000 statute miles, an uplink frequency of 145.9 MHz and a zero dB average gain receiving antenna, path loss calculations give a required e.r.p. of about 80 watts or 50 watts into a dipole antenna in order to attain full downlink power. This calculation assumes an arbitrary loss factor of 3 dB for polarization mismatch; during peaks of Faraday rotation fading, signals would be 3 dB better, during nulls, somewhat worse. With 100 feet of RG-8/U and 60% transmitter efficiency, approximately 160 watts input will be required with a dipole antenna. Use of a four-element beam at the transmitting station would cut required power to about 7 watts output at the antenna or 23 watts input. Clearly the uplink will not pose a problem.

As was the case with the AMSAT aircraft flights, the downlink poses far more serious constraints. There are several components to the downlink calculation -- free space loss, receiver noise, antenna noise and ionospheric losses. Let us take these in order.

For the same conditions specified above in the uplink calculation -- 2000 miles slant range, dipole antennas, 3 dB polarization mismatch and 100 feet of RG-8/U, free space loss at 29.5 MHz works out to approximately 132 dB including provision for antenna gains and line losses. For a receiver meeting usual amateur specifications -- 0.5 uv. for 10 dB S/N in a 2.1 kHz bandwidth, receiver-generated noise is approximately 1.26×10^{-16} watts. To this must be added antenna noise. For a quiet location at 29MHz, this will consist primarily of galactic noise with an average value of 8.4×10^{-16} watts. The receiving noise threshold for a quiet location would be the sum of these or just about exactly -150dBW. The noise level could be perhaps 2 dB lower due to variations in galactic noise, or it could be as much as 20 dB higher for an amateur in a noisy urban location. We will assume a quiet location and an average noise level of -150 dBW.

With a smoothed sunspot number of 43 or less, ionospheric blockage due to F_2 refraction ought to be negligible, except perhaps near midday at equatorial latitudes. For most amateurs in the U.S., Europe and Australia, F_2 blockage, which was minimal with AC-5, should be just about non-existent. Similarly, nondeviative absorption at noon for 40° latitude is predicted to be 2 dB or less for elevation angles of 5° or more (distances to subsatellite point of 2050 statute miles or less). For elevation angles of 20° or more, absorption should be negligible. This is not to say, however, that the ionosphere will not make itself felt. Blockage due to sporadic-E, when present, could take the signal out entirely. Particularly on paths traversing auroral latitudes, scintillation and flutter-type fading will be noticed in much the same way as with AC-5.

(TO BE CONTINUED NEXT MONTH).

