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CONGRATULATIONS

To Joe and Phill on their recent marriage. We wish you much happiness and health
in your future years together.

To Dean Lawson for passing his ACLCP. Dean has applied for the call VK7ZLD

To Norm VK7ZNR for his pass in the recent C.W. exams. Norm has taken the call
VK7NR.

MEETINGS

OCT. 3rd	NORTH WESTERN ZONE, LAKIN'S HALL, ULVERSTONE.
OCT. 13th	NORTHERN ZONE, TEACHERS' COLLEGE, PLUMER ST. MCWBAY. 8pm SHARP.

Y R C S

OCT. 7th & 21st	KINGS MEADOWS HIGH SCHOOL
NOV. 4th	

CONTESTS

OCT. 7th 1000z to OCT. 8th 1000z	- VK-ZL CONTEST PHONE
OCT. 14th 10.00z to OCT. 15th 10.00z	- VK-ZL CONTEST C.W.
OCT. 28th to 29th	C Q W.W. DX CONTEST
OCT. 21st	JAMBOREE ON THE AIR

NORTHERN NOTES

There were really only two items thrashed about at our September meeting. Problems pertaining to a change of repeater frequencies were aired and the general opinion seemed to be in favour of a change if it resulted in Australian wide uniformity. Reports of interstate dissention are a little disturbing!

A report on discussions with City Council officers on clubroom sites showed that there are likely to be no problems in this regard. The only problem will be money!

Other items mentioned were the proposed WIA constitutional changes, the Swansea Hamfest and sundry items.

Our trip underwater through Ken Atherton's slides was tremendous. The interest and searching questions by members confirmed this.

NOTE WELL

This meeting is at the Teachers College (College of Advanced Education) Newnham, at 8pm.

Be early as the lecture/demonstration of their CCTV facilities will be held before the business meeting. 7ZMS says he'll put some arrows up in case you're late.

NORTH WESTERN ZONE NOTES

Apart from our September meeting there is little news this month. It was certainly a fine meeting. On looking round the gathering, one wondered whether it was North or North-West. Some notable visitors were 7JV, 3EP/ZLIAQW, 7NR, 7ZWX, 7ZKV, 7RH, 7AK and our own 7CE.

A great deal of information was forthcoming from all directions. After the meeting John JV gave a demonstration of SSTV and certainly stimulated some interest. There could be several starters in this area.

It would seem from remarks heard on the air that Tony and Winstone are making great progress with Amateur TV.

By this time 7ZGJ will be accustomed to a new face across the breakfast table F.B. Joe & Phil and we extend our sincere congratulations from all the boys here. Back to radio mate.

C U next month.

7MX.

(ADVT.)

SATELLITE TRACK CALCULATOR
27" X 27" Polar map with AOC
range rings and track overlays
\$2.00 post paid

Northern Zone, Tas division, WIA
P.O. Box 1010 Launceston, Tas. 7250

ANOTHER USE FOR TAA 300: For many years I have possessed a car radio of the Hybrid valve type. The front end and I.F. consists of Hybrid valves and the audio stage A driver transistor followed by a power output transistor.

Due to the reasonable current drain of the power outlet transistor it was decided to use a different output stage requiring less current.

Having acquired a 1W I.C. Amp Kit Complete employing the TAA300 I.C., (Produced by the G.A.R.C) I decided to give same a try.

The complete driver and output stage including transformers etc., were removed from the car radio chassis. This left plenty of room to mount the P.C. Board containing the Amp. The AMP is designed to work into a load of 8-15 OHM. As the impedance of speaker in use was 3-5 OHM, I wired another 3-5 OHM speaker in series and mounted same under the rear window ledge of the car.

The results were quite pleasing and I can assure you that 1W of Audio is ample power for use in a car. Frequency response is quite good and it was found necessary to alter the volume and tone controls to valves as shown. I discovered that a large degree of "Top Cut" was required on the Associated Tone Control.

A Hybrid valve was removed from the set completely, this being the detector and 1st Audio Stage. Detection was achieved by the use of a small germanium signal diode wired directly across this socket.

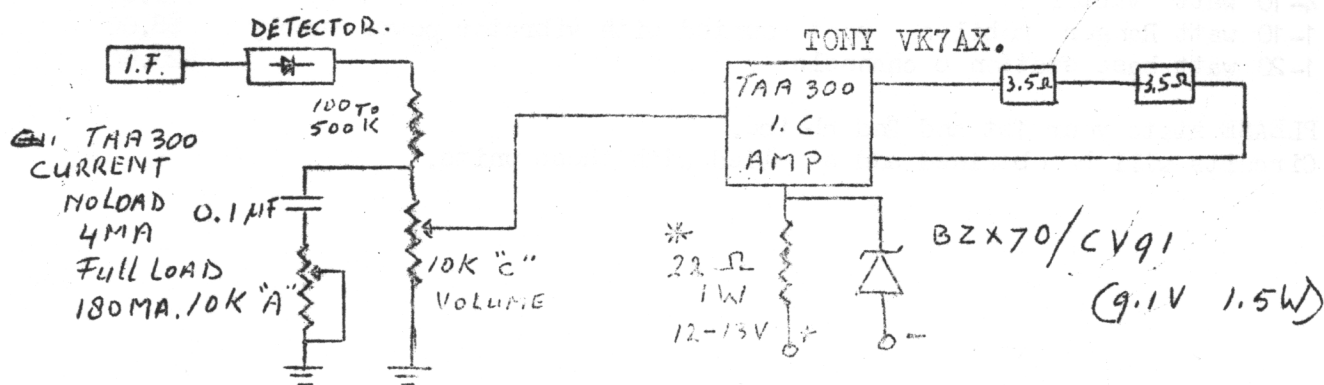
Gain of the I.C. AMP is ample (5MW for 1 watt output approx.) and the 100K - 500K Resistor Divider in series with the volume control is selected to give the required output at maximum rotation of the volume control. For 2 main reasons:-

1. Uniform use of complete range of POT.
2. Prevent extreme overload of I.C. AMP (Due to Harmonies' Fingers etc.)

*

After a while a failure of the Zener Diode occurred. I suspect the reason being that the voltage regulator in my particular vehicle is set a little on the high side (14.8V approx.) To keep the battery well up. I changed the 22 OHM resistor for a 27 OHM job. For a few weeks now the new Zener has stayed intact, so here's hoping. With regulators set to a lower maximum voltage, the 22 OHM resistor would be preferable as regulation of supply voltage to the AMP under maximum audio output is much better.

The above idea is only one of the many uses, the I.C. AMP Kit could be put to.



LETTER TO THE EDITOR

I have during the past months made quite a few trips to Launceston. Naturally I have taken the rig along and CQed on both channel B and channel 4. All the way up and all the way back I have called and called. Except for a couple of rare occasions the only person to answer my call is VK7ZIE and I get enough of him at home. (HI Ian).

So many times I have later heard "I heard you call but" and I am not the only one to complain of this.

Any time you come to our corner of the Island and call you are almost guaranteed a contact. We don't listen to you calling CQ until the cows come home - we answer.

You can buy a receiving licence at any post office but most of you have worked hard to get a transmitting licence - so how about using it!

G. RAND. VK7ZAC

F O R S A L E

150 watt 6 metre Transmitter contained in 5 ft. standard rack consisting of pair of 6/40 finals, modulator with pair of KT88 separate supplies 750 volts at 5amp each separate meters for plate current of TX and MCD 3rd meter switchable to 6 positions F.E.T. VFO tunable over 52 to 54 Mes 5 Element YAGI antenna. ALL READY TO GO.

\$100.00

VK7ZGJ

The Zone has recently obtained some Pye Low band FM mobiles. These units will be ballotted, the ballot will close 8pm 13th OCTOBER and be drawn that night. PRICES ARE AS FOLLOWS:-

15-10 watt ranger mobiles Transistor power supply	\$8.00
2-25 watt " " " " "	\$10.00
4-10 watt Victor " " " "	\$10.00
1-10 watt Ranger mobiles boot mounted with vibrator power supply	\$8.00
1-20 watt base station 6 channels	\$20.00

PLEASE state your 1st and 2nd choice.

Circuits will be obtained and supplied with these units.

CHANGE to the ACC specifications (QRM Sept.)

- (a) Orbit details Period 115 mins. inclination 102° to the equator. Height 1450km. 9 o'clock crossing (local sun time).
- (b) Launch date 9th, 10th or 11th October 0331 EAST.
- (c) No change in 145.95 to 29.5 translator

SIDEBAND SIGNALS WILL NOT INVERT THROUGH THE TRANSLATOR
THERE'LL BE A BEACON ON 29.450 Mhz AND 435.100 Mhz.

VK7PF

SATELLITE TRACK CALCULATOR

By F.D. FRITH VK7PF, 181 Punchbowl Rd. Launceston, Tas. 7250

This visual method plots the path across the earth of a satellite and from this determines 1/ In what direction will it first be heard and at what time (Acquisition of signal AOS) 2/ The bearing, time and elevation at closest approach (TCA) and 3/ The loss of signal (LOS) direction and time. For communication purposes it is required to know areas of possible contacts. These can be found by using overlays for the particular areas and establishing whether there is a common overlap period when the satellite is within range of both stations.

Before going into details some terms used in tracking satellites will be given and explained. When the first Oscars were tracked I had difficulty in finding a suitable text to explain in just the right amount of detail the mechanism of how and why a satellite orbits where it does and Ref. 1 is to be recommended as that text.

Orbit A satellite is in orbit when it revolves around the earth in a plane which passes through the earth's centre. This means that it has to spend time in both the north and south hemispheres, it is not possible to orbit around say 40° S latitude only.

Orbit number The start of an orbit is said to be when a satellite passes over the equator on a north bound track (ascending node) and the number of the orbit changes at that time. It will be seen from the calculator that it also passes over the equator southbound (descending node) approximately 180° further west.

Inclination This is the angle the plane of revolution makes with the equator at the start of an orbit with east as reference. For ACC this will be 102° which is the angle required for the chosen height to cancel the influences that would move the daily viewing time away from the chosen 9 o'clock local sun time.

Progression of tracks The plane of the orbit in which the satellite revolves can be regarded as fixed with the earth rotating beneath. This means that successive equator crossings in the same direction will be further to the west and because of this the longitude scale on the equator is marked in degrees west only.

Period The time of one revolution. For earlier OSCARS this varied but the changes will be of no consequence for ACC.

Predictions These are usually given as orbit no., the of the start of this orbit (as it crosses the equator northbound) and the longitude west of this crossing.

The calculator This takes the form of a polar map, that is, a great circle map with the south pole as centre. Two sample tracks are shown on fig. 1 one southbound east of Australia and the other northbound in the same area. The first would be around 8am. and the other around 9pm. The tracks are actually great circle paths corrected for the Earth's rotation as the satellite moves along them. The northbound track crosses the equator southbound at 006.5° W, passes to the east of the pole and northwards to cross the equator at 200.9° W ($006.5 + 180 + 14.4$) and into the next orbit.

The southbound track crosses the equator 7 orbits later at 207.5° W, passes to the west of the pole and then northwards to cross the equator at 41.9° W ($207.5 + 180 + 14.4 - 360$). The earth rotates 14.4° during half an orbit or 28.8° for a full orbit of ACC.

(115 min. period + 4) The next N-S crossing will be at 236.3°W.

Shown in fig. 2 are two sample range diagrams which have to be used for the particular latitude of interest. The ones supplied with the tracking kit, being made available, will be for most latitudes and be on transparent paper.

USING THE CALCULATOR

Select the range ring for your latitude and fix it over the map with the centre at your location, or better still copy it onto the map to leave the transparency free for use at other locations. Fix the map onto a baseboard of heavy cardboard or other suitable material and the AOC track onto a piece of perspex. Pivot by some means the perspex with the indicated southpole at the southpole of the map. Now you can do a trial run of a typical day's cycle of orbits. Rotate the track so that the start of an orbit is at 173° W and assume the time is 1800 EAST. Study the track and see that at 1 hr.42m. after the start it passes over ZL and to the east of VK to cross the equator at 201.8°W at 1955 hrs. Now rotate the perspex so that the start is now over 201.8° W to see the track for the next orbit. This will now be over VK and the times between AOS and LOS can be seen from where the track crosses the range ring, centred on your location, at the 0° elevation ring as well as the intermediate bearings and times. Try the correct range ring for other locations to see the amount of overlap and whether the satellite will be in this overlap and at what time. Continue to rotate the track around in 28.8° increments to see the other portion of the track that goes N-S. Continue to rotate the track around to find the next day's orbits. These will not be in the same place but will appear to be further to the west and later by 55 minutes, but a pattern can be derived to make day to day predictions. easier.

Orbit	time	°W
100	1800	173
101	19 55	201.8
113	1855	186.7
114	20 50	215.5
125	1755	171.6
126	1950	200.4
139	2045	214.1
140	2240	242.9

From the example it will be seen that the tracks will be almost in the same position every second day and 5 mins. earlier. This may not be wholly true in practice as a variation of the nominal period of 0.1 min. will alter the time over two days by 2.5 minutes. The predictions can of course be updated by the time differences found in practice.

USING THE PREDICTION INFORMATION

Generally following a satellite by beam swinging for maximum signal is unsatisfactory, especially for the lone operator who may be attempting to make a QSO at the same time. Due to the relative broadness of a typical 29Mhz beam compared with the associated 144Mhz beam, when using ACC, a good signal could be received when the 144 Mhz beam is off the peak for transmission into the satellite.

To prepare for a particular pass, from the calculator find the bearing and times at AOS and thence at two or three minute intervals up to LOS. Start with the aerial array at the first bearing and step it around at the correct times to the predicted bearings. Continue to do this even if the signals are weak or inaudible. The equipment set-up should ensure that the 29Mhz output can be monitored while transmitting on 144Mhz. This enables you to listen for your return signal from the satellite and a check can be made of the correctness of the beam heading if desired.

I WISH TO THANK L.Dowl VK7ZLD for his work in drawing up the calculator and for the encouragement given to me by other local amateurs when shown the calculator in the embryo state.

References 1 Satellites & Scientific Research, Desmond King -
Hele.

The Calculator CQ August 1965
OSCAR predictions, March 1965

Peter VK7PF

Fig. 1

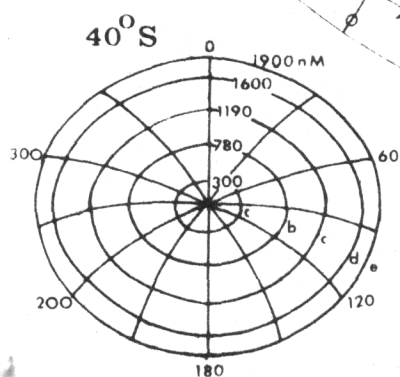
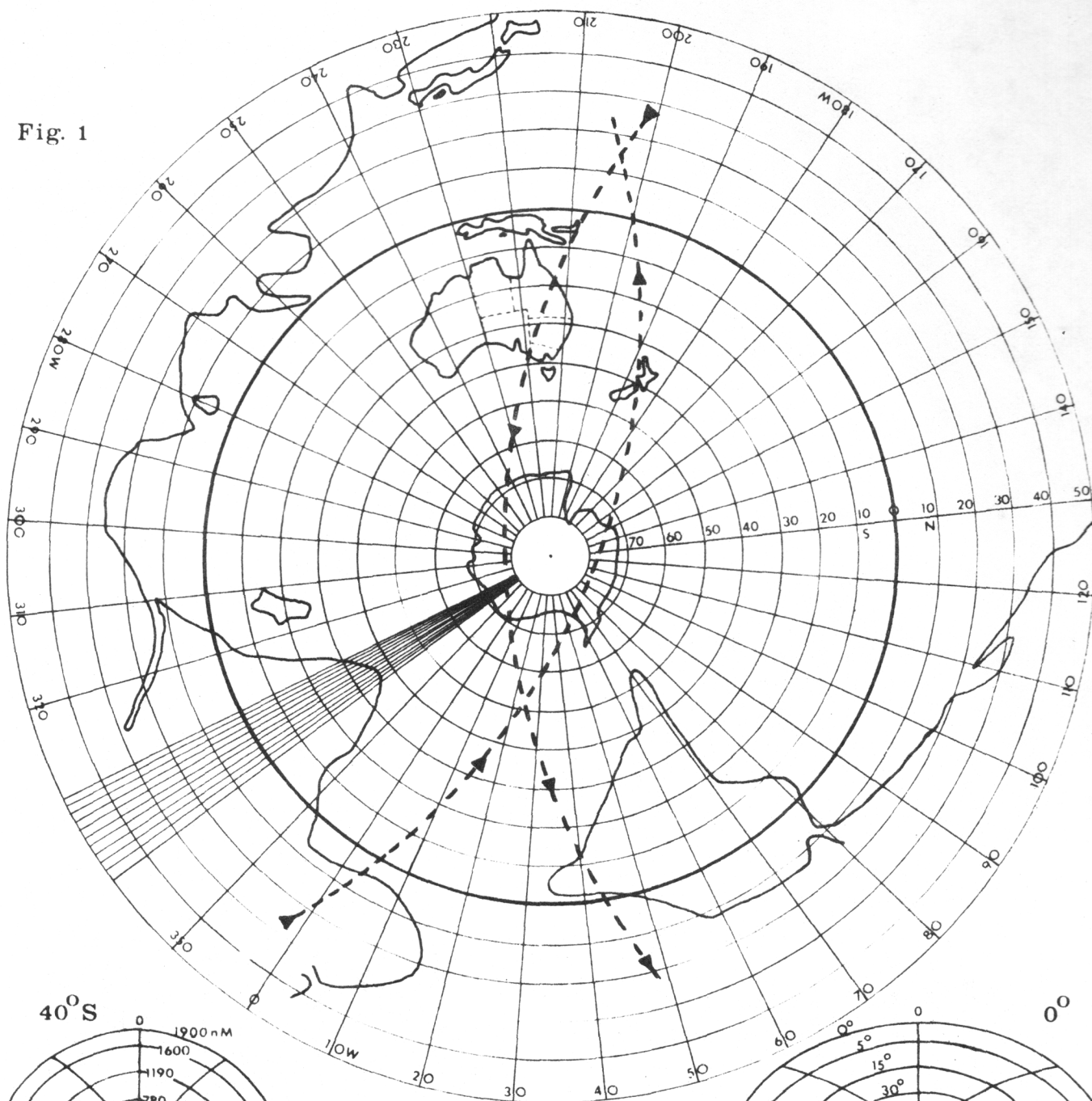


Fig. 2

