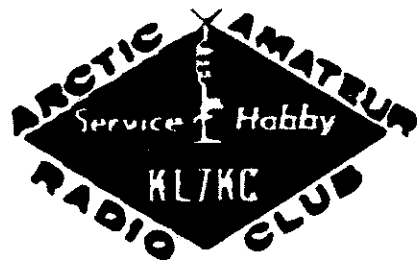


Short Circuit



JULY/AUGUST 1987

Address correspondence to:
Arctic Amateur Radio Club
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Secretary - Lewis Overton, N0SN	

BYERS LAKE PICNIC NEXT WEEKEND

THE 5TH ANNUAL MOTLEY NET PICNIC WILL BE HELD AT BYERS LAKE, LOCATED AT MILE 147 ON THE PARKS HIGHWAY, ON JULY 17-19. HAMS, FRIENDS AND RELATIVES WILL BEGIN TO GATHER FRIDAY EVENING AND DEPART SUNDAY. HAM EXAMS WILL BE GIVEN AS NEEDED ON SATURDAY AND SUNDAY, BUT NO SCHEDULE HAS BEEN ANNOUNCED. OTHER EVENTS INCLUDE A MYSTERY PERSON BUNNY HUNT, A WHITE ELEPHANT SALE AND HAM GEAR EXCHANGE, AND A SPECIAL T-SHIRT SALE. TENT AND TRAILER CAMPERS ARE WELCOME. BOATING (NO MOTORS ALLOWED) IS AVAILABLE ON THE LAKE. BRING YOUR OWN BOAT. THE SPECIAL SATURDAY EVENT IS THE EVENING POTLUCK. BE SURE TO COME AND SEE ALASKAN HAMS. THE TRIP FROM FAIRBANKS/NORTH POLE TAKES ABOUT 4 HOURS. DON'T FORGET THAT THE ROAD IS UNDER CONSTRUCTION IMPROVEMENT.

I wouldn't want you to REPEAT this, but ...
by Lewis Overton, N0SN

The tone access has been removed from 146.28/88! Relocation of the repeater within the building, and into a new shielded cabinet, was completed on Thursday, 9 July 1987. The tone access requirement was turned off. The relocation seems, at least at first blush, to have resolved the electronic noises that kept 88 from locking on, and the machine is once again available to those of us without sub-audible tone generators. Welcome back!

And on the subject of repeaters, the Borealis ARC has brought up a new one on 146.37/97. This machine is located on Ft. Wainright, and covers most of the valley. It was readily accessible from the university and the Chena Ridge area on Thursday afternoon (same Thursday as above). The 97 repeater is open to hams in the area. It supports an auto-patch for members of the Borealis club. The patch is restricted to encourage people to support the cost of the phone line. If you are interested in using this repeater, you are encouraged to join the Borealis club. Cost is \$15/year. Contact Laureen Salvagnini, 5134-B Koyuk, Eielson AFB 99702.

New Amateur Satellites Are Now QRV.
by Louis M Tozzi (AL7IF)

The Soviet Union has launched a new amateur satellite into low earth orbit. The satellite, designated 87-54a is part of an experimental navigation and communications satellite. The bird has two complete sets of transponders, designated as RS-10 and RS-11. Each set of transponders has five distinct modes in which it can operate. It appears that only one transponder is on at a time, alternating between RS-10 and RS-11. Each transponder has an output power of five watts. Here is a summary of the modes and uplink/downlink frequencies:

MODE	RS-10		RS-11	
	UPLINK	DOWNLINK	UPLINK	DOWNLINK
A	145.860-900	29.360-400	145.910-950	29.410-450
K	21.160-200	29.360-400	21.210-250	29.410-450
T	21.160-200	145.860-900	21.210-250	145.910-950
KA	145.860-900	29.360-400	145.910-950	29.410-450
	21.160-200		21.210-250	
KT	21.160-200	145.860-900	21.210-250	145.910-950
		29.360-400		29.410-450

Engineering beacons mark the lower edge of the downlink transponders. These beacons are sending spacecraft information in CW at rates around 25 WPM. When the spacecraft is in modes A, K, KA or KT, a beacon can be found at 29.357 on RS-10, or 29.407 on RS-11. In modes T or KT, a beacon can be found at 145.857 on RS-10, or 145.907 on RS-11.

At the top end of the downlink passband, the robots can be heard calling CQ. On RS-10, the robot can be heard on 29.403, and presumably on 145.903. The corresponding frequencies on RS-11 are 29.453 and 145.953. The robot can be heard sending: CQ CQ CQ DE RS10 RS10 QSU (frequency) AR. The frequencies it will listen on are 21.120 or 145.820. Each transmission of the robot will tell you where it is listening.

To work the robot, send the following in your best fist (for convenience, my callsign is inserted): RS10 DE AL7IF AR. If you are into the robot, you will hear yourself in the robot's transmitting frequency. If it is garbled in any way, resend it. The robot uses DE and AR as delimiters, and anything it hears in between those two is the callsign it will respond with. Send your callsign only once. The robot will recognize your callsign and give you a signal report. The robot's log is downloaded to the control station in the USSR, and you will receive a QSL card (I am told that they are rather nice).

RS-11 robot procedures are exactly the same, with downlinks at 29.453 and 145.953, and uplinks at 21.130 and 145.830.

Making contacts with either the satellite or other users is simple, but a bit of practice is required, and there is a minimum requirement for equipment. For equipment, there is a necessity to be able to transmit on one band, and receive on another, whether it be 2 and 10, 15 and 10, 15 and 2, or some other combination. the ability to transmit and receive at the same time is very desirable.

Satellite transponders are linear translators. Everything they hear between the upper and lower limits of its receive passband is retransmitted on the downlink proportional to its signal strength. If you are at the bottom of the uplink passband, you will be at the bottom of the downlink passband. USB up gives USB down, FM up (definitely NOT recommended) is FM down, etc. This allows you to have a good idea where you will be in the downlink passband. On RS-10, 21.172 yields a downlink signal of 29.372, +/- 1khz. 21.160 corresponds to 29.360, 21.198 corresponds to 29.398.

With a separate transmitter and receiver, the following procedure works well. Listen for the beacon. when it is Q5, listen to the downlink, and find an open spot. Estimate the transmit frequency that corresponds to that spot on the downlink. Send a string of V's, or a series of dits while slowly moving the TRANSMIT frequency up and down around where you expect to find yourself. Eventually, you will find yourself sweeping past your receive frequency. Adjust your transmitter until your signal is zero-beat with your receiver.

Call CQ, either in CW or SSB, if you are strong enough in the downlink. Make a long call, and listen for other stations to "crash" you. They will sound like a string of dits, or a carrier sweeping past in frequency. These stations hear you, and are looking for themselves on your frequency. continue to call until either the other station calls you, or he has settled down to one frequency. Give your callsign twice, then listen. Due to doppler shift, you will appear to drift down in frequency during the pass. Leave the receiver in one place, and adjust the transmit frequency so that you can hear yourself. If you lose yourself in the downlink, look for the beacon. If you don't hear it, the pass is over.

Lastly, a couple of hints. This satellite is in a very low orbit for a communications satellite. Passes are typically fifteen minutes long, at most. Be as brief as possible; otherwise, you may find yourself talking to yourself. A typical CW contact might be: KA9SPC DE AL7IF R R TU 559 559 QTH FAIRBANKS NAME WIGI BT HW? BK/ BK R R FB WIGI NAME PAUL, QTH WAUKESHA, WI. UR 559 559 C U NXT PASS RS10 AL7IF DE KA9SPC SK. At 20 WPM, this takes about a minute. Phone contacts should be equally brief. this becomes more and more important as the stations get farther away, since the common satellite window is shorter.

Feel free to ask for help to get up on satellites. There are plenty of folks willing to help. The more the merrier!

QST AARC DE RS-10 E RS-11 AR!

AARC Annual Picnic
August 1, 1987
by Jim Dixon (NL7HI)

The AARC picnic will be August 1, 1987 at the Chena Lakes Recreation Area. The fun starts Saturday morning at the number one pavilion. It will be a potluck affair with the following license classes bringing the following:

Extras - dessert
Advance & Generals - main dish
Techs and Novices - salad

There will be plenty of sunshine and maybe different skill contests if I get motivated before August. The club will supply liquid refreshment and paper plates and the such.

99708

Fairbanks, AK

Box 82443

Joe Voelkeit

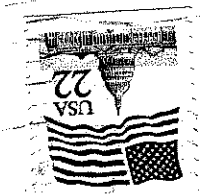
9/30/87

FAIRBANKS, AK 99708

PO BOX 83231

ARCTIC AMATEUR RADIO CLUB

SHORT CIRCUIT



**ARRL Amateur Radio Exam Scheduled
Wigi Tozzi (AL7IF)**

There will be an amateur radio exam on Tuesday, July 14, 1987 at 7:00PM. The exam is to be held at the Geophysical Institute, in the Globe room. This will be an ARRL/VEC exam, thus there will be a charge of \$4.35 for the exam. This if payable by check or money order only, payable to ARRL/VEC. Demand for this exam is expected to be high, and thus, seating for certain elements may be limited. Arrive early to insure availability of test materials.

For more information, call Wigi Tozzi (AL7IF) at 474-5292 during the day, Monday thru Friday.