



Seattlebutt

No. 48 November 1983

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Captain's Cabin

John Yodis, K2VV

Once again I was pleased to hear the bands filled with calls from the Northeast. While it was frustrating to go all weekend without a decent ten meter opening conditions were much better than we have reason to expect in years to come. Some newer amateurs in YCCC might have trouble imagining an entire weekend yielding only HI8LC and 6W8DY on 10m. 160m is doing a nice job of picking up the slack, though. Joe, WA2SPL, worked 42 countries there in a CQ WW phone single band effort. 20 countries on this band for an all-band entry is not bad. By the way, yes, Virginia, 4UIVIC does count separately in CQ WW. It was just recently added to the WAE Countries List.

Every one of us finishes a contest with a few calls in the log of which we're only 80% sure. We find ourselves vindicated or corrected with each bureau shipment. I'm always amazed, however, to find QSLs correcting calls I "know" I had copied correctly. I think I have a good idea of what's going on, try this on for size.

In this issue -- CQ WW Phone scores

Picture the following exchange:

CQ TEST DE K2VV TEST
K2VV DE JF3GQR
JH3GQR 599 05
R 599 25
R TU DE K2VV TEST

Whose fault is the busted call? Half the time, QRM is probably responsible for the calling station not knowing you got his call wrong but I'm convinced that the quick pace of contesting promotes an attitude of "close enough" or "he can correct it when he gets my card".

Add to these the number of stations who answer you without ever sending your call (how do you know they have it right?) and it's amazing we get anything right.

Floating

Paul Young, K1XM

A quick count of the stations listed in the Clipper's Log column shows that at least sixty-six YCCC stations were active in the CQ WW Phone contest, representing at least eighty five members. Not Bad! FRC is not taking all this lying down, though, so we will have to be out in force on the CW weekend if we are going to win this year. Traditionally, YCCC has done best on phone, and FRC has done best on CW. Maybe we can change that this year.

For the CW contest, I plan to spare myself the grief of the multi-single rule, and operate multi-multi. If I can keep the inter-station interference problems down, maybe I can give K1OX some competition (but only if they have a forty hour power blackout).

Speaking of K1OX, the repeater was very useful during the SSB contest, providing us with multipliers we otherwise would have missed. At the end of the contest, for example, we knew of about five pileups on three different bands, and were able to plan our band-switching strategy to get the most multipliers possible within the 10 minute rule. It was also very handy for finding out about multipliers on ten meters, and for keeping operators awake (and busy) during the night. For CW it should be even more useful with input from the K1OX multi-multi. If you are not operating seriously, why not go multi-single and take advantage of the repeater?

On a different note, the club secretary informs me that there are several people who made large scores for the club who have not yet paid 1983 dues. If these people have not paid by the time the club eligibility list must be sent to *CQ Magazine*, their scores will not count for the club! Check the label on this Scuttlebutt, and if it does not say you have paid for 1983, please do so. Wouldn't you feel silly if, after operating all those hours, your score didn't count?

YCCC December Meeting

The next meeting of the **Yankee Clipper Contest Club** will be at 1 PM on 3 December 1983 at the Polish Naturalization Independence Club, 290 Millbury Street, Worcester, Massachusetts. The agenda is not complete at this time, but will probably feature Mark, K1RX talking on VP2VDH.

From the Massachusetts Turnpike (I-90):

Get on I-290 North, take exit 12 to Brosnihan Square. Go around the rotary under I-290, then take an immediate right and park in the lot on the right. PNIC is across the street.

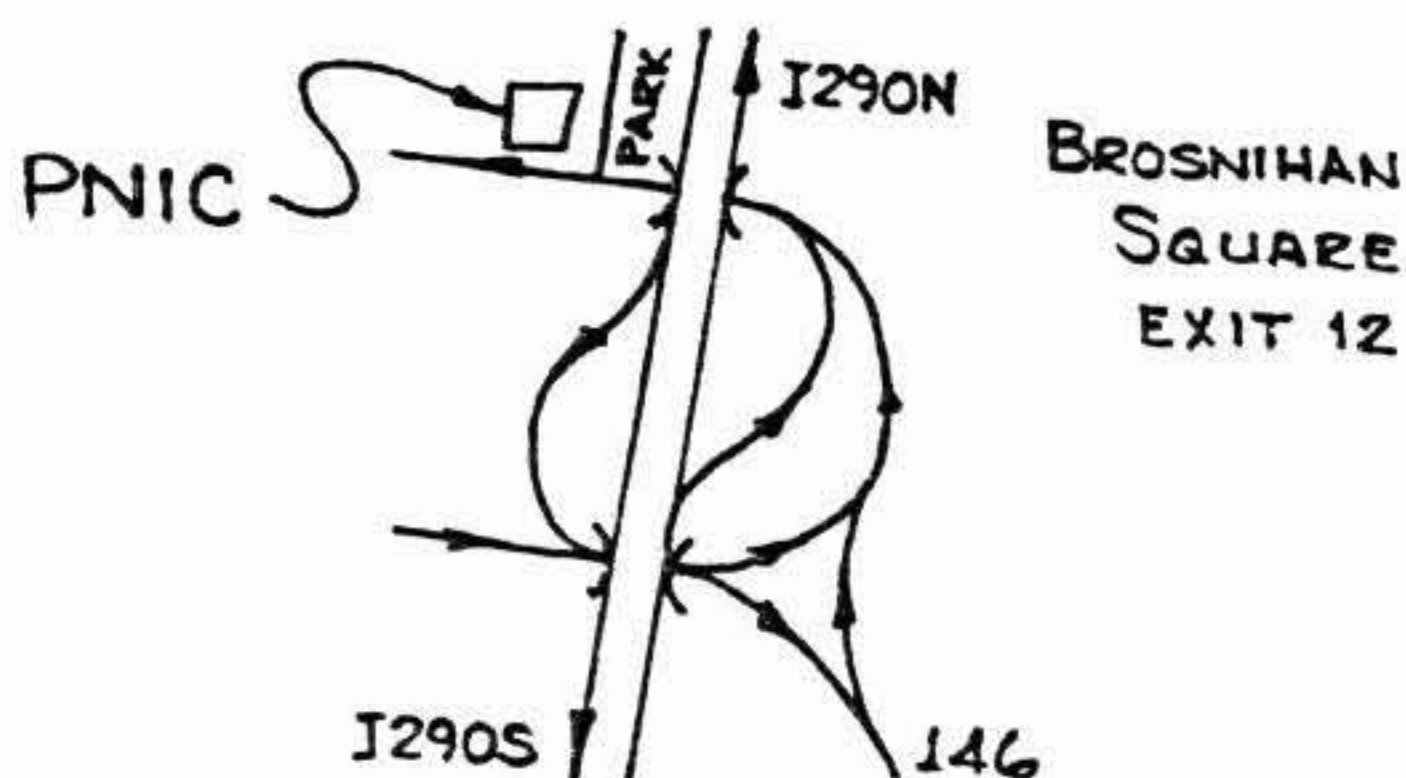
From I-290 heading South:

Take exit 12, go around the rotary passing under I-290 twice, then turn right as above.

From Route 146 (RI, etc.):

Follow 146 into the rotary at I-290, go around and under I-290, turn right as above.

PNIC operates a bar and serves some sandwiches. There are no quick-food establishments within walking distance. There are, however, several restaurants a short drive from the PNIC.



MLA-2500B Saga

Fred Hopengarten, K1VR

I bought an MLA-2500B for the purpose of getting on 160. After loaning it to WICF, so that he could try his broadcast station location on Martha's Vineyard, he liked it so much that he bought the company.

Er, actually, no. He just bought one for himself.

Thereupon, since I had no 160 antenna, and a good primary 80-10 meter amplifier, I let the MLA-2500B stand idle, trotting it out for contests at K1OX and the like.

Last year when I tried using it again, as I would load it up and approach 700 watts output, the amplifier's main fuse would blow. Soon, fuses were blowing at even lower power levels.

Initial Research

A thorough check of the inside of the amplifier failed to reveal any obviously blown parts. Running one tube at a time resulted in low output power in relationship to what could be expected, and, even then, sometimes the amplifier would sputter.

Working in a dark room and making close observations, wearing glasses for eye protection, it was possible to see that the tubes started blue, got bluer as power was increased, and then went to orange as the fuse would blow. Conclusion: the tubes were gassy.

As the finals are very expensive 8875's, merely replacing them was to be a last step. K1EA thereupon volunteered to call Eimac. Customer service at Eimac suggested that the problem was a weakened getter.

It seems that when vacuum tubes are made, the vacuum is never perfect. To capture the last few molecules still drifting, an element in the tube heats up and "gets" those remaining free molecules.

Eimac's suggestions were:

1. Drive the amplifier off-resonance (low output) for a while, or
2. Run the amplifier at half of normal plate voltage for a while.

With either strategy, they suggested that we might want to cool the transformer with a fan, while trying to heat up the tubes, and that it was probably a good idea to run the amplifier for 4 to 5 hours, key-down. This was all in an effort to heat up the getter and gather back those last few molecules which were causing the tubes to be gassy and short, blowing the fuses.

Solution

It turns out that figuring out how to run the amplifier at half voltage was a problem for us. And running the amplifier for 5 hours off-resonance seemed like an inelegant solution. So I loaned the amplifier to Sergio Marino, KG1C, a local with a keen interest in 220 repeaters, who was born in Italy and likes to talk to the folks of his native land now and ag.

KG1C promptly uncorked the two tubes and baked them at 450 degrees for 24 hours. They now have a slightly brown stain which is related to the type of cooking which normally goes on in his oven, but they work just fine. Apparently the getter has been re-invigorated. Output does seem down a tad, but not seriously down, from the days when those tubes were new. However, no one can argue with the cost to fix!

Now I know the true meaning of the phrase: "Those tubes are cooked."

TS-930 Remote Bandswitching Unit

Tyler Barnett, N4TY

CAUTION:

This article describes a performance improvement for the TS-930 applicable to DXers and contesters. The author takes no responsibility for damage to equipment resulting from this modification. If your radio is in warranty, this will void it. The author leaves some of the details of this project to your own design (power supply, packaging, relay selection, etc.) but enough material is presented to complete construction. The 930 is a very, very complex radio, and repair could be costly. If you have any doubts at all about your ability, PUT YOUR SCREWDRIVER AWAY!!!

GENERAL DESCRIPTION:

The TS-930 Antenna Tuner has relays built-in to switch the appropriate inductance in and out. Two dc servo motors drive two tuning capacitors to minimum SWR by means of phase-detection circuitry. We sample the six lines, AT1 through AT6, and decode them to drive 1 of 7 relays to provide us with an external bandswitch that instantly follows the front-panel pushbuttons. This may seem a trivial electronic project, but the time saved while contesting or DX-ing is truly remarkable. Once you have used it, you will not be without it.

TS-930 REWORK:

Encoded band-change information is sampled at the #1 6-pin connector on the AT-930 circuit board. See pictorial A for connector location. Remove the 4 screws holding the circuit board and gently lift halfway out. Tack-solder 6 small wires to the foil-side of the circuit board per pictorial B, and label as wires 1 through 6. Reinstall the PC board and route the 6 wires between the front-panel and antenna tuner and run them through the sliding-top cover of the radio where the calibrator switch is. After running a ground wire from under one of the top-cover screws of the AT-930 out the hole also, button-down the top cover. Terminate the 6 AT wires and the ground wire in a small multi-pin connector. This is the extent of the 930 re-work.

The cable from the 930 runs over to the switching unit by means of a 6-conductor shielded cable. If the 930 is being transported, the cables can be unplugged, and the short one from the 930 stuffed into the cavity around the calibrator switch, and the cover closed.

SWITCHING UNIT CIRCUIT DESCRIPTION:

The heart of the TS-930 remote bandswitch is the two 74LS154 4 to 16 decoders. The 74LS154 was used to keep down the fan-out load on the Digital Unit which drives the AT-930 Antenna Tuner.

The two 74LS154's decode the truth-table below: Notice that the service manual left out the AT6 line being active on 28.0. This caused much grief in the de-bug stage!!

signals from AT-930 -->		AT1	AT2	AT3	AT4	AT5	AT6
band -->	THRU or 1.8						
selected	3.5	x	x	x	x		x
	7	x		x	x		
	10	x			x		
x=TTL on state	14	x			x		x
	21	x					
	28	x				x	x

The 74LS154 decode chips drive all 6 sections of a single 7404 and the outputs are used to turn on a Darlington NPN transistor, which drives the appropriate relay coil. All false states in the 930 have been accounted for, and if the frequency selected wanders outside an Amateur band, the THRU relay is selected. Please note 160M uses the THRU position also.

One could possibly drive a 5V reed relay (several are available) directly off the 74LS154 outputs, but since my friend's application deemed the use of a 110VAC coaxial stepper relay, the decision was made to go with surplus 24VDC relays with very adequate contact ratings. Also, if something should go wrong, there is a Darlington and a 7404 and a 74LS154 between your precious 930 and whatever went wrong. In my case, something did go wrong once, and everything was turned into inert silicon chunks. The 930 remained intact. Heed the message!! By the way, any relay voltage can be used: 12V, 5V, etc., so long as the transistor ratings suffice. Don't forget the diodes across each relay, and put them in right!!

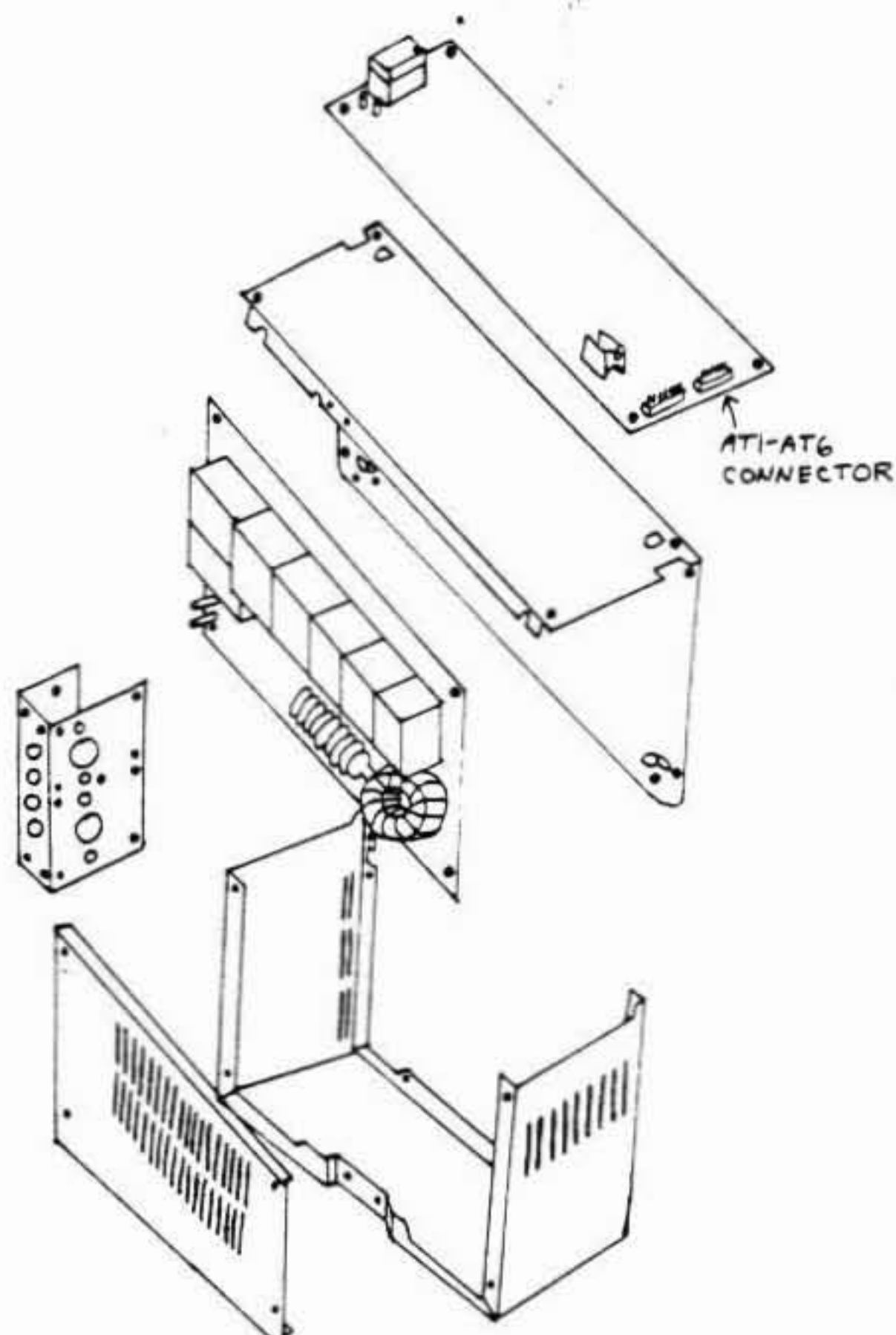
Use the output contacts of your relays to switch anything you want: amplifier bandswitch drive motors, antenna switches, coaxial relays tuners, etc.

Power is supplied by a small transformer, diode bridge and filter of your choice. A 7805 3-terminal regulator takes care of the logic chips' small power needs.

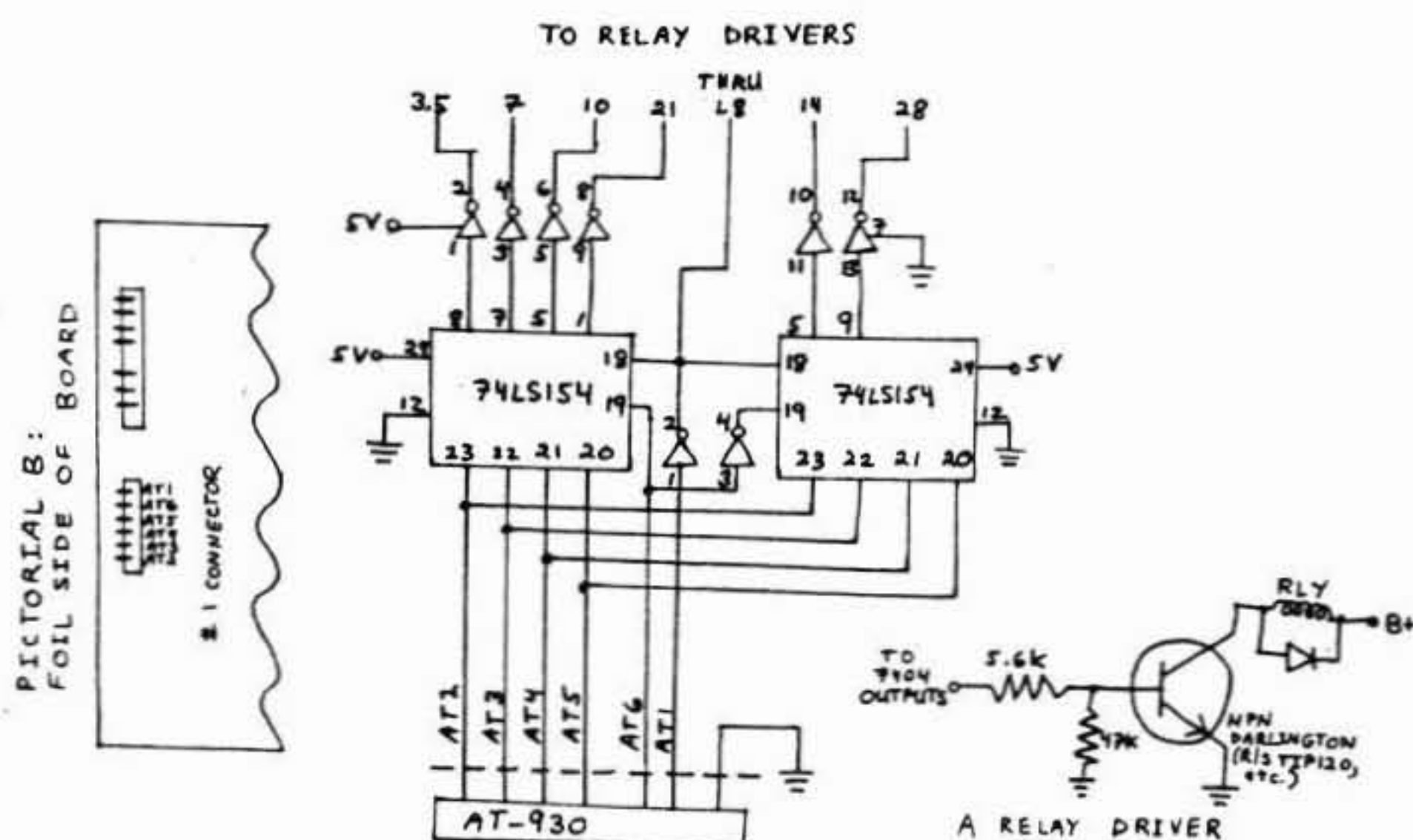
Proper bypassing of the AT1 through AT6 lines coming into the switching unit cabinet is provided by using shielded 6-conductor cable between the 930 and the unit, along with .01uf disk capacitors from each AT line to ground.

One man's dream of a legal-limit amateur station that can switch bands by the push of a button is reality! My thanks go to Bill Ovca, N1GL, for the generous loan of his 930 and his pocketbook for the duration of the project. Also kudos to Hank Zimmerman, K4FU, who hatched the idea for the bandswitch project and arranged my connection with Bill. Thank you, gentlemen.

PICTORIAL A: AT-930



PICTORIAL C: SWITCHING UNIT SCHEMATIC



Clipper's Log

Matt Power, KA1R

October ARRL QSO Party cw

KZ2S 522/65
K1KI (N1EE, op.) 496/62
K1VUT 422/58

October ARRL QSO Party SSB

KX2S 640/68

CQ WW phone

W1GG	592	78	192	448.740
KA1RE	334	56	140	182.868
KB1W	655	75	194	533.696
WA1ZAM	293	77	192	204.000
N2AIF	320	73	167	197.760
N2JJ	395	85	193	279.390
KB2MG	80	?	?	10K
W2NC	53	26	41	9.045
K2QF	339	82	181	242.486
K2RD	730	117	286	822.926
WA2SPL	185	18	42	18.484 160m
K2TR	325	29	88	110K 20m
K2VV	1680	130	385	2.424.620
K2XA	1011	119	335	1.346.000

KQ1F 706 121 316 822.434 ms
(+K1XM, K9HI, K1PR)
KR1R 796 80 196 621.552 ms
(+K1RG, KSIN, WB1EYL)

CQ WW Phone Rumors

AK1A 1.7M m/m
(+K1GQ)
N1AFC 40K s/o
K1AR 2.6M s/o
W1BR 1.15M m/s
(+K1KNQ)
N1CQ 1.2M m/s
(+K1JN, KA1YQ)
KG1E 78K s/o 10m
KA1GG 1.5M m/s
(+K1CQ, W1KM)
AJ1I 488K s/o
W1IHN 880K s/o
K1JX 2K s/o
K1OX 2.2M s/o
(K1CF)
K1RX 2.6M m/s
(+K1YR, K1RU)

W1WEF 1.29M s/o
W1ZM 175K s/o 75m

N2AA 4.76M m/m
(W2RQ, K5NA, KR2J)
KA2AEV 258K s/o
K2EK 1.5M s/o
N2GC 288K s/o 20m
KR2J 99K s/o
KR2N 15K s/o
KY2P 500K m/s
(+KY2O)
KZ2S 475K s/o
AA2Z 509K s/o

NP4A 8.0M s/o
(N2NT)
PJ7A 11.4M m/s
(K1DG, K1KI, K2WR)
VP2VDH 4.0M m/m
(K1RX)

Also heard:

N1AU, AG1C, W1BK, K1CC, KA1CI, W1CWU,
K1EA, W1FM, K1FWF, K1GSK, K1HI, W1HNZ,
AK1L, K1MEM, W1OO, K2OY, KC1R, W1RM,
W1RR, K1TR, K1VR, K1WW, W1YN, KC4AAA
(N2WT)

ARRL Sweepstakes CW

K3UA*	1100	74	B
W2RQ	1079	74	B
W1WEF	1009	74	B
W2YV* (KQ2M)	1001	74	B
K1XM	973	74	B
KZ2S	951	74	B
K1VR	936	74	B
KY2P	791	72	A
K1ZM	750	74	A
KB1W	743	74	B
K1AR	741	73	B
KA2AEV	655	74	A
AA2Z	559	?	B
N1ACU	350	?	B
KA1CLV	340	?	A
K1RX	300	?	B
KR2J	291	65	B
N2JJ	203	72	?
WA1ZAM	251	58	A
KSIN	210	42	A
KQ1F	115	37	A
AJ1I	50	?	B

* Doesn't count for YCCC aggregate score

Scores from Last Sunspot Cycle

Matt Power, KA1R

Just for nostalgia's sake, here's how things looked for CQ WW cw in 1972:

Single-op, All-band

N3RS	1.53M
W3LPL	1.44M
W1RM/2	1.39M
W6RJ	1.34M
K1NA	1.25M
W1YK (K1JX, op.)	1.24M
N6CW	1.17M
W6RR	1.14M
N6AA	1.13M
N2LT	1.06M

Single-op, Single-band

160 Meters	
WA4GSF	3K
W1BB	2K
80 Meters	
W1MX (W1FV, op.)	80K
W3MFW	75K
40 Meters	
K6EBB	229K
W5UN	190K
20 Meters	
W1JUY (K1RX, op.)	202K
WA6IQM	168K
15 Meters	
W2HPF/8	169K
W4AAV	161K
10 Meters	
W4KFC	101K
K1LWI	82K

Multi-single

K1DIR	(+W1FJ, w1UU) 1.99M
K1ZZ	(+W1ARR) 1.56M
W3GM	(+W2NM, K3OA, W3FV) 1.10M
K2SB	(+AB1T) 1.02M
N6RA	(+K4TKM) 980K
W9EWC	(+W8LHE, WB8IJI) 970K

Multi-Multi

W3AU (+K1F, K2SS, WA2DHS, K3EST, K3RV, W3GRM, WA3AMH, WA3IAQ, N4IN, N4RV)	5.03M
W4BVV (+K2AV, K2TT, K3KU, K3RA, W3ZZ, K4GKD, K4YF)	4.48M
W7RM (+K6RR, K6RU, K7CW, K7JA, K7SS, K7RA, N7UA, W7HIK, W7XR, WA7GWL)	4.23M
W3MM (+K1PT, K3WJV, W3RJ)	2.43M
K3WW (+K3VW, KB3GJ, W3WPG, ND6H)	2.25M
K4CG (+WA3HWN, K4FJ, KJ4I, N4VN, WB4RDV, WB4VWI, K6BZL)	1.52M
AA4S/3 (+K2PS, W2NM, WA3GJZ, WA3MME)	1.24M

Some of the calls have been updated to the current calls.

The **Scuttlebutt** is the newsletter of the **Yankee Clipper Contest Club** and is mailed about nine times per year to all paid up members. Dues are \$10 per year, payable 1 April with a grace period through 30 June. Non-members may subscribe to the **Scuttlebutt** by sending \$10 to the Treasurer: Charlotte Richardson, KQ1F, 11 Michigan Drive, Hudson, MA 01749. Subscribers who subsequently become members will be credited as having paid dues.

The **Yankee Clipper Contest Club** (an ARRL Affiliated Club) holds four official meetings per year, on Saturday afternoons in March/April, October (at the New England Division Convention when possible), November/December, and January/February. Also, W2YV hosts a summer social gathering each July, usually on the second weekend after July 4. Attendance at an official meeting is required in order to become a member. Club members congregate on 3830 Khz Monday evenings; many routinely monitor this frequency other evenings as well.

Rosters are mailed to all paid members each summer. For more information and/or assistance, contact the area manager nearest you on the following list:

Area	Call	Name	Home	Work
CT/RI	K1KI	Tom Frenaye	(203) 673-5429	(203) 549-0107
EMass	W1FJ	Al Rousseau	(617) 598-3744	(617) 599-7500x173
WMass	W1GG	Gary Gaudette	(413) 443-3404	(413) 494-4047
VT/NH	WB8BTH	Jeff DeTray	(603) 525-4998	(603) 924-9471
ME	K1SA	Bernie Cohen	(207) 773-6589	(207) 797-3585
NNY	K2VV	John Yodis	(518) 843-3897	(518) 370-4200x632
SNY/NJ	K2EK	Bill Gioia	(914) 221-1672	(212) 888-2102

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