

## Crystal Peak Log

**April 7, 2002 Sunday**

W6IT, WD6E, W6AMP, W1AIX, K6TRN

Removed Motorola receiver, Kenwood transceiver (transmitter), fan and barrier strip. Installed GE Mastr radio into the repeater shelf. Easy mounting and easy to remove the radio for service. GE Mastr purchased from Micro Computer Concepts (MCC).



Discovered no discriminator audio present on the MCC accessory connector pin 11 (DB15). There was "Receiver Audio Output" on pin 2, but with de-emphasis filtering. We decided to use this connection but only until we could figure out why there was no discriminator audio at pin 11. The pin out of the DB15, as indicated on MCC's document is:

15 Ground	8 Ground
14 +13.8 (3A)	7 XMTR Audio In
13 RCVR Audio Out 2	6 NC
12 CTCSS Logic Out	5 NC
11 RCVR Disc Audio	4 PTT (low to transmit)
10 CTCSS Audio TX In	3 COS Out (sq open = HI)
9 Ground	2 RCVR Audio Out
	1 Ground

Noticed that we could not squelch the audio in our controller with any setting of the squelch pot (this is the squelch pot on the front panel of our controller). We finally used the IFR in oscilloscope mode and found a 1 MHz signal on pin 2 of the MCC connector only when we had our cable connected. Assumed to be op amp oscillation in their audio circuit. We left the repeater in "CTCSS squelch".

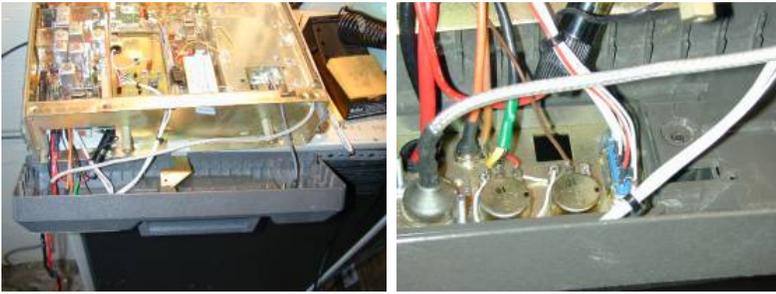
Noticed repeater coverage to be very poor, and the audio was quite bad due to "double de-emphasis" filtering on the receiver audio.

**April 10, 2002 Wednesday**

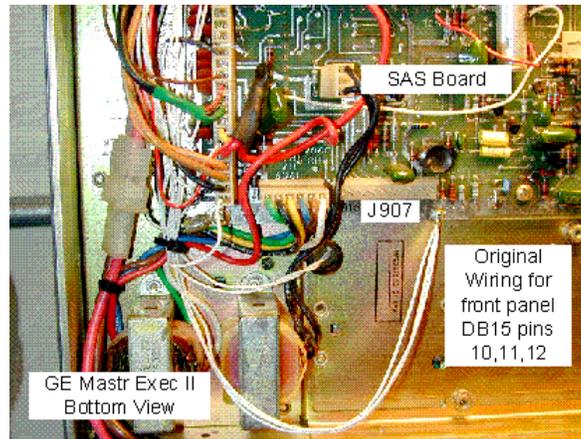
WD6E

Pulled the Mastr radio from the mount. Tilted the front panel down and found that the wiring to the DB15, pins 10, 11 and 12, was in tact at the connector. Then determined that the other ends of the wires (for discriminator audio and CTCSS TX audio) were simply grounded to the SAS board rather than

connected to the correct connector (J907).

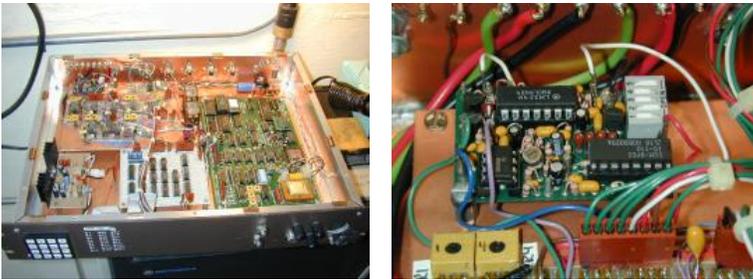


Apparently, the MCC process modifies the Mastr radio this way for “no controller ordered”. Quite frustrating. I phoned Ron at MCC with the radio opened up and got the correct pin numbers for discriminator audio (pin 8) and CTCSS TX audio in (pin 6). Tested for continuity from the DB15 pins 10 and 11, and connected the wires to the SAS board connector (J907).



Re-installed the Mastr into the rack. Changed the wiring on the DB15 connector so that receive audio into our controller was connected to pin 11. Checked for proper squelch operation and repeater audio quality. Both were now OK.

Modified our controller by adding a wire from the TS-32 encoder output to the DIN connector J5, pin 5. Removed the controller from the rack to do this mod.



This was a simple modification, and the setting the CTCSS encode level was easy once the controller was re-installed into the rack. Then set the CTCSS TX deviation to 1 kHz, and the repeat audio deviation at 5 kHz. Tested for CTCSS functionality with my handy talky and my mobile rig. All worked fine.

Next tested for SWR on the (interim) antenna. 60 w forward and 50 w reflected! Put a dummy load on the end of the coax (1/2” hardline) and got the same reading. Found an old run of Belden 9913 coax with N connectors and replaced the hardline. SWR was now about 10 watts reflected with about 55 watts forward. The G6-440 must just be tired (15 year old antenna). Installed the radials (they were missing) on the G6-440. Heard W1AIX at his office (handy talky into a mobile antenna on his bookcase). He was good copy. Then heard W6STR mobile in Monterey. Some picket fencing but also good copy.

Called it a day.

