

Additional Details on Inyo / Mono 2M repeater linking project

Our latest linking project has had mixed success so far. Our objective is to link the 3 Mono County RACES 2M repeaters to existing Silver/Mazrouka linked 2M repeaters and add a link to the Mammoth Mt. 2M Repeater. All the links to be controllable from either end.

The Silver and Mazourka 2M repeaters are currently linked on UHF using a very simple interface that provides audio and PTT between the Kenwood TKR750 repeaters and Motorola GM300 UHF link radios on each site. The link between them can be commanded on and off from either end using the built-in capacities of the TRK750 2M repeaters.

The Mammoth Mt. 2M repeater is a standalone TKR750.

The 3 RACES 2M repeaters in Mono County on Leviathan, Conway and Antelope are linked together on UHF. The UHF "hub" is on Conway. A VHF signal coming into any of the 3 repeaters is retransmitted via UHF and comes out on the other two.

Our original effort ("PLAN A") was to add link radios and a 3-link port controller (CAT400) to the equipment on Silver Pk. Maintain the existing UHF link between Silver and Mazourka but control it using the CAT400. Access the 3 RACES repeaters via a new UHF link from Silver to their hub on Conway. Add a VHF link from Silver to Mammoth Mt (essentially an in-band repeater from Silver to Mammoth). The CAT400 controller would allow all links to be controlled (on and off) from either end. (i.e. any of the 3 RACES repeaters could turn the link to Silver on or off and the link from Silver to the RACES repeaters could be turned on or off via the Silver or Mazoruka repeaters etc.)

After several trips to Silver were made with considerable effort and support from many folks, both on and off the site. The original plan failed, and several other options have been tired. This is what we have learned and where we stand:

PLAN A: The in-band VHF link to Mammoth Pk. was installed and works fine. However, there is interference on the UHF link Conway UHF frequency from an FM broadcast transmitter on Silver Pk. That interference is sufficiently strong to preclude access to Conway from Silver. (We may be able to solve the problem but not before we get snowed out of Silver this year.)

PLAN B: Find an immediately available accessible location with a good RF path to both Silver and Conway. Install a "relay" on a clear UHF frequency to Silver which then links to Conway on its' normal UHF frequency pair. This is the preferred approach but we have not been able to find such a location to date. There are several long-term possibilities, but nothing appears viable before Silver will be snowed in.

PLAN C: Use a VHF link from Silver to the Antelope repeater, essentially an "in-band" repeater like the Silver to Mammoth link. Transmitting to Antelope would access the other two RACES repeaters via their UHF hub. We installed a VHF link radio that transmits on the Antelope input frequency of 146.37 and listens on 146.97. Two problems came up. The transmitter of the link radio to Antelope is only 30 KHz away from the input frequency to the Silver repeater (146.34)! When the link to Antelope is up the Silver receiver is overloaded and the effective sensitivity drops dramatically. Additionally, because of the carrier drop delays on Antelope and Mammoth those two links cannot be on simultaneously (they

cause each other to key up and just see saw back and forth endlessly) This last problem is probably not resolvable.

PLAN D: Find an immediately available accessible location with a good RF path to both Silver and Antelope and install a "relay" link that ties Antelope to Silver with a UHF link from Silver to the relay and a VHF link to Antelope. One place appears useable; the ridge above Paul's KK6BAF's QTH which has a good path and a solar panel. We would have to come up with an enclosure, two radios, two antennas, a solar controller and some batteries. The only issue with this plan is that, because it is essentially an in-band repeater it is likely we could not have the Mammoth Mt link on at the same time. There may be other locations available. We are currently working this plan.