

Linking for Dummies

A number of members have been asking how to control the links on the Manitoba Repeater Society linked repeater system. So this article is to show everyone how simple the linking can be. First we need to establish some ground rules. Once we understand the ground rules below, the rest is simple for 95% of the users and the commands they will be issuing to the system.

1. We need to believe that all the links are in good working order as published from time to time in the various guides or manuals that are distributed. (look for a schematic diagram of the system elsewhere in this issue)
2. We need to understand that a repeater does not represent a controller and vice-versa. When I mention the VE4PWG controller, I am not talking about the VE4WPG repeater, They are two different pieces of equipment at the same location
3. We need to understand which repeaters are attached to the backbone normally and which ones are not.
4. We need to understand which links are normally attached to the back bone and which are not.
5. We need to understand where inter-ties exist between one system and another.
6. We need to understand the difference between local commands and remote commands

Item 1 - The diagram.

Hopefully there is room in the newsletter to have the diagram attached. If not then please look for it on the MRS web site, or in the next newsletter. The diagrams shows all MRS repeater, Links and inter-ties both current and planned for the future. In a perfect world, we would have paid employees who would travel the province every few days fixing, repairing and maintaining the sites. But as this is a hobby and the executive members are limited to what they can do at any given day by their families. Things tend to break or not work properly all the time. But we try our best. So for now, lets just agreed that the system is working perfectly and everything is as displayed.

Item 2 - Understanding the diagram

The Controllers - The double line boxes with the numbers in them are the controllers located at specific sites. The site the controllers are associated with is, the repeater that hangs immediately off the controller. i.e.. - the #45 controller is at the VE4WPG repeater site, and the #42 controller is at the VE4MIL site.

The Backbone - Not every site has the same type of equipment, But if we call work with the controllers that are numbers and the look at the bi-directional double lines that go from controller to controller. This we call the backbone. This is what holds the system together. Without this you could not talk from one end to the other. The backbone is a full duplex system, where it receives and transmits at the same time. This means that while a conversation is going from #45 to #46 a totally different conversation could be going from #46 to #45. Complicated, yes, but don't worry about it. Just accept it as the way it works. The backbone is normally always connected to pass traffic from one end to the other.

Repeaters - Some of the repeaters (radios) are at the controller site and are connected by wires. Other repeaters are connected to the controller by links (other radios). This is important to understand which

are which, as they take different commands to make them work properly. The repeaters that are directly connected are shown by lines without arrows, while the linked repeaters are shown with lines with arrows. For both of these the connection is semi-duplex. Only one conversation can happen at a time. They are either transmitting or receiving, not both.

Item 3 - Normally connected repeaters

Each controller on the system can handle a number of functions at the same time. By this I mean they can process more than one audio conversation at the same time. They can be mixed together or kept separate and routed over any of the repeater ports or link ports. The choice is up to the user. But to keep everything simple for the users, your executive has set the system up with some repeaters pre-connected so you do not have to work about entering the commands to establish the connection. All repeaters associated with the controller except the VE4WPG repeater are connected on a normal basis. This is not to say that someone could have disconnected the repeater prior to you using it. For repeaters that are connected directly to the controller (not through a link) you will hear a be-bop as a courtesy tone when you un-key the mic. This signals a connected repeater. The reason for not normally connecting the VE4WPG repeaters is due to the high traffic that exists on that repeater.

Item 4 - Normally connected links.

As I stated before the backbone linking is normally always connected. The other links that exist are the one that go to remote repeaters (repeaters not at the controller site). These links have been normally set to always connected as well. The one exception is the VE4EMB link from VE4FAI, this one is hot-linked. This means that it is always connected and can not be disconnected.

Item 5 - Inter-ties

Where the Manitoba Repeater Society system connects to another system (like the Lake of the Woods System) there is an inter-tie point. This is like a switch it is either on or off. Connected or not connected. There is no normal for this switch. Sometimes it is set to normally on and other times it is normally off. You will have to test to see which state it is in. The Manitoba Repeater Society is part of the Pine Tree Inter-tie, which provides linking from Brandon to Dryden. We also link to other systems (Triple S Communication group, Dauphin Amateur Radio Club, and the Brandon Amateur Radio Club), plans are in the works to link to the Winkler Repeater group, the Manitoba Amateur Radio Museum, and to some private repeaters. All these inter-ties will either be normally connected or not. Each group decides how they want the system to be in a normal situation. If one wants it off then it is off. You can always connect it by command when you require it.

Item 6 - local vs. remote

Most of the repeaters on the system are made by one manufacturer or are set-up to mimic the commands of the one manufacturer. But how do you tell one controller to perform a command and not all the controllers. This is done by the use of a local prefix or a remote prefix. i.e. you want to tell the controller to disconnect the repeater from the backbone so you can have a QSO locally without it going over the entire system. The command for this is 460. But if you were to issue that all controllers would

Palomar Controller commands
Reset to Normal State - Prefix, 500

	ON	OFF
Link # 1	401	410
Link # 2	402	420
Link # 3	403	430
Link # 4	404	440
Repeater	406	460

Telemetry

	CW	Voice
Controller Status	411	411
Repeater status	04D	099A
L1 status	71A	711A
L2 status	72A	722A
L3 status	73A	733A
L4 status	74A	744A
Time (12 hour)	861	8661
Time (24 hour)	862	8662
Date	863	8663
Day of week	864	
Start local Identifier	018	
Start remote Identifier	019	
Location	09A	

Remember to use the proper Prefix
Local Controllers with a *
Remote Controllers with their Prefix , (i.e... #47)

The codes that 95% of the users will need.

In Winnipeg using VE4WPG, calling outside Winnipeg	*406
In Winnipeg using VE4WPG, resetting controller	*500
Outside Winnipeg, calling VE4WPG	#45,406
Outside Winnipeg, resetting VE4WPG	#45,500

disconnect the repeater associated with the site. Not what you really want to do. You want only one controller to accept the command. So what we have done is establish a prefix for local controllers and for remote controllers. To issue a command to the local controller, you need to prefix the command with the *, while remote controllers are prefixed with the #. What this means is that when you enter a command with start with the *, the local controller will intercept the command and perform the function you require. But if the prefix is a #, the local controller will ignore the command and pass it out the link ports for another controller to perform. But, now we have another problem, How do we specify which remote controller to send the command to. This is done by the address of the remote controller. You will notice that the controllers (in Manitoba) all have numbers starting at 40 and ending at 49. The controller in Ontario begin at 30 and go up from there. 4's for the VE4's and 3's for the VE3's. Kind of simple right. So to send a command to a certain remote controller, (i.e.. The controller associated with the VE4MIL

repeater) you would prefix it with #42 and then issue the command.

The fun part

OK, so now we have established the ground rules and we have an understanding of them. If we look at what is normally connected and what is not, you will soon see that everything is connected on the Manitoba Repeater Society system except the VE4WPG repeater. So if you are out in the rural area and accessing any repeater that is part of the MRS system, you will be able to hold a conversation with anyone else on the system as long as they are not using the VE4WPG repeater. This means that a person on the VE4MIL repeater can talk to a person on the VE4CDN repeater without issuing any commands. But what happens if you want to talk into the VE4WPG repeater and of to another

repeater or vice-versa. You will need to connect the VE4WPG repeater to the backbone. This done by issuing the proper prefix and the 406 command.

*406 or #45, 406

Once you are done you would issue the disconnect command as follows.

*460, or #45, 460

But what happens if the controller you are accessing is not in it's normal mode. You would issue the reset to normal command prefix, 500

*500 or #45, 500.

You could simply do this as compared to the 460 command described above for the situation above.

So now you have the most basic fundamentals on using the Manitoba Repeater Society link repeater system. From here you can get into more complicated commands. In the figure above are some of the other basic commands for turning links on and off and telemetry commands. (Please note only some repeaters have voice others respond in CW). So there you have it. How to use the MRS system or Linking for Dummies. Give it a try. It's your system, please use it.. If you have any questions, please feel free to contact any executive member, who will be happy to guide you through it. - enjoy