Using the NARC Fusion Repeater on the All-Star Network

AS210629

The NARC fusion UHF repeater is now operational on the AllStar amateur radio network. Being linked into the AllStar network allows the effective range of our repeater to be extended to virtually anywhere in the world. There are thousands of AllStar nodes and hubs all over the world. The AllStar network is similar to proprietary networks, like IRLS, D-Star, or DMR. However, unlike the proprietary networks, the AllStar network can be used with standard analog FM radios. Specifically, you do not have to have a special “digital” radio to use the system. The AllStar system works with everyone’s ordinary analog FM radio. The AllStar system is superior in sound quality due to its commercial-based PBX architecture. Moreover, the management structure of the AllStar system is superior to other systems. This makes for a more pleasant operating experience.

A brief word about our Fusion repeater. Our repeater is a Yaesu DR-2X C4FM digital/analog repeater. This repeater automatically works with both digital and analog signals. That means the repeater will function with either analog FM signals or digital C4FM signals. Whatever it hears, that is what it repeats. So, if you have a good old-fashioned FM radio, it will work perfectly fine. The beauty of the Fusion system is that if you have a Yaesu digital radio, your radio will coordinate with the repeater and will automatically switch between analog and digital. So, with your Yaesu digital radio, you can also talk to ordinary analog FM stations as well as digital. This is as close as it comes to universal compatibility between digital and analog modes of operation. Our repeater: 444.850 MHz, +5MHz split, 100.0 Hz PL.

The AllStar system works via the internet. The network is divided up into what are called nodes. Simply put, it is like a bunch of individual radios sitting out on the internet somewhere. Think of it as a telephone system, except instead of individual telephones and phone numbers, it is a bunch of hams with radios, each with a node number instead of a telephone number. Any of these nodes can talk to each other individually, or link together in groups. Some nodes exist just to be meeting places for hams to get together; they are called hubs. You may think of a hub as if it were a repeater, a place where hams can talk together.

Linking to any AllStar node or hub is easy. Simply use your touch-tone keys to enter the access code and the node number that you wish to link to. To make it easier, we have created a few short cuts to a few more “popular” hubs: the Philadelphia hub, the United Kingdom hub, and the Alaska Net hub. You may find many hams, or few hams, linked into these hubs at any one time throughout the day. Hams link-in from all over the world. I regularly hear hams from Australia and England chatting with Pennsylvania hams on the Philadelphia hub. Our repeater is one node among many thousands on the network. Our repeater is always on-line and ready to link into any AllStar node or hub. Remember, our repeater is simply another node on the AllStar network. Remember also that our repeater works with either analog FM or the C4FM digital mode. Either way, AllStar will work for you.

Our repeater, when left to itself, is not linked to any node or hub. We the users must tell the repeater what node or hub we wish to talk to. You can tell if the repeater is linked to any nodes or hubs by the sound of the courtesy tone. A double beep courtesy tone means the repeater is linked to a node or hub. A single beep courtesy tone means there are no nodes or hubs connected. Or you can simply ask the repeater what nodes it is linked to via the *52 command.

You open a link to nodes or hubs via a touch-tone command. To unlink from any node or hub, simply send the touch-tone disconnect code, *76. The AllStar network will disconnect. If you forget to disconnect, the system will automatically disconnect after one hour with no usage from our end of the link. Our repeater coverage is as wide as the world with the AllStar network. So, enjoy and have fun!

General notes:

1. Our repeater will have a single curtesy tone (one beep) if there are no nodes or hubs linked to our repeater. Our repeater will have a two-beep curtesy tone when a node or hub is linked to our repeater. If there is no courtesy tone at all, then the network is out-of-service, and no links can be made.

2. The AllStar network will time out in one hour if there is no activity from our end of the link. A voice will announce a 30 second warning. To stay on the link, simply key your microphone briefly; the link will be maintained for another hour.

3. The repeater will ID every ten minutes just like any repeater. It will also announce the time of day every hour.

4. Our own courtesy tone will change to a two-beep higher-pitched tone when a link is established. The linked node/hub courtesy tone will remain a single courtesy beep.

5. Popular hubs can be accessed via a shortcut code. See the library of “popular” hubs.

6. Be careful not to accidentally link together nodes/hubs that should not be linked.

Accessing nodes and hubs on the AllStar network:

There are two ways to open a link to nodes or hubs. One way is to use the “popular hub” shortcut. The second way is to enter the link command, *73, and then enter the individual node or hub number. Remember, all nodes and hubs have their own unique number. Just like hams have unique call signs.

Linking with the “popular node/hub” shortcut method:

1. Key up the repeater and announce your call sign.

2. Key up and transmit the touch-tone shortcut command for the node or hub you wish to link to.

3. Our own courtesy tone will change to a two-beep tone while linked to another node or hub. Note that the courtesy tone coming from the node you are linked to will remain a single tone. Our tone will be double.

4. At this point announce yourself or make a call as you would on any normal repeater.

5. Remember to wait for the courtesy tone each time before you transmit. This allows for propagation delay through network.

Linking with the general node/hub method:
This method is used if there is no popular shortcut.

1. Key up the repeater and announce your call sign.

2. Key up and transmit the Touch-Tone command for accessing any node/hub (*73) followed by the number of the node or hub you wish to link to. Do not un-key between the access code and the node/hub number.

3. Our own courtesy tone will change to a two-beep tone while linked to another node or hub. Note that the courtesy tone coming from the node you are linked to will remain a single tone. Our tone will be double.

4. At this point announce yourself or make a call as you would on any normal repeater.

5. Remember to wait for the courtesy tone each time before you transmit. This allows for propagation delay through network.

Linking nodes that should not be linked together – a possible problem.
Something to watch out for. Be careful not to accidentally link nodes together that do not belong together. It is possible that you can accidentally link nodes/hubs together, which could be inappropriate. If the repeater is already linked to a node or hub, and then you link the repeater to another node or hub, then those two nodes/hubs will be linked together through our repeater. In such a case, the two hubs may not want to be linked together. An example: If our repeater was already linked to a west coast public service hub, and then someone on our repeater links our repeater to a European chit-chat hub, then the west coast people might not appreciate being linked to Europe. How do we avoid this situation?

The best way to avoid linking nodes/hubs unintentionally is to check to see if our repeater is already linked before you link it to another node/hub. You can easily check to see what our repeater is linked to. We have a special shortcut code that announces what we are linked to. Simply key in *52. The repeater will tell you what nodes or hubs it is linked to. It is possible that someone forgot to close the repeater link when they were done. If this is the case, simply drop the undesired link and then link to whatever you want.

Terminating the AllStar link:
When you are finished with your link, please disconnect the link, and let the repeater return to normal repeater service. Disconnecting is easy, just send the link termination code.

1. When the link and the repeater are idle, key up and transmit the link terminate code (*76).
2. Announce that you are clear with the network.
3. Remember to **terminate the network connection** when you are done with your link.
4. The network will automatically terminate after one hour if you forget.

Where do I find a listing of nodes and hubs, and their node numbers?
An index of the 20,000 nodes and hubs can be found at (www.allstarlink.org/nodelist/). This list is overwhelming in its scope. However, if you look around the internet you will find clubs and organizations that list their AllStar linking information.

"Popular" Nodes/Hubs Shortcut Codes
Use the following commands as shortcut codes to access the time-of-day, announce what nodes/hubs are linked, and to quickly link to popular nodes and hubs.

Purpose	Shortcut code
Time of Day request	*51
Announce linked node/hub number	*52
Philadelphia Hub	*53
Alaska Net Hub	*54
United Kingdom Hub	*55

Command Codes
Use these codes to link to a node/hub or to disconnect from all nodes and hubs.
xxxxx represents a node or hub number.

Command Code	Action
*73xxxxx	Connect to node/hub xxxxx
*76	Disconnect all links

Where do we go from here?
For now, our AllStar connections are limited to outgoing connections only. This means people using our repeater can connect outward to other nodes on the AllStar network. However, anyone not on our repeater (nodes or hubs outside of our node) are not able to link into our repeater. In other words, AllStar links must originate from our repeater. Later we will consider allowing outside areas to initiate links to our node.

The list of "popular" shortcuts will grow as we determine which hubs are the most popular. If you have a favorite node or hub that you use often, we may be able to add it to the popular shortcut list.

We plan to add incoming linking in the future. In this case our members will be able to go on the AllStar network from wherever they are around the country or the world and link back into our Fusion repeater. This will be an excellent way to keep in touch with the local hams while you are on the road.

Enjoy the NARC Fusion repeater and the AllStar network. There are more good things to come.

Any Questions?
If you have any questions, please contact Woody K3YV or Eric W3EDP. AS210629