WESTERN TIDEWATER RADIO ASSOCIATION (WTRA)
IRLP USER ORENTATION AND
BASIC IRLP OPERATING INSTRUCTIONS FOR THE WT4RA
147.195 MHz REPEATER
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This document briefly describes the **Internet Radio Linking Project** (**ILRP**), instructs readers how to operate IRLP on the WT4RA 147.195 MHz repeater, and details the best practices for operating IRLP.

1. What is IRLP?

IRLP is a technology for linking amateur radio systems together using the internet. Systems linked together via IRLP are referred to as "nodes", and are assigned a node number. The WT4RA repeater's node number is 8373.

The IRLP website (**http://www.irlp.net/**) has substantial information about the background of IRLP (**http://www.irlp.net/bckground.html**) and how it works (**http://www.irlp.net/how-does-it-wrk.html**). Primarily, IRLP is used to link repeaters together that are beyond VHF/UHF radio linking range.

IRLP is similar to EchoLink in that both are protocols that transmit voice over the internet. Unlike EchoLink, IRLP only connects repeaters to other repeaters – through amateur radio practices and procedures always apply. EchoLink allows users to connect their computers to repeaters (or other computers), which can lead to a breakdown in amateur radio operating practices.

IRLP Connection Modes

There are two connection modes for an IRLP connection: One-to-one direct connections and one-to-many reflector connections.

Direct: Direct connections are just like they sound, where repeater (node) "A" connects directly with node "B". With this type of link the two nodes are interconnected and no connections from other IRLP nodes are possible. While nodes "A" and "B" are connected, any other node attempting to connect with either node will be told by a recording that – "The node you are calling is currently connected to CALLSIGN". Direct connection is preferred for a city to city chat.

Reflector: The most common type of connection in use today, however, is one-to-many connections via Reflector Nodes. A reflector is a computer that is not connected to any radio, but rather allows many nodes to be inter-connected. Each reflector has 9 sub channels allowing up to 10 separate virtual reflectors to operate. These sub channels are identified by the last digit of the node number. For example – 9250 is the main channel with 9251, 9252, 9253, etc. being virtual reflectors with identical capability as the main channel.

You can always check which stations are connected to the reflectors main and sub-channels by visiting **http://status.irlp.net** and looking for nodes connected to individual nodes or reflectors. Some of the reflectors can be monitored from a computer – see **http://www.irlp.net/listen_live.html** .

What Nodes (Repeaters) are Available for Linking?

The priminary method to find other IRLP nodes is to use **http://status.irlp.net** . This page allows you to search by various parameters (country, zip code, lat/long). Under the "information" tab, you can also sort modes by state or city.

A Google Earth display of IRLP nodes is available. From the IRLP home page, click "Node Info" in the menu on the left hand side (or directly link there using **http://www.irlp.net/status.html**). Then choose "Google Earth IRLP interactive node mapping".

Finally, if you simply want to test the system, you can connect to an echo server which will repeat your transmissions back to you after a 10 second delay, for example node 9990.

2. How Do I Connect to an IRLP Node Using the WT4RA Repeater?

The intent is to leave the WT4RA IRLP connection active at all times. However, the node may be down during local ARES/RACES activations and Drills. Basically assume the IRLP connection is active and proceed as follows:

1. Find an IRLP node to connect to using **http://status.irlp.net** .
2. Announce on the repeater that you are about to activate IRLP by saying. **This is <your call> about to call IRLP node <1234> in <location>**".
3. Transmit "#" **and the four digit node number you wish to connect to**. When the connection is created, a voice ID of the destination node will be announced on the WT4RA repeater. Simultaneously, the voice ID of the WT4RA repeater is transmitted to the far-end node.
4. Wait at least 15 seconds for these voice IDs to be transmitted and to verify that no conversation was already in progress on the far-end node.
5. Announce yourself on the far-end node by saying "**This is <your call> monitoring from <your location (city and state)> via IRLP**".
6. Enjoy your QSO.
7. When you are ready to disconnect, say "**This is <your call sign> closing IRLP link to <location>.**
8. Transmit DTMF Tones "#**73**" to close the connection.

If the above instructions do not work, contact a control operator (N4TJI, W4RBH, W4VX or WC4R) and ask for help.

3. Best Operating Practices

The remainder of this document contains a version of "IRLP Guidelines" available from **http://irlp.net**.

Reflector Use

With reflector use the first thing we must all remember is to leave a gap between transmissions. Having said that this is a good time to list the three main rules when connected to a reflector:

Pause
Pause
Pause

Due to the slight increase in delays created by multiple Tone Squelch radios in the links between the repeater and IRLP link radio, a slight change in our normal operating procedures is required with IRLP.

By leaving a pause between transmissions it .....

- Allows users on other nodes a chance to check in.
- Allows other nodes time to send touch-tone commands to drop their node.

The most important guideline to remember is leaving a pause after pressing the PTT button as well as between transmissions.

Avoid local traffic while connected to the reflector

By its nature, the reflector has a large footprint and a wide audience, therefore if local users would like to have a discussion, they should disconnect from the reflector. If we hear a local conversation (all participants coming from the same node) that continues, I, or one of the other reflector control ops will likely ask them to disconnect. If attempts to break into the conversation are unsuccessful, the node may be blocked from the reflector (more on blocking later).

Along the same line, if two stations become engaged in an extended dialog involving only themselves, then I would recommend they both move off the reflector and make a direct node to node connection, freeing up the reflector for others. If more than two nodes are involved, then moving to one of the lesser used reflectors might be an alternative, especially if one of the stations can check the web site for an available reflector. In the future, moving to one of the available sub-channels will become an option.

Calling CQ DX :-)

It is acceptable to call CQ, in fact, if you really want to make a contact, it is preferable to say "**This is <your call> calling CQ, is anyone available for a contact?**" as opposed to "<your call> Listening" ...silence for 2 minutes, followed by a disconnect. However, long CQs are unnecessary and should be left for CW/SSB frequencies where tuning around is the observed practice. Odds are we heard it the first time.

It is acceptable to talk about the weather, or anything else that is geographically significant. But like anything else, within reason. A station in Indiana that says to a Colorado op, "Hey I heard that you have a mountain out there" will probably cause eyes to roll worldwide.

In general though, long winded, channel consuming conversations should be avoided. Remember there are usually a dozen or two connected systems, with perhaps hundreds of users that might like a chance to use the system.

A few other Reflector operational guidelines

Listen first. When connecting to the main channel on a Reflector, odds are that you are dropping into an existing conversation. **Wait for at least 15 seconds** to make sure you are not interrupting an existing QSO before calling.

Pause between transmissions. Many nodes are connected using simplex links, therefore the only time it is possible for them to disconnect is between transmissions. Be sure to pause **AT LEAST 5 seconds** between transmissions.

Key your transmitter and wait before speaking. There are propagation delays across the Internet, as well as delays caused by sub audible tone decoders and other devices that cause a delay before the audio path is cut through. If you speak immediately upon PTT, the beginning of your transmission will not be heard.

Being BLOCKED from Reflectors

IRLP reflectors have a management function allowing reflector control operators to block specific nodes from accessing the reflector. When a node is blocked, the reflector ALWAYS automatically generates an e-mail message to the e-mail address of the Node owner as submitted to database@irlp.net. The e-mail should contain the specific reason for the block. This blocking is NEVER personal. It does NOT mean that we don't like you, but is only done to ensure continued operation of the reflector. Even my own node has been blocked.

Nodes are usually blocked for a technical malfunction, such as a locked COS, open squelch noise, extended hang time, or your repeater ID (with no user traffic) or courtesy beeps audible to IRLP, or any other problem that that impairs operation of the Reflector. Your node may also be blocked for rapid fire local traffic making it impossible for nodes to break in between transmissions.

Cross-linking other VoIP networks on IRLP reflectors is not allowed as very few non IRLP VoIP systems mute Station IDs, hang timers and courtesy tones. IRLP does not permit retransmission of any source that is not part of a users PTT transmission. With 20 or more repeaters connected together, sheer chaos would result if this hard rule was not enforced.

The reflector control ops may try to contact a local control op on the air to advise the problem, however this may not always be possible. It is important that the node owner respond to the e-mail message advising the problem has been corrected.

Making a Direct Connection

First of all listen on your local machine for at least 15 -30 seconds before transmitting and then ask if the repeater is currently in use. Assuming all is clear, **identify your self** and give the node name or number you wish to call. Example: "**VE3xyz for the Sydney node**" - - then enter the ON code for the node and release your PTT. Your local repeater should come up with a carrier as it waits for the connection to be authenticated. This can take a few seconds of dead-air so don't be concerned. When the connection is confirmed, the voice ID of the destination node will be transmitted back to you as well as your nodes voice ID to the other repeater.

To disconnect the connection, identify your self for example "**VE3XYZ closing connection to Sydney Node (name) or, give node 4 digit code", then key in the DTMF characters "#73"**.

> NOTE: If your node is already connected to another node or reflector, a greeting will play saying; "Your node is currently connected to...ID of the connection". In this case confirm if anyone desires the connection to remain up before dropping by using the OFF code.

Once connected and after hearing the confirming voice ID, wait at least 15 seconds before transmitting as.....

- The repeater may be in use, and your entry may have occurred between transmissions.
- The voice ID of your node is longer than the voice ID of their node, and the connection is not made until the ID is fully played.
- Their computer may be slower, and hence take longer to process the connection than yours.

Press and hold the microphone PTT for a second and then announce your presence and your intention such as you are calling someone specifically or just looking for a QSO with another ham in that city.

If no response is heard, announce your call and your intent to drop the link and then touch-tone in the DTMF "#**73**" OFF code. Not a good idea to transmit touch-tone commands without first giving your call-sign. Not only is this courteous it is a regulatory issue in some countries who may be connected to the reflector.

Some nodes are configured so you cannot connect to them if that repeater is active. In this case you will receive the message "The node you are calling is being used locally". If you receive this message wait 5 or 10 minutes and then try again.

If you stay connected to a node and there is no activity on your repeater for 4 minutes, the connection will time out and automatically disconnect with a voice ID disconnect message on both nodes.

Disconnecting Before You Leave the Repeater Frequency

When you establish a connection to another direct node or reflector, you should continue to monitor the repeater for the duration of the connection. If you can no longer monitor the frequency and there is no one else locally that you know will continue to be on the repeater frequency, you should disconnect form the node as explained above. Reason? If you establish a connection and then leave, other local users may begin an extended local conversation on the repeater without knowing that someone had previously connected the machine to a node such as a reflector, where such conversation may not be appropriate.

If you hear or wish to engage in a prolonged rag-chew on your local repeater (long discussion of a local nature) out of courtesy to other node listeners drop the distant node connection.

What Are the Node/Reflector Codes?

The 4 digit node/reflector codes can be found at the web site **http://status.irlp.net** . Find the node you wish to contact and click on the node number. Additional information will be displayed about the node.

Error Messages

From time-to-time you may receive error messages when attempting to connect with a node or reflector. The most common ones are:

- **"The node you are calling is not responding, please try again later"**
  This is caused by a loss of internet connectivity to one end of the call attempt.
- **"BEEP Error- The call attempt has timed out, the connection has been lost"**
  This error occurs when a node is OFF-LINE. Some nodes such as in the UK use dial-up connections and then, only for short periods. Also there may be temporary net or node problems.
- **"The Connection Has Been Lost"**
  If the internet connection drops, this error message will be heard. I found this out when I accidentally kicked out my network cable while working around the node computer.

Dos and Don'ts

In summary then a few do's and don'ts:

DO pause between transmissions to let other in or others to enter DTMF command.
DO identify before sending DTMF command tones.
DO hold your microphone PTT for about 1 second before talking to allow all systems time to rise.
DO NOT rag-chew on your local repeater while connected to the reflector.
DO pause for 10 seconds or when entering the reflector before talking.
DO NOT start or plan a Net without pre-authorization from the reflector owner

4. User Notes