

Digital Radio comes to Clallam County Amateur Radio Club

Before any further explanation... you do NOT need a new radio to use the new Striped repeater. It is fully compatible with current 2 meter FM mode radios; it just adds C4FM digital mode for compatible radios.

The Clallam County Amateur Radio Club operates the Striped Peak W7FEL repeater on 146.760 MHz. It has a negative offset and a tone of 100 Hz when used for FM.

While the old GE Master II Repeater equipment is generally reliable, it was getting a bit long in the tooth, it is big, heavy and difficult to work on. In early 2014, the club made a decision that, along with the new Sierra Radio SRS200 controller, it would be a good idea to eventually replace the old GE Master repeater with something more up-to-date and easier to interface with external equipment such as the new controller. With a short list made up, the brand new Yaesu DR-1 System Fusion repeater was at the top of the list. One of the biggest plusses was that Yaesu was offering clubs the \$1900.00 (list) repeater at a introductory price of only \$500.00.

The club applied to Yaesu in February and the Fusion DR-1 repeater arrived in early April. It is up and running successfully on a test bench and is being interfaced to the new Sierra Controller. Within a few weeks the new repeater, controller and IRLP/Echolink should be installed at Striped.

The DR-1 is a game changer. While it is capable of FM, it also automatically handles digital signals using a new mode for Yaesu called C4FM which is Frequency Division Multiple Access (FDMA). This mode of modulation matches the Yaesu FT1DR HT and FTM-400D mobile released by Yaesu in the previous year. These two radios and the soon to be released FT2DR HT are also capable of APRS operation with the GPS and TNC built in. The recently released FT-991 which covers 160M-70cm is also C4FM capable. The W7FEL repeater is set up to pass either FM **OR** C4FM signals. The repeater recognizes the mode of the incoming signal and automatically switches to that mode be-it FM or C4FM. This allow users with FM-only radios to share the frequency with digital users. Users on FM still need the 100 Hz CTCSS tone to get into the repeater and, to prevent FM users from having to listen to digital signals (9600 baud data), FM users should turn on tone squelch (100 Hz) on the receive side also.

(Sequim users of the Carlsborg remote have a unique problem, however, as most of them are in carrier squelch mode to hear Striped as the remote receiver is on a different CTCSS tone. With the receiver operating in carrier squelch the user will hear the 9600 baud C4FM digital transmissions. Sequim users with two band radios should put the standby receiver on the Striped frequency with a tone squelch of 100 Hz. and the main receiver (transmit side) on the Carlsbad frequency with tone squelch 77 Hz.)

As is standard on all repeaters, there is a time out timer which is set for three minutes. To prevent the repeater from timing out, try to keep your transmissions short. The TOT will reset when you unkey, but It is good practice to let the repeater drop between transmissions. This will make it easier for anyone with emergency traffic or otherwise to access the repeater. As on directed nets, it is best to just give your callsign to break in. Saying such things as station, contact, or break don't convey any meaningful information.

The hang time after the courtesy tone is 4 seconds which is somewhat longer then the current configuration. There is no need to wait for the repeater to drop out after 4 seconds before starting a new transmission or replying to a previous transmission. Please start your new transmission at the end

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of the courtesy tone. *The reason the hang time is four seconds is to keep the repeater "turned on" during multiple transmissions in lieu of going on and off causing unnecessary wear and tear on the repeater.*

For almost a year the VE7RSI on Salt Springs Island was the only System Fusion repeater in the area. Within a few months from now, however, there will be almost 20 System Fusion repeaters in the near vicinity and more to come. VA7ANI is already operating in Ladysmith / Nanaimo on 146.980 MHz - 141.3Hz. Either on now or soon to be on are three in Victoria, one in Delta, one in Richmond, two in Squamish, one in Whistler. There are also repeaters either up and running or soon to be running in Everett, Seattle, Sequim, Port Angeles and Forks, WA.

Forks Update.... A new Fusion repeater is being ordered for Forks and will be installed as soon as the county completes their work on the Police Department antenna system. At the moment it is tentatively scheduled for May 15/16. The Public Safety Radio Network (PSRN) link back to Striped is dependent on the county moving some of their VOIP equipment at Striped which is not scheduled until June. An echolink patch to Striped would be possible if an echolink system was available in Forks to create a short term tie.