AREA REPEATER COORDINATION COUNCIL (ARCC), INC.
Amateur Radio Repeater and Auxiliary Link Frequency Coordination

SHARED NON-PROTECTED (SNP) REPEATERS

Rev. B, 10 July 2012

OVERVIEW

As there continues to be a very high demand for repeater pairs in the 2 meter and 70 centimeter bands, few, if any, repeater pairs are available in much of ARCC's service territory. At the ARCC Executive Board meeting held on April 28, 2012, the creation of shared non-protected (SNP) pairs on these two popular bands was considered as one of the ways of dealing with spectral congestion on these two most-crowded bands. Following discussions, the board unanimously approved a motion to establish SNP repeater pairs.

Due to several recent coordination cancellations, a window of opportunity has opened which has allowed for the creation of two new SNP pairs at this point in time, one on 2m and one on 70cm. During the course of discussions at the Board meeting, it was decided that, at this point in time, there is little need for SNP pairs on other bands as there exists sufficient spectrum available for the foreseeable future. However, should evidence of forthcoming crowding be realized, SNP pairs may be set aside for one or more of those bands at a later date. Likewise, additional SNP pairs may be reserved at a later time for 2m and/or 70cm as well. Note, also, that there already exists an SNP pair on 33cm (927.9875-).

SNP pairs have been used very effectively in other coordination councils' territories. Unlike standard repeater coordinations, SNP allows multiple repeaters to be coordinated and coexist on the same channel even if they share areas of overlapping coverage. SNP pairs are ideal for "back yard" repeaters, low-usage systems, closed repeaters, and other cases where time-sharing the use of common spectrum is practical. SNP pairs are generally not viable for busy repeaters, wide-area coverage systems, linked repeaters, or any operation or activity which renders the repeater busy, and thus the channel occupied, for extended periods of time.

In the course of monitoring and auditing repeaters, including those located in busy metropolitan areas, the ARCC board has noted that the vast majority of repeaters are underutilized, with many having less than one hour of usage per day. Such low utilization of geo-spectrum set aside exclusively for one repeater is a very inefficient use of such a limited resource. In contrast, SNP pairs effectively allow for unlimited efficiency via cooperative sharing of the available geo-spectrum. Existing repeater

owners who operate very-low-usage repeaters are urged to consider applying for an SNP pair and surrendering their existing coordinations to free up pairs which could be more effectively, and efficiently, utilized by a potentially-larger portion of the amateur community.

RESERVED SNP PAIRS

The 2m repeater pair reserved for SNP use in ARCC territory is 145.2500-. At present, there exists only one repeater coordinated on this pair in ARCC territory (WB2BQW). WB2BQW will still be protected as a coordinated repeater. That is, SNP repeaters on 145.2500- may not share coverage with WB2BQW, and they may not cause interference to WB2BQW. 145.2500- is not an SNP pair in adjacent councils' territories; of the adjacent councils, TMARC is the only other council which has an SNP pair on 2m, that being 145.1700-.

The repeater pair 145.2500- can be problematic in some areas due to leakage from cable television systems, as 145.2500 is the visual carrier frequency for cable television channel 18 (also known as channel "E"). However, due to the proliferation of digital cable television distribution, QAM has replaced VSB/AM on many cable systems, eliminating the annoyance of a constant 145.250 MHz carrier appearing on users' radios, making this channel less-undesirable than it once was.

On 70cm, the repeater pair 447.8750- is reserved for SNP use. This is also an SNP pair in TMARC territory, making it a good choice for use in ARCC's service area. Additionally, there are no co-channel repeaters coordinated on this pair in Metrocor or WPRC territory. In UNYREPCO, the only repeater coordinated on this pair at the time of this writing is W2LGB in Thiells, New York, approximately 35 miles north of New York City along the Hudson River.

On 33cm, 927.9875- will continue to be reserved as an SNP pair.

COORDINATION PROCEDURES

First and foremost, SNP pairs are NOT pairs set aside for uncoordinated operations. Use of SNP pairs is still subject to coordination, including the submission of a coordination application. However, unlike standard repeater pairs, there is no analysis done with respect to interference to other co-channel repeaters within ARCC's service territory with the sole exception of WB2BQW, and only as long as that repeater remains operational at its coordinated location. That is, SNP repeaters may have overlapping coverage. Interference analysis will still be performed with respect to adjacent-channel operations when applicable.

Additionally, as is the case with any other coordination application, SNP applications will be cross-coordinated with the adjacent coordination councils. Should the proposed SNP operation conflict with any incumbent operation in their territory(s), coordination will be denied.

There are several unique policies which will apply to SNP pairs which differ from the standard policies for coordination, the remainder of which still apply:

1. Channel Availability. The two new SNP pairs on 2m and 70cm are eligible for use by FM and digital voice repeaters, either wideband or narrowband. On 33cm, the SNP pair is limited to narrowband-only. In the case of narrowband FM or digital voice, the 70cm SNP pair will be "split" into two 12.5 kHz bandwidth channels by offsetting the center frequencies +/- 6.25 kHz from the standard channel center (i.e. 447.86875- and 447.88125) as is done for all 70cm narrowband repeaters.
2. Access Control. FM SNP repeaters will be assigned a PL tone or DPL code by ARCC. ARCC will assign PL/DPL codes such that duplication is avoided among SNP repeaters as well as other co-channel repeaters in adjacent councils' territories. FM SNP applicants should indicate their preference for either PL or DPL, but not specify a particular tone or code as it will be assigned based on availability. SNP repeaters must utilize their assigned access control on the receiver (e.g. PL-decode) at all times, and likewise, must encode the same tone/code on the repeater transmitter at all times.
3. Shared Use. Since two or more SNP repeaters may have overlapping coverage, owners of SNP repeaters shall instruct users of the repeater to monitor the channel before transmitting. This includes users of both analog and digital repeaters -- users must monitor the channel in analog mode in "carrier squelch", to verify that there is no other traffic on the channel before accessing the desired repeater. Part 97 applies at all times – purposely keying up on top of an ongoing QSO is a clear case of intentional interference. The use of repeaters on SNP pairs is no different than shared use of FM simplex channels or HF spectrum in this regard.
4. Interference. ARCC will not investigate or mediate cases of interference amidst coordinated SNP repeaters. SNP repeater operators are cautioned that, like any coordinated repeater, they must operate in strict compliance with the terms of the coordination and all applicable ARCC policies otherwise the coordination will be canceled.
5. Single-Site Restrictions. Only a single repeater receiver collocated with a single repeater transmitter may comprise a repeater operating on an SNP pair:
    a. Remote bases are not allowed.
    b. Split-site repeaters are not allowed.

c. Multiple receive sites are not allowed.

d. Linking is not allowed. SNP repeaters may not be linked to any other repeater or amateur station. This includes, but is not limited to, all forms of wireline, RoIP (Echolink, IRLP, Asterisk, etc.), and RF linking.

[Exception: mobile/portable repeaters deployed for an emergency, drill, or other event of short duration may be linked to another repeater within 50 miles of the temporary repeater location only for the duration of the event for which the mobile/portable repeater is deployed.]

6. Ownership Limit. An individual or club/group may not have more than one SNP repeater within 50 miles of any other repeater in which he/she/it has an ownership interest or for which he/she/it holds a coordination. For the sake of this provision, being a member of a club which operates a repeater is not considered ownership interest.

7. EIRP Limit. SNP repeaters will be allowed a maximum EIRP ($EIRP_{max}$) of 100 watts on 2m, and 200 watts on 70cm and 33cm.

8. HAAT Limit. SNP repeaters may not exceed 150 feet HAAT. Should the proposed location not be able to comply with this provision due to the site having an HAAT at ground level in excess of 150 feet, the site may still be utilized if the effective radiated power is derated via the following formula:

$$EIRP_{allowed} = EIRP_{max} * (150 / HAAT)^2$$

Example: A proposed 70cm repeater has an HAAT of 250 feet, which exceeds the 150 foot maximum. The maximum-allowed EIRP for the repeater is $200 * (150/250)^2 = 72$ watts.

9. Portable and Mobile Repeaters. Itinerant portable and mobile repeaters are eligible for coordination on SNP pairs. Portable and mobile repeaters will be coordinated based on a center point of their area of operation. Portable/mobile repeaters may operate anywhere within the county in which the coordinated center point of operation lies, or anywhere within a 25-mile radius of the coordinated center point, whichever is greater. The ERP and HAAT limits set forth above apply to portable and mobile repeaters at all times, and at all locations, as well.

   Mobile/portable repeaters may be operated only for the duration of the event for which they are deployed. Mobile/portable repeaters may not operate continuously from any fixed location, nor from multiple fixed locations, for a continuous period exceeding one week (7 days) unless deployed as a result of, and providing emergency communications in response to, a state of emergency as declared by a local, county, state, or federal government agency.

10. Directory Listings. All SNP repeaters will be published in directories; applicants may not request their repeater be unlisted. Directory listings will be indicated by

"SNP" for all SNP repeaters. Mobile/portable repeaters will additionally be indicated "Mobile".

PROCEDURAL

Applicants who wish to request an SNP pair should complete a standard coordination application, specifying the input and output frequencies of one of the SNP pairs. **Only coordination application form revision H or later is acceptable for applying for an SNP pair.** All other aspects of the coordination process shall apply except for those deviations from standard policies related to co-channel interference analysis within ARCC territory as detailed above.

The special provisions and procedures presented in this document are related only to SNP repeaters, and in no way should be construed as being applicable to non-SNP repeaters.

ARCC will begin accepting applications for SNP repeaters on August 1, 2012. Any application for an SNP repeater received prior to August 1, 2012 will be dismissed without action.