

November 7, 2008

Bulletin No. 2008-4

Subject: Compliance with Technical Standards section 547.14(f)(4), scaling algorithms and scaled numbers for electronic random number generators.

On October 10, 2008, the National Indian Gaming Commission published final “Technical Standards for Electronic, Computer, or Other Technologic Aids Used in the Play of Class II Games.” (Technical Standards). This bulletin supplements the NIGC’s previous Technical Standards guidance document, bulletin no. 2008-3, “Compliance guidance for new technical standards, 25 C.F.R. part 547” (November 3, 2008).

An inadvertent error, not captured and corrected during the notice and comment period for the Technical Standards, has been brought to the NIGC’s attention.

Electronic random number generators (RNGs) must meet the requirements of section 547.14. The use of scaling algorithms and scaled numbers must meet the requirements of section 547.14(f). Paragraph 547.14(f)(4) requires that scaling algorithms be *unbiased*, defined to mean a measured bias no greater than 1 in 100 million. However, many, if not most, industry-standard bingo RNGs are 32-bit RNGs – they produce a universe of 2^{32} results. Using the most common scaling algorithm to scale those results down so that the RNG draws numbers from 1 to 75 produces a measured bias of 1 in 57,266,230, a bias greater than 1 in 100,000,000. In short, as it is written now, most industry-standard bingo RNGs will not be compliant with 547.14(f)(4). As a Class II gaming system must be compliant with all of section 547.14 in order to be grandfathered, 25 CFR 547.4(a)(2), systems using 32-bit RNGs for bingo will not be eligible for grandfather status absent a software change.

This was not the NIGC’s intent. A requirement of a bias no greater than 1 in 100 million is unnecessarily stringent. The Technical Standards were not meant to exclude industry-standard 32-bit RNGs scaled to 75 numbers. The bias present in such RNGs is insignificantly small and does not affect the statistical randomness of the RNGs or the fairness of games played using them. Therefore, NIGC will shortly publish a change to the Technical Standards amending 547.14(f)(4) to read: “Use an unbiased algorithm. A scaling algorithm is considered to be unbiased if the measured bias is no greater than 1 in 50 million.”

Until such amendment becomes effective, NIGC will regard a gaming system using a 32-bit RNG scaled to 75 numbers as eligible for grandfather status, provided that the RNG meets all of the other requirements of 547.14 and the system meets the requirements of all of the other sections specified in 547.4(a)(2).