

Part 5319

Standards for Gaming Devices

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§ 5319.1. Gaming device approval.

Prior to the commencement of gaming activities, all gaming devices shall be tested and certified by a licensed independent testing laboratory pursuant to Part 5318 of this Subchapter.

§ 5319.2. Machine requirements.

- (a) A gaming device shall be robust enough to resist forced entry.
- (b) Electrical and mechanical parts and design principals of a gaming device shall not subject a player to any physical hazards.
- (c) *Game integrity standard.* Tests shall be performed to determine whether outside influences affect game fairness to the player or create cheating opportunities. The independent testing laboratory approved by the commission also shall perform, where possible, a cursory review of submissions related to electromagnetic interference, radio frequency interference, magnetic interference, liquid spills, power fluctuations and environmental conditions. Electrostatic discharge testing is intended only to simulate techniques observed in the field being used to attempt to disrupt the integrity of electronic gaming devices.
- (d) A gaming device shall be able to withstand the following electrostatic interference tests, resuming game play without operator intervention:
 - (1) Random number generator. A random number generator (*RNG*) and random selection process shall be impervious to influences from outside the device,

including, without limitation, electromagnetic interference, electrostatic interference and radio frequency interference.

(2) Electrostatic interference. Protection against static discharges shall require that a gaming device's conductive cabinets be grounded in such a way that static discharge energy shall not damage permanently, or inhibit permanently the normal operation of the electronics or other components within such gaming device. A gaming device may exhibit temporary disruption when subjected to a significant electrostatic discharge greater than human body electrostatic discharge, but such device shall exhibit a capacity to recover and complete any interrupted play without loss or corruption of any control or critical data information associated with such gaming device. Tests of such protection shall be conducted with a severity level of a maximum of 27 kilovolts air discharge.

(e) Each gaming device shall meet the following hardware requirements:

(1) Microprocessor controlled. A gaming device shall be controlled by one or more microprocessors or the equivalent in such a manner that a game outcome is controlled completely by the microprocessor or a mechanical device, as approved in section 5319.35 of this Part; and

(2) On/off switch. An on/off switch that controls the electrical current shall be located in a place that is readily accessible within the interior of the gaming device but is located so that power cannot be disconnected from outside of the gaming device using the on/off switch. The on and off positions of the switch shall be labeled.

§ 5319.3. Gaming device wiring.

A gaming device shall be designed so that power and data cables into and out of such gaming device can be routed so that such cables are not accessible to the general public. Security-related wires and cables that are routed into a logic area shall be fastened securely within the interior of such device.

§ 5319.4. Machine identification.

A gaming device shall have an identification badge affixed to the exterior of the cabinet of the device by the manufacturer. Such badge shall not be removable without leaving evidence of tampering. Such badge shall include the manufacturer's name, a unique serial number, the gaming device model number and the date of manufacture.

§ 5319.5. Tower light.

(a) A gaming device shall have a light, located conspicuously on the top of such device, that illuminates automatically when:

(1) a player has won an amount or is collecting credits that the device cannot pay automatically;

(2) an error condition (including "Door Open") has occurred; or

(3) a player initiates a “Call Attendant”.

(b) For devices such as “bar-top” games, it is permissible for the tower light to be shared among other gaming devices or to be substituted by an audible alarm.

(c) The commission may approve, on a case-by-case basis, alternative means to alert appropriate personnel in regard to the operation of a gaming device.

§ 5319.6. Manipulation of power supply.

A gaming device shall not be affected adversely, other than through resets, by surges or dips of 20 percent of the supply voltage. It is acceptable for the equipment to reset so long as no damage to the equipment or loss or corruption of data is experienced in the field. Upon reset, a game shall return to its previous state. It is acceptable for a game to return to a game completion state so long as the game history and all credit and accounting meters reflect a completed game.

§ 5319.7. Requirements for external doors and external compartments.

(a) Gaming device doors shall be manufactured using materials that are suitable for allowing only legitimate and authorize access to the inside of the cabinet (*i.e.*, locks, doors and their associated hinges shall be capable of withstanding determined and unauthorized efforts to gain access to the inside of the gaming device and shall leave evidence of tampering if such an entry is made).

(b) The seal between the cabinet and the door of a locked area shall be designed to resist the entry of objects.

(c) All external doors shall be locked and monitored by door access sensors, which when opened shall cease game play (with the exception of a drop box door), disable all voucher and currency acceptance and enter an error condition, which at a minimum shall illuminate the tower light and send the error condition to the gaming facility accounting system, when applicable.

(d) A gaming device shall protect against the insertion of any device that will disable a door-open sensor when such gaming device’s door is shut without leaving evidence of tampering.

(e) The sensor system of a gaming device shall register an external door as being open when such door is moved from its fully closed and locked position, so long as power is supplied to the device.

§ 5319.8. Logic door and logic area.

(a) *Logic area.* The logic area shall be a separately locked cabinet area (with its own locked door), which houses electronic components that have the potential to influence significantly the operation of a gaming device. There may be more than one such logic area in a gaming device. The logic door shall be monitored.

(b) *Electronic Components.* Electronic components that are required to be housed in one or more logic areas shall be:

(1) a central processing unit and any program storage device that contains software that may affect the integrity of gaming, including, without limitation, the game accounting, system communication and peripheral firmware devices involved in, or that influence significantly, the operation and calculation of game play, game display, game result determination or game accounting, revenue or security. The commission may evaluate any exceptions on a case-by-case basis;

(2) communication controller electronics and components housing the communication program storage device. The commission may evaluate any exceptions on a case-by-case basis; and

(3) the non-volatile (NV) memory back-up device shall be kept within a locked logic area.

§ 5319.9. Currency compartments.

(a) Currency compartments shall be locked separately from the main cabinet area.

(b) Access to the currency storage area shall be secured via separate key locks and shall be fitted with sensors that indicate door open/close or stacker receptacle removed, so long as power is supplied to the device.

(c) Access to the currency storage area shall be through two levels of locks (the relevant outer door plus one other door or lock) before currency can be removed.

§ 5319.10. Program memory, non-volatile memory and non-volatile devices used to store program memory.

(a) *Non-volatile memory requirements.*

(1) A gaming device shall have the ability to retain data for all critical memory, as set forth in section 5319.11 of this Part, and shall be capable of maintaining the accuracy of all information required for 30 days after power is discontinued from such gaming device.

(2) For rechargeable battery types only, if a battery backup is used as an “off-chip” battery source, such battery backup shall recharge itself to its full potential in a maximum of 24 hours. The shelf life of such battery backup shall be at least five years.

(3) NV memory that uses an off-chip backup power source to retain NV memory contents when the main power is switched off shall have a detection system that shall provide a method for software to interpret and act upon a low-battery condition before the battery reaches a level where such battery is no longer capable of maintaining NV memory.

(4) Clearing NV memory shall require access to the locked logic area or other secure method that the commission shall control.

(b) *Function of NV memory reset.* Following the initiation of an NV memory reset procedure (using an approved NV memory-clear method), a game program shall execute a routine that initializes all bits in critical NV memory to the default state. All memory locations intended to be cleared through such NV memory-clear process shall be fully reset in all cases. The commission shall review and, in the discretion of the commission, approve the methodology for games that allow for partial NV memory clears.

(c) *Default reel position or game display.* The default reel position or game display immediately after an NV memory reset shall not be the advertised top award on any selectable line. The default game display, upon entering game-play mode, also shall not be the advertised top award. This section applies to the base game only and not to any secondary bonus features.

(d) *Configuration settings.* A configuration setting that causes an obstruction to the electronic accounting meters without an NV memory clear shall not be permitted. A change to the denomination shall be performed by a secure means, which includes access to the locked logic area or other secure method, so long as such method can be controlled by the commission (e.g., security tape, password or PIN-based controls)

§ 5319.11. Contents of critical memory.

Critical memory is used to store all data that is considered vital to the continued operation of a gaming device. Such data include, without limitation:

- (a) all electronic meters required in section 5319.52 of this Part, including last-bill data, power-up and door-open metering;
- (b) current credits;
- (c) gaming device and game configuration data;
- (d) information pertaining to the last 10 games with the game outcome (including the current game, if incomplete). Gaming devices offering games with a variable number of free games per base game may satisfy this requirement by providing the capability to display the last 50 free games in addition to each base game;
- (e) software state (the last normal state, last status or tilt status the gaming device software was in before interruption);
- (f) any pay table configuration information residing in memory; and
- (g) at minimum, a log of the last 100 significant events as set forth in section 5317.27 of this Subchapter. The commission may grant waivers of this subparagraph for specific games.

§ 5319.12. Maintenance of critical memory.

(a) Critical memory storage shall be maintained by a methodology that enables errors to be identified. Such methodology may involve signatures, checksums, partial checksums, multiple copies, timestamps and/or effective use of validity codes. This section is not intended to preclude the use of alternate storage media types, such as hard disk drives, for the retention of critical data. Such alternate storage media still are expected to maintain critical data integrity in a manner consistent with the requirements in this section, as applicable to the specific storage technology implemented.

(b) Comprehensive checks of critical memory shall be made following game initiation but prior to display of game outcome to the player. It is recommended that critical memory be monitored continuously for corruption. The methodology shall detect failures with an extremely high level of accuracy.

(c) An unrecoverable corruption of critical memory shall result in an error. The memory error shall not be cleared automatically and shall result in a tilt condition, which facilitates the identification of the error and causes the gaming device to cease further function. The critical memory error shall also cause any communication external to the gaming device to cease immediately. An unrecoverable critical memory error shall require a full NV-memory-clear performed by a person authorized by the gaming facility's approved system of internal controls.

(d) Non-volatile memory space that is not critical to gaming device security (e.g., video or sound) is not required to be validated.

§ 5319.13. Program storage device requirements.

The term *program storage device* means the media or an electronic device that contains the critical control program components. Device types include, without limitation, EPROMs, compact flash cards, optical disks, hard drives, solid state drives, USB drives or other storage technology that may evolve. Each program storage device shall:

(a) be housed within a fully enclosed and locked logic compartment;

(b) be clearly marked with sufficient information to identify the software and revision level of the information stored in the device. In the case of media types on which multiple programs may reside, it is acceptable to display this information via the attendant menu;

(c) validate itself during each processor reset; and

(d) validate itself the first time such storage device is used.

In addition, CD-ROM, DVD and other optical-disk-based program storage shall not be a re-writeable disk and the "session" shall be closed to prevent any further writing.

§ 5319.14. Control program requirements.

(a) *Control program verification.*

(1) EPROM-based program storage. Gaming devices that have control programs residing in one or more EPROMs shall employ a mechanism to verify control programs and data. Such mechanism shall use, at a minimum, a checksum. It is recommended that a cyclic redundancy check be used (at least 16-bit).

(2) Non-EPROM program storage.

(i) Software shall provide a mechanism for the detection of unauthorized and corrupt software elements, upon any access, and subsequently prevent the execution or usage of such corrupt elements by a gaming device. Such mechanism shall employ a hashing algorithm that produces a message digest output of at least 128 bits.

(ii) In the event of a failed authentication after a game has been powered up, a gaming device immediately should enter an error condition and display an appropriate error. This error shall require operator intervention to clear and shall not clear until the data authenticates properly, following operator intervention, or the media are replaced or corrected, and the gaming device's memory is cleared. Control program verification mechanisms will be evaluated on a case-by-case basis based on industry-standard security practices.

(3) Alterable media. In addition to the requirements set forth in paragraph (2) of this subdivision shall:

(i) employ a mechanism that tests unused or unallocated areas of the alterable media for unintended programs or data and tests the structure of the media for integrity. Such mechanism shall prevent further play of the gaming device if unexpected data or structural inconsistencies are found; and

(ii) employ a mechanism for keeping a record any time a control program component is added, removed or altered on any alterable media. Such record shall contain a minimum of the last 10 modifications to the media and each record shall contain the date and time of the action, identification of the component affected, the reason for the modification and any pertinent validation information. Alterable program storage does not include memory devices typically considered to be alterable that have been rendered "read-only" by either a hardware or software means.

(b) *Program identification.* Program storage devices that do not have the ability to be modified while installed in a gaming device during normal operation shall be marked clearly with sufficient information to identify the software and revision level of the information stored in such devices.

(c) *Independent control program verification.* A gaming device shall have the ability to allow for an independent integrity check of such device's software from an outside

source. An independent integrity check is required for all control programs that may affect the integrity of the game. In such integrity check, the software shall be authenticated by a third-party device, which may be embedded within the game software, by having an interface port for a third-party device to authenticate the media, or by allowing for removal of the media such that the media can be verified externally. This integrity check shall provide a means for field verification of the software to identify and validate the program. An approved testing laboratory shall, prior to device approval, evaluate the integrity-check method. If the authentication program is contained within the game software, the manufacturer shall receive written approval from the testing laboratory prior to submission for testing.

§ 5319.15. Multi-station games.

(a) A *multi-station game* means a gaming device unit that incorporates more than one player terminal and has just one random number generator which is controlled by the master terminal. The master terminal, containing the game's central processing unit shall determine the outcome of the game and random number generator results. The game display is typically shared among the player terminals and each player terminal shall also display all game results. Each terminal shall meet the applicable technical standards outlined throughout this Part, including gaming device identification and metering. This section does not apply to central-determined-type games, nor does this section apply to community-bonus-style games. There shall be a method for each player to know when the next game will begin, such as a countdown timer.

(b) As applicable, multi-station gaming devices shall meet the hardware requirements and software requirements of this Part.

(c) The master terminal, which contains the random number generator, shall meet the hardware requirements and software requirements of this Part. Bill validator requirements do not apply to the master terminal.

§ 5319.16. Printed circuit board.

(a) Each printed circuit board (*PCB*) shall be identifiable by name or number and revision level. Where feasible, this identification should be readily viewed without removal of the PCB from the gaming device.

(b) The top assembly revision level of a PCB shall be identifiable.

(c) If track cuts and/or patch wires are added to a PCB, then a new revision number or level shall be assigned to the assembly.

(d) Manufacturers shall ensure that circuit board assemblies used in their gaming devices conform functionally to the documentation and the certified versions of those PCBs that were evaluated and certified by an independent testing laboratory approved by the commission.

(e) The manufacturer's name, logo or abbreviated symbol on a PCB is recommended.

§ 5319.17. Patch wires.

All patch wires and track cuts shall be documented in a service manual and/or service bulletin and shall be submitted to the testing laboratory. This requirement does not prohibit required repairs in the field.

§ 5319.18. Switches and jumpers.

(a) All hardware switches or jumpers contained in a gaming device shall be fully documented for evaluation by an approved test laboratory.

(b) All hardware switches and/or jumpers in a gaming device that may alter configuration settings, pay tables, game denomination or payout percentages shall meet the requirements of this Part and shall be housed within a logic compartment of the gaming device. This includes top award changes (including progressives), selectable settings or any other option that would affect a payout percentage.

§ 5319.19. Mechanical devices used for displaying of game outcomes.

(a) Electromechanically controlled display devices (e.g. reels or wheels) shall have a sufficiently closed loop of control so as to enable the software to detect a malfunction and/or any attempt to interfere with the correct operation of that device.

(b) Mechanical assemblies (e.g., reels or wheels) shall have some mechanism that ensures the correct mounting of the assembly's artwork, if applicable.

(c) Displays shall be constructed in such a way that winning symbol combinations match up with pay lines or other indicators.

(d) A mechanical assembly shall be so designed that such assembly is not obstructed by any other components.

§ 5319.20. Video monitor/touch screens.

(a) Any video monitor touch screen shall be accurate and, once calibrated, shall maintain such accuracy for at least the length of the manufacturer's recommended preventative maintenance period.

(b) Any video monitor touch screen should be able to be recalibrated without access to the gaming device cabinet other than opening the main door.

(c) There shall be no hidden or undocumented buttons or touch points anywhere on a video monitor touch that affect game play and/or that impact the outcome of the game, except as provided for by the game rules.

§ 5319.21. Bill validators and other methods of inserting financial instruments into a gaming device.

(a) *Bill Validators.* All paper currency acceptance devices shall be able to detect the entry of valid bills, coupons, vouchers or other approved notes, as applicable, and provide a method to enable the gaming device software to interpret and act appropriately upon a valid or invalid input. A paper currency acceptance device shall be electronically based and be configured to ensure that such device accepts only valid bills of legal tender, coupons, vouchers or other approved notes, and shall reject all other items. Rejected bills, vouchers, coupons or other approved notes should be returned to the player. Vouchers are paper slips that are treated as a unit of currency, which may be redeemed for cash or exchanged for credits on the gaming device. Coupons are paper slips primarily used for promotional purposes, which may be of a cashable or non-cashable value. A bill input system shall be constructed in a manner that protects against vandalism, abuse or fraudulent activity.

(1) Each valid bill, coupon, voucher or other approved note shall register the actual monetary value or the appropriate number of credits received for the denomination being used on the player's credit meter.

(2) Credits shall be registered only when:

- (i) the bill or other note has passed the point where such bill or note is accepted and stacked; and
- (ii) the acceptor has sent the "irrevocably stacked" message to the gaming device.

(3) Each bill validator shall be designed to prevent the use of cheating methods such as stringing, the insertion of foreign objects and any other manipulation that may be deemed as a cheating technique. A method for detection of counterfeit bills shall be implemented.

(4) Acceptance of any bills, vouchers, coupons or other approved notes for crediting to the credit meter shall be possible only when the gaming device is enabled for play. Other states, such as error conditions, including door opens, audit mode and game play, shall cause the disabling of the bill validator system.

(5) Each gaming device or bill validator shall have the capability of detecting and displaying the following error conditions (for bill validators, it is acceptable to disable or flash lights with respect to the bill validator itself):

- (i) full stacker, in which case it is recommended that an explicit "stacker full" error message not be used, in order to minimize security risk; rather, a message such as "bill validator malfunction" is suggested;
- (ii) bill jams;
- (iii) stacker door open;

(iv) stacker removed; and

(v) any other bill validator malfunction.

(b) All bill validators shall communicate to the gaming device using a bi-directional protocol.

(c) If bill validators are designed to be factory-set only, no access to such bill validators, maintenance or adjustments to such bill validators in the field, shall be permitted, other than:

(1) the selection of desired acceptance for bills, coupons, vouchers or other approved notes and their limits;

(2) changing of certified control program media or downloading of certified software;

(3) adjustments of the tolerance level for accepting bills or notes of varying quality, but not externally and only if adequate levels of security are in place, such as through lock-and-key, physical switch settings or other accepted methods approved by the commission on a case-by-case basis;

(4) maintenance, adjustment and repair per approved factory procedures; or

(5) options that set the direction or orientation of acceptance.

(d) For games that allow tokenization, the game shall record monetary value from the bill acceptor and post to the player's credit meter the entire amount inserted and display any fractional credits, when applicable. It is acceptable for a device to store the fractional credits if one of the following conditions is met:

(1) the game displays the credit meter in dollars and cents; or

(2) the game informs the player that there are fractional credits stored on the device at an opportune time, to avoid the possibility of the player walking away from the gaming device without such knowledge. Specifics on how residual credits should be handled and displayed are set forth in section 5319.53 of this Part.

§ 5319.22. Machine metering of bill validator events.

(a) A gaming device that contains a bill validator device shall maintain sufficient electronic metering to be able to display the following:

(1) total monetary value of all items accepted;

(2) total number of all items accepted; and

(3) a breakdown of the bills accepted;

(4) the number of bills accepted for each bill denomination; and

(5) for all other notes (vouchers and coupons), a game shall have a separate meter that reports the number of items accepted, not including bills.

(b) A gaming device that uses a bill validator shall retain in its memory and display the information required in subdivision (a) of this section of the last five items accepted by the bill validator (*i.e.*, currency, vouchers, coupons, etc.). The bill validator recall log may be combined or maintained separately by item type. If combined, the type of item accepted shall be recorded with the respective timestamp.

§ 5319.23. Acceptable bill validator locations.

If a gaming device is equipped with a bill validator, such bill validator shall be located in a locked area of such gaming device (*e.g.*, require opening of the main door to access), but not in the logic area of such gaming device. Only the bill or voucher insertion area is permitted to be accessible by the player.

§ 5319.24. Bill validator stacker requirements.

Each bill validator shall have a secure stacker and all accepted items shall be deposited into the secure stacker. The secure stacker and its receptacle are to be attached to the gaming device in such a manner so that such stacker and receptacle cannot be removed easily by physical force and shall meet the following rules:

- (a) the bill validator device shall have the ability to detect a stacker-full condition; and
- (b) there shall be a separate keyed lock to access the stacker area. This keyed lock shall be separate from the main door. In addition, a separate keyed lock shall be required to remove the bills from the stacker.

§ 5319.25. Credit redemption.

(a) Available credits may be collected from a gaming device by a player pressing a collect or cash-out button at any time other than during:

- (1) a game being played;
- (2) audit mode;
- (3) any door open;
- (4) test mode;
- (5) a credit meter or win meter increment, unless the entire amount is placed on the meters when the collect button is pressed; or
- (6) an error condition, provided the error condition prevents a valid cash-out that is not supported through some other means.

(b) If credits are collected, and the total credit value is greater than or equal to a game limit, the game shall lock up until the credits have been paid, and the hand-pay is cleared by a gaming facility employee.

(c) In certain situations, the printing of multiple independent tickets, each below the ticket limit, is an acceptable alternative, if approved by the commission.

§ 5319.26. Printers.

(a) A gaming device shall have a printer that is used to make payments by issuing a printed voucher. Such printer shall print on a voucher as set forth in section 5319.28 of this Part. A gaming device shall support the transmission of data to the gaming facility accounting system that records the following information in regard to each payout voucher printed:

- (1) value of credits in currency;
- (2) time of day the voucher was printed in 24-hour format, showing hours and minutes;
- (3) date indicating the day, month and year;
- (4) gaming device number or machine number; and
- (5) unique validation number.

(b) A gaming device shall either keep a duplicate copy or print one copy for the player, but shall have the ability to retain and display the last-25-voucher-out information to resolve player disputes. In addition, an approved system shall be used to validate the payout voucher, and the voucher information on the gaming facility accounting system shall be retained at least as long as the voucher is valid at that location. If offline voucher issuance is supported, a gaming machine shall mask all but the last four digits of the validation number as displayed in the 25-voucher-out log.

(c) The printer shall be located in a locked area of a gaming device (*i.e.*, require opening of a locked external door), but not be housed within the logic area or the drop box.

(d) A printer shall have mechanisms to allow control-program software to interpret and act upon the following conditions:

- (1) out of paper/paper low. It is permissible for the gaming device to not lock up for these conditions, yet there shall be a means for an attendant to be alerted;
- (2) printer jam/failure; and
- (3) printer disconnected. It is permissible for the gaming device to detect this error condition when the game tries to print.

§ 5319.27. Voucher validation.

Payment by voucher printer as a method of credit redemption is permissible only when:

(a) the gaming device is linked to a computerized voucher validation system that allows validation of the printed voucher. Validation approval or information shall come from the voucher validation system in order to validate vouchers. Vouchers may be validated at any location within the gaming facility, so long as such validation meets the standards in this section. Provisions shall be made if communication is lost and validation information cannot be sent to the validation system, thereby requiring the manufacturer to have an alternate method of payment. A validation system shall be able to identify duplicate vouchers to prevent fraud by reprinting and redeeming a voucher that was previously issued by the gaming device; or

(b) an alternative method approved by the commission is used that includes the ability to identify duplicate vouchers to prevent fraud by reprinting and redeeming a voucher that was previously issued by the gaming device.

§ 5319.28. Voucher information.

A voucher shall at a minimum contain the following printed information:

(a) gaming facility identifier (It is permissible for this information to be contained on the ticket stock itself);

(b) machine number (or cashier/change booth location number, if voucher creation outside of the gaming device is supported);

(c) date and time (24-hour format);

(d) numeric dollar amount of the cash and/or the promotional value of the voucher, displayed independently;

(e) the cash value of the voucher displayed in text;

(f) voucher sequence number, which refers to a sequential number generated by the gaming device and includes the bank and game location;

(g) validation number (including a copy of the validation number on the leading edge of the voucher);

(h) bar code or any machine readable code representing the validation number;

(i) type of transaction or other method of differentiating voucher types, assuming multiple voucher types are available. Additionally, it is strongly recommended that whenever the voucher type is a non-cashable item, including a prize voucher that required attendant intervention to print and that contains an offset barcode that cannot be inserted into another gaming device to make additional wagers, that the ticket explicitly expresses that it has "no cash value";

(j) indication of an expiration period from date of issue, or date and time the voucher will expire (24-hour format). It is permissible for this information to be contained on the ticket stock itself (e.g., “Expires in one year”); and

(k) if offline voucher issuance is supported, an offline authentication identifier shall, at a minimum, be printed on the immediate next line following the leading edge validation number that in no way overwrites, or otherwise compromises, the printing of the validation number on the ticket (not required for vouchers that are non-redeemable at a gaming machine). The offline authentication identifier shall be derived by a hash, or other secure encryption method of at least 128 bits, that uniquely will identify the voucher, verify that the voucher was created in the gaming facility where the redemption is occurring and validate the amount of the voucher. When a suitable authentication identifier is not printed on the voucher, a gaming device shall only allow for one additional voucher print out after such gaming device to system communications has been lost.

§ 5319.29. Voucher issuance and redemption.

(a) A voucher may be generated at a gaming device through an internal printer. Vouchers that reflect partial credits may be issued automatically from a gaming device. Additionally, cashier and change-booth issuance is permitted, if supported by the validation system.

(b) A gaming device shall, at a minimum, meet the following to incorporate the ability to issue offline vouchers after a loss of communication has been identified by such gaming device:

(1) such gaming device shall not issue more offline vouchers than such gaming device has the ability to retain and display in the ticket-out log maintained by such gaming device;

(2) such gaming device shall not request validation numbers and seed, key, etc. values used in the issuance of vouchers until all outstanding offline voucher information has been communicated fully to the voucher validation system;

(3) such gaming device shall request a new set of validation numbers and seed, key, etc. values used in the issuance of online/offline voucher if the current list of validation numbers and seed, key, etc. values have the possibility of being compromised, which include, without limitation, the following cases:

(i) after power has been recycled; or

(ii) upon exit of a main door open condition; and

(4) the values for the seed, key, etc. shall never be viewable through any display supported by such gaming device. Additionally, validation numbers always shall be masked when viewable through any display supported by such gaming device such that only the last four digits of the validation number are visible.

(c) Vouchers may be inserted in a gaming device using the validation system, provided that no credits are issued to such gaming device prior to confirmation of voucher validity.

(d) The offline voucher redemption may be validated as an internal control process at the specific gaming device that issued the voucher. A manual hand-pay may be conducted for the offline voucher value.

§ 5319.30. Software requirements; display.

(a) Pay glass or video displays shall be identified clearly and shall state accurately the rules of the game and the award that will be paid to a player when such player obtains a specific win.

(b) Pay glass or video displays shall indicate clearly whether awards are designated in credits, currency or some other unit.

(c) A gaming device shall reflect any change in award value that may occur in the course of play. Such notice may be accomplished with a digital display in a conspicuous location of such gaming device that such game shall clearly indicate as such.

(d) All pay table information, rules of play and help-screen information should be able to be accessed by a player, prior to such player committing to a bet. Such information shall include unique game features, extended play, free spins, double-up, take-a-risk, auto play, countdown timers, symbol transformations and community-style bonus awards.

(e) Pay glass or video displays shall not be certified for use if the information provided thereon is inaccurate.

(f) A game shall not advertise upcoming wins (e.g., three-times-pay coming soon) unless:

(1) it is mathematically demonstrable that an award occurrence is upcoming; and

(2) if a player is shown a graphic representation in the form of a progress indicator, such representation shall accurately depict the current progress towards such an award.

(g) Each game that offers a feature such as free games or a fever mode shall display the number of feature games that are remaining during each game.

(h) Any games that use multiple decks of cards shall alert a player as to the number of card decks in play.

§ 5319.31. Software requirements; information to be displayed.

A gaming device shall display, or shall have displayed on the glass of such gaming device, the following information to the player at all times such gaming device is available for player input:

- (a) the player's current credit balance;
- (b) the current bet amount (only during the base game or if the player can add to the bet during the game);
- (c) all possible winning outcomes, or be available as a menu item or on the help menu;
- (d) win amounts for each possible winning outcome, or be available as a menu or help-screen item;
- (e) the amount won for the last completed game (until the next game starts or betting options are modified);
- (f) the player options selected (e.g., bet amount, lines played) for the last completed game (until the next game starts or a new selection is made); and
- (g) the denomination being played.

In the alternative, the items described in subdivisions (e) and (f) of this section may be made available to a player as a menu item or on a help menu. It is recommended that a disclaimer in regard to "malfunction voids all pays" (or equivalent language) be clearly displayed. Should such a disclaimer be used, such information shall be affixed permanently to the exterior of the machine and not be removable.

§ 5319.32. Multi-line games.

- (a) Each individual line in a multi-line game to be played shall be indicated clearly by a gaming device so that the player is in no doubt as to which lines are being bet on. Displaying the number of lines bet shall be sufficient to meet this requirement.
- (b) The credits bet per line shall be shown. It is acceptable if the bet-per-line can be calculated from the number of lines bet and the total bet.
- (c) The winning pay line or lines shall be discernable clearly to the player (e.g., on a video game, it may be accomplished by drawing a line over the symbols on the pay line or lines and/or the flashing of winning symbols and line selection box). Where there are wins on multiple lines, each winning pay line may be indicated in turn. The requirements in this subdivision would not apply to electromechanical reel games unless technology is used that implements pay lines similar to those used on video displays (e.g., backlit reels flashing for each winning pay line).

§ 5319.33. Game cycle.

A game is considered complete when the final transfer to the player's credit meter takes place or when all credits wagered are lost. The following are all considered to be part of a single game:

- (a) games that trigger a free-game feature and any subsequent free games;
- (b) second-screen bonus features;

- (c) games with player choice (e.g., draw poker or blackjack);
- (d) games where the rules permit wagering of additional credits (e.g., blackjack insurance or the second part of a two-part keno game); and
- (e) double-up/gamble features.

§ 5319.34. Game selection process.

- (a) Each possible permutation or combination of game elements that produces a winning or losing game outcome shall be available for random selection at the initiation of each play, unless otherwise denoted by the game.
- (b) After selection of the game outcome, a gaming device shall not make a variable secondary decision that affects the result shown to the player. For instance, if the random number generator chooses an outcome that the game will be a loser, the game shall not substitute a particular type of loser to show to the player, thus eliminating the possibility of simulating a near-miss scenario where the odds of the top award symbol landing on the pay line are limited, but appear frequently above or below the pay line.
- (c) A gaming device shall use appropriate protocols to protect the random number generator and random selection process from influence by associated equipment that may be communicating with such gaming device.

§ 5319.35. RNG requirements.

The selection of game symbols or production of game outcomes for a gaming device using a RNG shall:

- (a) be statistically independent;
- (b) conform to the desired random distribution;
- (c) pass various recognized statistical tests; and
- (d) be unpredictable.

§ 5319.36. Applied tests.

An independent testing laboratory approved by the commission may employ the use of various recognized tests to determine whether or not the random values produced by the random number generator pass the desired confidence level of 99 percent. Such independent testing laboratory may choose the appropriate tests on a case-by-case basis depending on the RNG under review. Such tests may include, without limitation:

- (a) chi-square test;
- (b) equi-distribution (frequency) test;
- (c) gap test;

- (d) overlaps test;
- (e) poker test;
- (f) coupon collector's test;
- (g) permutation test;
- (h) Kolmogorov-Smirnov test;
- (i) adjacency criterion tests;
- (j) order statistic test;
- (k) runs tests (patterns of occurrences should not be recurrent);
- (l) interplay correlation test;
- (m) serial correlation test potency and degree of serial correlation (outcomes should be independent of the previous game);
- (n) tests on subsequences; and
- (o) Poisson distribution.

§ 5319.37. Background RNG activity requirement.

A RNG shall be cycled continuously in the background between games and during game play at a speed that cannot be timed by the player.

§ 5319.38. RNG seeding.

The first seed shall be determined randomly by an uncontrolled event. After every game there shall be a random change in the RNG process (new seed, random timer, delay, etc.) in order to ensure that the RNG does not start at the same value every time. It is permissible not to use a random seed. Nevertheless, a manufacturer shall ensure that multiple games will not synchronize.

§ 5319.39. Live game correlation.

Where a gaming device plays a game that is recognizable to be a simulation of a live casino game, such as poker, blackjack, roulette, etc., the same probabilities associated with the live game shall be evident in the simulated game, unless otherwise denoted on the display or help screen.

§ 5319.40. Symbol probability.

For game types such as spinning reel games or video spinning reel games, unless otherwise denoted on the pay glass, the mathematical probability of a symbol appearing in a position for any game outcome shall be constant.

§ 5319.41. Card games.

The requirements for games depicting cards being drawn from a deck are the following:

(a) At the start of each game or hand, the cards shall be drawn fairly from a randomly shuffled deck or decks. Replacement cards shall not be drawn until needed and shall be drawn in accordance with the rules of the game, to allow for multi-deck and depleting decks.

(b) Cards removed from the deck shall not be returned to the deck except as provided by the rules of the game depicted.

(c) As cards are removed from the deck, such cards shall be used immediately as directed by the rules of the game (*i.e.*, the cards are not to be discarded due to adaptive behavior by the gaming device).

(d) It is acceptable to draw random numbers for replacement cards at the time of the first-hand random number draw, so long as the replacement cards are used sequentially as needed.

§ 5319.42. Ball drawing games.

The requirements for games depicting balls being drawn from a pool (*e.g.*, keno) are as follows:

(a) At the start of each game, only balls applicable to the game are to be depicted. For games with bonus features and additional balls that are selected, balls should be chosen from the original selection without duplicating an already-chosen ball.

(b) The pool shall not be re-mixed except as provided by the rules of the game as depicted.

(c) As balls are drawn from the pool, such balls shall be used immediately as directed by the rules of the game (*i.e.*, the balls are not to be discarded due to adaptive behavior by the gaming device).

§ 5319.43. Scaling algorithms.

(a) If a random number with a range shorter than that provided by the RNG is required for some purpose within the gaming device, the method of re-scaling (*i.e.*, converting the number to the lower range) is to be designed in such a way that all numbers within the lower range are equally probable.

(b) If a particular random number selected is outside the range of equal distribution of re-scaling values, it is permissible to discard such random number and select the next in sequence for the purpose of re-scaling.

§ 5319.44. Mechanical-based RNG games.

(a) A mechanical-based RNG game is a game that employs the laws of physics in any way to generate the outcome of such game. All mechanical-based RNG games shall meet the requirements of this Part, with the exception of provisions in sections 5319.37, 5319.38 and 5319.43 that dictate the requirements for electronic random number generators. Mechanical-based RNG games shall meet the following:

(b) The independent testing laboratory approved by the commission shall test multiple iterations of a mechanical-based RNG game to gather enough data to verify randomness. In addition, the manufacturer may supply live data to assist in such evaluation.

(c) The mechanical pieces of a mechanical-based RNG game shall be constructed of materials to prevent decomposition of any component over time (e.g., a ball shall not disintegrate prior to scheduled replacement).

(d) The properties of physical items used to choose the selection in a mechanical-based RNG game shall not be altered.

(e) A player shall not have the ability to interact physically or come into physical contact or manipulate the machine physically with the mechanical portion of a mechanical-based RNG game.

(f) The commission may require replacement parts after a pre-determined amount of time for mechanical-based RNG game to comply with subdivision (b) of this section. In addition, the device or devices may require periodic inspections to ensure the integrity of a device. Each mechanical-based RNG game shall be reviewed on a case-by-case basis.

§ 5319.45. Software requirements for percentage payout.

(a) If progressives, bonus systems, merchandise and so on are external to a game's prize pool, the values shall not be included in the percentage-payout calculation. The independent testing laboratory approved by the commission shall provide the minimum and maximum theoretical payout percentage for the game within a certification report, unless otherwise noted. Additional external awards added to a game shall require a re-evaluation of the theoretical payout percentage, considering the value of the award and other relevant factors. The independent testing laboratory approved by the commission shall re-evaluate a game's theoretical payout percentage when requested.

(b) Gaming devices that may be affected by player skill shall meet the requirement of this section when using a method of play that will provide the greatest return to the player over a period of continuous play.

(c) The minimum percentage requirement shall be met when playing at the lowest end of a non-linear pay table (i.e., if a game is continuously played at a minimum bet level for the cycle of the game and the theoretical return to the player is lower than the minimum percentage, then such pay table is not permissible).

(d) Double-up or gamble options shall have a theoretical return to the player of 100 percent.

§ 5319.46. Odds.

The highest single advertised payout on each gaming device shall occur, statistically, at least once in 50 million games. Such requirement shall not apply to multiple awards won together on the same game play where the aggregate prize is not advertised. Such requirement shall not apply to games that make it possible for a player to win the highest win multiple times through the use of free games. This section does apply to each wager that wins the maximum award. If the highest advertised award can occur within a bonus or free-game feature, the odds calculation shall include the odds of obtaining the bonus round, including the odds to achieve the top award.

§ 5319.47. Bonus games.

(a) *Bonus game requirements.* Games that have awards calculated that occur from game play within the base game's cycle (e.g., bonus features, including free games) shall meet the following:

(1) the game shall display clearly to the player which game rules apply to the current game state. Such rules shall be made available to the player prior to the start of the bonus game (rather than during the bonus game);

(2) the game shall clearly display to the player the possible win-amount ranges, multiplier ranges and so on that can be obtained from bonus play;

(3) a game that offers a bonus game, other than those that occur randomly, shall display to the player sufficient information to indicate the current status towards the triggering of the next bonus game;

(4) if the game requires obtaining several events or symbols toward a feature, the number of events or symbols needed to trigger the bonus shall be indicated along with the number of events or symbols collected to any point;

(5) the game shall not adjust the likelihood of a bonus occurring based on the history of prizes obtained in previous games (i.e., games shall not adapt their theoretical return to the player based on past payouts);

(6) if a game's bonus is triggered after accruing a certain number of events or symbols or combination of events or symbols of a different kind over multiple games, the probability of obtaining like events or symbols shall not deteriorate as the game progresses (e.g., for identical events or symbols it is not permitted that the last few events or symbols needed are more difficult to obtain than the previous events or symbols of that kind);

(7) the game shall make it clear to the player that the player is in a bonus mode, in order to minimize the possibility of the player walking away from the gaming device not knowing that the game is in a bonus mode;

(8) bonus game awards are part of the game cycle with predetermined award values. Bonus play award contributions to the program payout percentage are calculated consistent with awards of the regular game cycle. Specifically, if the cycle for bonus play awards is different from the base game cycle, then the bonus play awards, occurring within the base game's cycle, shall be calculated as part of the game's payout; and

(9) the game shall display the rules of play for the bonus game awards, the rewards associated with each bonus play award and the character combinations that will result in the specific payouts. For bonus play awards achieved by obtaining specific game results, the progress of the award shall be displayed.

(b) *Player selection or interaction in bonus games.* A gaming device that offers a bonus game or extended feature that requires player selection or interaction is prohibited from automatically making selections or initiating games or features unless such gaming device meets the requirements set forth in paragraphs (1) through (3) of this subdivision and explains the mechanism for auto-initiation or selection on the device glass or video display.

(1) A player shall be presented with a choice and shall acknowledge specifically an intent to have the gaming device auto-initiate the bonus or extended play feature by means of a button press or other physical or machine interaction.

(2) The bonus or extended feature shall provide only one choice to the player (*i.e.*, press button to spin wheel). In such a case, the device may auto-initiate the bonus or extended feature after a time-out period of at least two minutes.

(3) The bonus or extended feature shall be offered as part of community play that involves two or more patrons and where the delay of an offered selection or game initiation will impact directly the ability for other players to continue their bonus or extended features. Prior to making selections automatically or initiating a community-based bonus or feature, a player shall be made aware of the time remaining in which the player shall make a selection or initiate play.

§ 5319.48. Extra credits wagered during bonus games.

If a bonus or feature game requires extra credits to be wagered during the bonus and the game accumulates all winnings (from the trigger and the feature to a temporary win meter, rather than directly to the credit meter), such game shall:

(a) provide a means whereby winnings on the temporary meter can be bet (via the credit meter) to allow for instances where the player has an insufficient credit meter balance to complete the feature;

(b) transfer all credits on the temporary meter to the credit meter upon completion of the feature;

(c) not exceed the maximum bet limit, if one is set; and

(d) provide the player an opportunity not to participate.

§ 5319.49. Mystery awards.

It is acceptable for a game to offer a mystery award, which is an award that is not tied to any specific symbol combination, if such game indicates the maximum amount the player potentially could win. If the minimum amount that potentially could be won is not displayed, such amount will be assumed to be zero. In addition, both a minimum and maximum amount shall be displayed for any mystery award if the method to receive such award involves strategy or skill, including methods whereby the value of the pay table is used in order to make decisions that could increase the return to the player (e.g., video poker).

§ 5319.50. Multiple games on the gaming device; selection of game for display.

(a) A *multi-game* is a game that simultaneously can be configured for use with multiple themes and/or multiple pay tables.

(b) The methodology employed by a player to select a particular game for play on a multi-game gaming device shall be explained clearly to the player on such gaming device and be capable of being followed easily.

(c) A gaming device shall have a means to inform clearly the player of all games, their rules and/or their pay tables, before such player shall commit to playing such games.

(d) A player shall at all times be made aware of which game theme has been selected for play and is being played, as applicable.

(e) When multiple game themes are offered for play, a player shall not be forced to play a particular game unless the game screen clearly indicates the game selection is unchangeable. If not disclosed, a player shall be able to return to the main menu.

(f) It shall not be possible to select or start a new game before the current play is completed and all relevant meters have been updated, including features, gamble and other options of the game, unless the action to start a new game terminates the current play in an orderly manner.

(g) The set of games or the pay table or tables offered to the player for selection may be changed only by a secure certified method that includes turning on and off games available for play. The rules set forth in subdivision (d) of section 5319.10 of this Part, in regard to configuration settings, shall govern the NV-memory-clear-control requirements for these types of selections. When a pay table is turned off, an NV-memory-clear is not required so long as the gaming device keeps the data of the previous pay table (in memory).

(h) No changes to the set of games or to the pay table or tables offered to the player for selection are permitted while there are credits on such player's credit meter or while a game is in progress, notwithstanding specific protocol features that might have allowed such changes to be made in a controlled fashion.

§ 5319.51. Electronic metering within the gaming device.

(a) *Credit meter units and display.* The credit meter shall be maintained in credits or cash value and at all times indicate all credits or cash available for the player to wager or cash out, with the exception of when the player is viewing an informational screen such as a menu or help-screen item. Such screen should be displayed to the player unless a tilt condition or malfunction exists.

(b) *Tokenization.* If the currency amount is not an even multiple of the tokenization factor for a game or the credit amount has a fractional value, the credits displayed for such game may be displayed and played as a truncated amount (*i.e.*, fractional part removed). However, the fractional credit amount shall be made available to the player when the truncated credit balance is zero. The fractional amount is also known as *residual credit*.

(c) *Credit meter, incrementing.* The value of all prizes awarded shall be added to the player's credit meter, except for hand-pays or merchandise.

(d) *Progressives.* Progressive awards may be added to the credit meter if either:

(1) the credit meter is maintained in currency;

(2) the progressive meter is incremented to whole credit amounts; or

(3) the progressive prize in currency is converted properly to credits upon transfer to the player's credit meter in a manner that does not mislead the player (*i.e.*, make unqualified statement "wins meter amount" and then rounds down on conversion or cause accounting imbalances). See also Part 5321 of this Subchapter.

(e) *Collect meter.* There shall be a collect meter, which shall show the number of credits or cash, collected by the player upon a cash-out. This meter should be displayed to the player unless a tilt condition or malfunction exists. The number of credits or cash collected shall be subtracted from the player's credit meter and added to the collect meter. This meter may include hand pays.

(f) *Software meter information access.* The software meter information shall be accessible only by an authorized gaming facility employee and shall have the ability to be displayed on demand using a secure means.

(g) *Electronic accounting and occurrence meters.* Electronic accounting meters shall be at least 10 digits in length. These meters shall be maintained in credit units equal to the denomination or in dollars and cents. If the meter is being used in dollars-and-cents format, eight digits shall be used for the dollar amount and two digits used for the cents amount. Devices configured for multi-denomination play shall display the units in dollars and cents. The meter shall roll over to zero upon the next occurrence, any time the meter exceeds 10 digits and after 9,999,999,999, or any other value that is logical, has been reached. Occurrence meters shall be at least eight digits in length. Occurrence meters are not required to roll over automatically. Meters shall be labeled so such meters may be clearly understood in accordance with their functions. All gaming

devices shall be equipped with a device, mechanism or method for retaining the value of all meter information specified in this section, which shall be preserved in the event of power loss to the gaming device. The following paragraphs (1) through (22) describe accounting meters, except where noted otherwise.

(1) *Coin in.* A gaming device shall have a meter that accumulates the total value of all wagers, whether the wagered amount results from the insertion of currency, deduction from a credit meter or any other means. This meter shall, with the exception of keno or skill games:

(i) not include subsequent wagers of intermediate winnings accumulated during game play sequence, such as those acquired from games permitting double-up wagers;

(ii) for all games, provide the coin-in information, on a per-pay-table basis, to calculate a weighted average theoretical payback percentage; and

(iii) for a pay table with a difference in theoretical payback percentage that exceeds four percent between wager categories, it is recommended that the device maintain and display coin-in meters and the associated theoretical payback percentage for each wager category with a different theoretical payback percentage and calculate a weighted average theoretical payback percentage for such pay table.

(2) *Coin out.* A gaming device shall have a meter that accumulates the total value of all amounts directly paid by the device as a result of winning wagers, whether the payout is made to a credit meter or by any other means. This meter shall not record amounts awarded as the result of an external bonusing system or a progressive payout.

(3) *Attendant-paid jackpots.* A gaming device shall have a meter that accumulates the total value of credits paid by an attendant resulting from a single game cycle, the amount of which is not capable of being paid by such gaming device itself. Such amount does not include progressive amounts or amounts awarded as a result of an external bonusing system. Such meter shall include only awards resulting from specifically identified amounts listed in the manufacturer's par sheet. Jackpots that are keyed to the credit meter shall not increment this meter.

(4) *Attendant-paid cancelled credits.* A gaming device shall have a meter that accumulates the total value paid by an attendant resulting from a player-initiated cash-out that exceeds the physical or configured capability of such device to make the proper payout amount.

(5) *Bill in.* A gaming device shall have a meter that accumulates the total value of currency accepted and a specific occurrence meter for each denomination of currency accepted that records the number of bills accepted of each denomination.

(6) *Ticket and/or voucher in or ticket in.* A gaming device shall have a meter that accumulates the total value of all gaming-device vouchers accepted by such device.

(7) *Ticket and/or voucher out or ticket out.* A gaming device shall have a meter that accumulates the total value of all gaming-device vouchers and payout receipts issued by the device.

(8) *Electronic funds transfer in (EFT in).* A gaming device shall have an EFT-in meter that accumulates the total value of cashable credits electronically transferred from a financial institution to such gaming device through a cashless wagering system.

(9) *Cashless account transfer in or wagering account transfer (WAT) in.* A gaming device shall have a meter that accumulates the total value of cashable credits electronically transferred to such gaming device from a wagering account by means of an external connection between such device and a cashless wagering system.

(10) *Cashless account transfer out or WAT out.* A gaming device shall have a meter that accumulates the total value of cashable credits electronically transferred from such gaming device to a wagering account by means of an external connection between such device and a cashless wagering system.

(11) *Non-cashable electronic promotion in.* A gaming device shall have a meter that accumulates the total value of non-cashable credits electronically transferred to such gaming device from a promotional account by means of an external connection between such device and a cashless wagering system.

(12) *Cashable electronic promotion in.* A gaming device shall have a meter that accumulates the total value of cashable credits electronically transferred to such gaming device from a promotional account by means of an external connection between such device and a cashless wagering system.

(13) *Non-cashable electronic promotion out.* A gaming device shall have a meter that accumulates the total value of non-cashable credits electronically transferred from such gaming device to a promotional account by means of an external connection between such device and a cashless wagering system.

(14) *Cashable electronic promotion out.* A gaming device shall have a meter that accumulates the total value of cashable credits electronically transferred from such gaming device to a promotional account by means of an external connection between such device and a cashless wagering system.

(15) *Cashable promotional credit wagered.* This meter is not an accounting meter. If a gaming device supports cashable promotional credits, the gaming device shall have a meter that accumulates the total value of promotional cashable credits that are wagered, including credits that are transferred to the machine electronically or through the acceptance of coupons or vouchers.

(16) *Coupon promotion in.* A gaming device shall have a meter that accumulates the total value of all gaming-device promotional coupons accepted by such device.

(17) *Coupon promotion out.* A gaming device shall have a meter that accumulates the total value of all gaming-device promotional coupons issued by such device.

(18) *Machine-paid external bonus payout.* A gaming device shall have a meter that accumulates the total value of additional amounts awarded as a result of an external bonusing system and paid by such device.

(19) *Attendant-paid external bonus payout.* A gaming device shall have a meter that accumulates the total value of amounts awarded as a result of an external bonusing system paid by an attendant. Bonus payouts that are keyed to the credit meter shall not increment this meter.

(20) *Attendant-paid progressive payout.* A gaming device shall have a meter that accumulates the total value of credits paid by an attendant as a result of progressive awards that are not capable of being paid by the device itself. Progressive payouts that are keyed to the credit meter shall not increment this meter.

(21) *Machine-paid progressive payout.* A gaming device shall have a meter that accumulates the total value of credits paid as a result of progressive awards paid directly by such device. This meter does not include awards paid as a result of an external bonusing system.

(22) *Games played.* This meter is not an accounting meter. A gaming device shall have meters that accumulate the number of games played.

(h) *Pay-table-specific meters.* In addition to the master electronic accounting meters required by subdivision (g) of this section, each individual game available for play shall have the pay table meters credits bet (*i.e.*, coin in) and credits won (*i.e.*, coin out) in either credits or dollars. Even if a double-up or gamble game is lost, the initial win amount, and not credits-bet amount, shall be recorded in the game-specific meters.

(i) *Double-up or gamble meters.* For each type of double-up or gamble feature offered, there shall be sufficient meters to determine such feature's actual return percentage, which shall increment accurately every time a double-up or gamble play concludes, including all amounts wagered and won during interim plays. These meters shall reflect amount wagered and amount won. If such gaming device does not supply accounting for the double-up or gamble information, the feature shall provide for the ability to be disabled.

§ 5319.52. Communication protocol.

(a) In order to communicate with a gaming facility accounting system, a device shall function accurately as indicated by the communication protocol that is implemented.

(b) A gaming device shall not allow any information contained in communication to or from the gaming facility accounting system that is intended by the communication protocol to be protected, or that is of a sensitive nature, to be viewable through any display mechanism supported by such gaming device. Such communication includes,

without limitation, validation information, secure PINs, credentials or secure seeds and keys.

§ 5319.53. Error conditions.

(a) A gaming device shall be capable of detecting and displaying the error conditions described in this section and of illuminating the tower light or sounding an audible alarm. Error conditions shall cause a gaming device to lock up and require attendant intervention except as noted within this section. Error conditions shall be cleared either by an attendant or upon initiation of a new play sequence after the error has cleared except for errors described in paragraphs (1) and (3) of subdivision (c) of this section, which are deemed critical errors that require further evaluation. Error conditions shall be communicated to an online monitoring and control system, where applicable.

(b) *Door-open error conditions.*

- (1) All external doors (e.g., main, belly, top box);
- (2) drop box door;
- (3) stacker door; and
- (4) any other currency storage areas that have a door.

(c) *Other error conditions.*

- (1) NV memory error (for any critical memory);
- (2) Low NV memory battery for batteries external to the NV memory itself or low power source;
- (3) Program error or authentication mismatch;
- (4) Reel-spin errors. The specific reel number shall be identified in the error code. This should be detected under the following conditions:
 - (i) a mis-index condition for rotating reels, that affects the outcome of the game;
 - (ii) in the final positioning of the reel, if the position error exceeds one-half of the width of the smallest symbol excluding blanks on the reel strip; and
 - (iii) microprocessor-controlled reels shall be monitored to detect malfunctions such as a reel that is jammed, or is not spinning freely, or any attempt to manipulate the final resting positions of such reels.

(d) *Error Codes.* For games that use error codes, a description of gaming-device error codes and their meanings shall be affixed inside the gaming device. This subdivision shall not apply to video-based games.

§ 5319.54. Program interruption and resumption.

(a) *Interruption.* After a program interruption (e.g., processor reset), software shall be able to recover to the state such software was in immediately prior to the interruption occurring. It is acceptable for the game to return to a game-completion state so long as the game history and all credit and accounting meters comprehend a completed game. If a power failure occurs during acceptance of a bill or other note, the bill validator shall give proper credits or return the note.

(b) *Restoring power.* When a gaming device is powered down while in an error condition, upon restoring power, the specific error message shall still be displayed and the gaming device shall remain locked-up. If power-down is used as part of the error reset procedure upon power-up or door closure, a gaming device shall check for the error condition and confirm that the error is no longer in existence.

(c) *Simultaneous inputs.* A program shall not be affected adversely by the simultaneous or sequential activation of the various inputs and outputs, such as “play buttons,” that might, whether intentionally or not, cause malfunctions or invalid results.

(d) *Resumption.* On program resumption, the following procedures shall be performed as a minimum requirement:

(1) any communications to an external device shall not begin until the program resumption routine, including self-tests, is completed successfully; and

(2) the bill validator device shall perform a self-test at each power up. In the event of a self-test failure, the bill validator shall disable itself automatically (i.e., enter bill-reject state) until the error state has been cleared.

(e) *Microprocessor-controlled reels.* Microprocessor-controlled reels (e.g., stepper motor reels) shall re-spin automatically to the last-valid-play mode result when the play mode is re-entered and the reel positions have been altered (e.g., the main door is closed, power is restored, audit mode is exited or an error condition cleared).

(f) *Required door metering.* Software shall be able to detect access to the following doors or secure areas, provided power is supplied to a device:

(1) all external doors (e.g., main, belly, top box);

(2) drop box door;

(3) stacker door; and

(4) any other currency storage areas that have a door.

§ 5319.55. Door open procedures.

When a gaming device’s external doors are opened, the game shall cease play, enter an error condition, display an appropriate error message, disable bill acceptance and either sound an alarm or illuminate the tower light, or both.

§ 5319.56. Door close procedures.

When all of a gaming device's external doors are closed, the game shall return to its original state and display an appropriate error message, until the next game has ended.

§ 5319.57. Taxation reporting limits.

A game shall be capable of entering a lock-up condition if any awards from a single game cycle are in excess of a limit that is required for Federal or State tax reporting. It is permissible to provide a mechanism to accrue W2-G-eligible winnings to a separate meter. Such meter shall not provide for the ability to place wagers and when collected by the player, the game shall lock-up and require an attendant to assist the player.

§ 5319.58. Test/diagnostic mode (demo mode).

(a) *Credits.* If a gaming device is in a test, diagnostic or demo mode, any test that incorporates credits entering or leaving such gaming device shall be completed on resumption of normal operation. No mode other than normal operation (ready for play) shall increment any of the electronic meters. Any credits on the gaming device that were accrued during the test, diagnostic or demo mode shall be cleared automatically before such mode is exited. Specific meters are permissible for these types of modes, provided the meters indicate as such.

(b) *Entry to test/diagnostics mode.* The opening of the main cabinet door of a gaming device automatically may place such gaming device in a service or test/diagnostic mode. Test/diagnostic mode may also be entered by action of a gaming facility employee for purposes of an audit. Such modes shall not be accessible to a player.

(c) *Exiting from test/diagnostic mode.* When exiting from test-diagnostic mode, a game shall return to the original state such game was in when the test mode was entered.

(d) *Test games.* If a gaming device is in a game-test mode, such gaming device shall indicate clearly that such gaming device is in a test mode, not normal play.

§ 5319.59. Game history recall.

(a) Information on at least the last 10 games always is to be retrievable upon the operation of a suitable external key-switch or another secure method that is not available to a player.

(b) Last-play information shall provide all information required to reconstruct fully the last 10 games. All values shall be displayed, including the initial credits or ending credits, credits bet and credits won, pay-line symbol combinations and credits paid, whether the outcome resulted in a win or loss. Such information is permitted to be represented in graphical or text format and should include the final game outcome, including all player choices and bonus features. In addition, the last-play information shall include the results of double-up or gamble wagers, if applicable. It is allowable to

display values in currency in place of credits. If a progressive was awarded, it is sufficient to indicate that the progressive was awarded and not display the value.

(c) The 10-game recall shall reflect bonus rounds in their entirety. If a bonus round lasts for a number of events, each with a separate outcome, each such event shall be displayed with its corresponding outcome, regardless if the result is a win or loss. The recall also shall reflect position-dependent events if the outcome results in an award. Gaming devices offering games with a variable number of free games, per base game, may satisfy the requirement of this subdivision by providing the capability to display the last 50 free games in addition to each base game.