AGCO

Alcohol and Gaming
Commission of Ontario

Ontario

ELECTRONIC GAMING EQUIPMENT MINIMUM TECHNICAL STANDARDS

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Table of Contents

Introduction

The Registrar of Alcohol and Gaming is appointed under the Alcohol and Gaming Regulation and Public Protection Act, 1996 and has powers and duties under the Gaming Control Act, 1992 and its regulations. Under section 3.8 of the Gaming Control Act, 1992, the Registrar is authorized to establish standards and requirements for the conduct, management and operation of gaming sites, lottery schemes or businesses related to a gaming site or a lottery scheme. The Registrar has specified the following technical standards as the minimum standards to be used in assessing gaming equipment and gaming management systems for approval for use in Ontario casinos. The Registrar has delegated to the Deputy Registrar the authority to make decisions on the approval of gaming equipment and gaming management systems.

The Registrar may decide to approve, without testing, the equipment or the system, as the case may be, if it has been approved in another jurisdiction where gaming is legal. However, these standards may be in excess of or differ from those used in other jurisdictions. These differences in our standards may necessitate additional review for approval in Ontario.

The intent of this document is to update minimum technical standards on electronic gaming equipment with regards to the technical integrity, safety and security of the equipment or the system, including its accounting capability. These minimum technical standards will become effective on February 1, 2017. Gaming equipment and gaming management systems submitted for approval prior to this date will not be subject to these minimum technical standards unless they suffer an issue of technical integrity, safety, security or accounting capability.

MODIFICATIONS TO THE TECHNICAL STANDARDS DOCUMENT

From time to time it may be necessary to make modifications to this document in order to address the following:

a) Changes in technology;

b) Changes, deletions or additions to meet the intent described earlier;

c) Introduction of new equipment where no standards have been set;

d) Rephrasing of a particular standard(s) to provide clarification.

OPERATIONAL REQUIREMENTS

These standards do not deal with implementation requirements at the gaming site such as: site security, redundancy of gaming systems, etc. These requirements will be dealt with through the internal control procedures for each gaming site.

Introduction of New Technology in Ontario

The AGCO encourages innovation in Ontario's gaming industry by supporting the early adoption of new technology/concepts. Existing Technical Standards are based on known technology, and may not extend or apply to innovative concepts or technologies. In the absence of Technical Standards, interim approvals will be based on the principles of technical integrity, safety, security, and accounting capability. Stakeholders are encouraged to submit innovative concepts or technology for approval at any time after consultation with the AGCO Gaming Lab, including when relevant technical standards have not yet been developed.

Early consultations with the AGCO Gaming Lab at the concept and/or design phase in the product development life cycle allow for effective planning of the introduction of new technology/concepts to Ontario, and enable the Registrar to expedite approval of new technology/concepts.

ASSUMPTIONS

It is assumed that standard industry practices will be applied (standard software development practices, design and development including handling of abnormal operations, etc.). Therefore, they are not included in these standards.

It is recognized that the evolution of technology and game design may result in some standards becoming more restrictive than intended. In such cases, we encourage the Suppliers to contact the Director/Deputy Registrar to discuss how the proposed technology/game design can comply with the intent of these standards.

ELECTRONIC GAMING EQUIPMENT MINIMUM TECHNICAL STANDARDS

1. Authentication/Verification of Critical Files

1.1 Critical Files on EPROM

1.1.1   The gaming equipment must verify the integrity of all critical files on conventional EPROM during power up and game reset functions for possible corruption. The test methodology must detect at least 99.99 percent of all possible failures and must reside and be loaded from conventional EPROM. The use of algorithms such as Cyclic Redundancy Check (CRC), MD5 or better is encouraged. Detection of any error during this memory test must cause a tilt, and the gaming equipment must not be playable.

1.1.2   When used, EPROM devices must only contain the actual control programs and data necessary for operation of the approved game(s). There must be no additional programs or data records/files on the media.

1.1.3   The unused portion of EPROM that is accessible by any means, for any program, must be set to a defined state, either hex FF or 00.

1.2 Critical Files on Media Other than EPROM

1.2.1   The gaming equipment must protect and verify the integrity of all critical files residing on the storage media to detect and prevent unauthorized changes to installed software.

1.2.2   The verification program must be able to authenticate control programs and related data against an authorization list (a file containing sufficient data to identify and verify integrity of each critical file; it may include a hash table, or signature table) using an algorithm (e.g. a one way hash, digital signature or authentication code) approved by the Registrar. The verification program will be evaluated on a case-by-case basis and approved by the Registrar based on industry standard security practises.

1.2.3   The verification program must reside on and load from a non-alterable storage media device of which the AGCO can verify the contents and seal. Alternatively, a series of programs can be used for verification if the initial verification program is stored on a non-alterable storage media device of which the AGCO can verify the contents and seal, and a "chain of trust" can be established.

1.2.4   The authorization list used by the verification program(s) must be protected from unauthorized modification. The authorization list must be either stored on a non-alterable storage media device secured in the gaming equipment, or authenticated using an approved mechanism (e.g. using digital signatures, encryption or authentication codes).

1.2.5   The gaming equipment must provide, as a minimum, a mechanism for verifying all program components on demand via a communication port and protocol approved by the Registrar. The mechanism for extracting the verification information must be stored on a non-alterable storage media device of which the AGCO can verify the contents and seal. Alternatively, a series of programs can be used for verification if the initial verification program is stored on a non-alterable storage media device of which the AGCO can verify the contents and seal, and a "chain of trust" can be established.

1.3   Control Program Verification

1.3.1   Control program components, excluding graphics and sound components, must be fully verified at the time of loading into electrically erasable or volatile memory, and at minimum, following any game resets and power up. The mechanism must prevent further play of the gaming equipment if an invalid component is detected.

1.3.2   In the event of failed verification during boot up, the gaming equipment must immediately prevent execution or usage of those elements by the gaming device.

1.3.3   In the event of failed verification after the game is powered up, the gaming equipment must:

    a) immediately enter a tilt condition to prevent further play of the gaming equipment, and display an appropriate error,

    b) require operator intervention to clear the error,

    c) display specific error information and not clear the tilt condition until either (i) the verification passes following operator intervention, or (ii) the media is replaced or corrected, the device's memory is cleared, the game is restarted, and all files authenticate correctly,

    d) if technically possible, send an exception message to the Slot Monitoring System for this authentication failure, and

    e) record the details of the tilt in a log including, at a minimum, the type of tilt, the time and date of the tilt, and slot machine event.

1.3.4   Gaming equipment that utilize multiple player terminals for the purposes of playing a common game must employ a mechanism to ensure that all connected terminals use a compatible version of software and compatible configurations with each other and with the central controller.

1.4   Updates to Critical Software and Files

Note: Program storage media devices are considered alterable unless they are inherently read-only (e.g. CD-ROM) or are manufactured with and utilize a hardware write-protect mechanism (such as a write-protect jumper or switch). Any other types of write protection on a program storage media device or its files will be assessed on a case-by-case basis based on the security of the approach.

1.4.1   Any potential writes to alterable storage media devices must be disclosed in full to the Registrar at the time of submission. This disclosure must include, at a minimum, the type of data being written, the location on the media to which writes are allowed, and reason for all writes.

1.4.2   Gaming equipment that uses alterable storage media devices to store critical files must:

    a) prevent any change in the media from taking place that would interrupt a game in progress or a game session,

b) be capable of displaying the message digests of critical files on demand through the audit mode, and

c) not store unintended programs or files on the alterable storage media device.

1.4.3   Gaming equipment must not write to critical files, unless the gaming equipment:

a) uses a restricted technical procedure to write to the files;

b) maintains a displayable record on the gaming equipment of all critical files that are added, deleted or modified on the media by the control program since the last critical memory clear. The displayable record must contain a minimum of the last 10 modifications to the media, the date and time of the action, identification of the component affected, and any pertinent validation information; and

c) upon successful modification to the media, synchronizes information in authorization lists, message digests and other authentication data in order to verify the new or modified software or data files.

1.5   Maintenance of Critical Memory

1.5.1   The control program must check for any corruption of critical game data in non-volatile memory locations. This memory check must be performed following game initiation but prior to display of game outcome to the player. If the memory check is not feasible to perform during the game, another method acceptable to the AGCO must be employed to insure game integrity.

1.5.2   Detection of any corruption of critical game data is considered to be either a:

a) Recoverable Memory Corruption if a known good copy of the data can be established; or

b) Unrecoverable Memory Corruption.

1.5.3   If the control program detects a recoverable memory corruption, the control program may recover critical memory information in order to continue game play, if the control program:

a) Re-creates all logical copies of the critical memory using an established known good copy of the data; and

b) Verifies that the re-creation of the critical memory was successful.

If a permanent physical memory failure is identified, the device must enter an unrecoverable memory corruption sequence.

1.5.4   An unrecoverable memory corruption must result in an error that requires a full clear of corrupted critical memory before the gaming equipment is brought up for play.

1.5.5   The gaming equipment must provide the capability for the contents of the critical memory to be read through restricted technical procedures.

1.5.6   The gaming equipment must be capable of continuing the current game with all the current play features and information after a malfunction is cleared, where technically possible.

1.5.7   For the purpose of forensic examination of critical game data, the contents of critical memory must be preserved for examination if the hardware is removed from the cabinet.

1.5.8   Clearing non-volatile critical memory must require access to the locked logic area or other secure method provided that the method can be controlled by the AGCO.

1.5.9   Following the initiation of a procedure to clear critical memory, the gaming equipment must execute a routine which initializes all bits in critical memory to the default state as appropriate to the operating jurisdiction. For games that allow for partial memory clears, the methodology in doing so must be accurate and the game must validate the un-cleared portions of critical memory.

2.   Award Pay Tables

2.1 Game Information Display

2.1.1   All paytable awards and game rules must be available to the player at the gaming equipment, prior to the player committing to a bet.

2.1.2   All paytable awards, game rules and other messages communicated to the player must be accurate.

2.1.3   Each award shown on the paytable must be attainable.

2.1.4   The pay glass or video display must clearly indicate whether awards are designated in denominational units, currency, or some other unit.

2.1.5   All possible game outcomes shall be available upon the initiation of each play of a game upon which a player commits a wager, except as provided by the rules of the game (i.e. for metamorphic games).

2.1.6   Once a game is initiated by a player, the rules of play for that game, including all the probabilities and possible awards, cannot be changed within the game.

Players must be notified through a prominent display of any changes made to the rules of play between games during a gaming session, including changes made to the probabilities and/or possible awards of the game.

2.1.7   Gaming equipment must not advertise 'upcoming wins,' e.g., "three times pays coming soon", unless they are guaranteed to occur in the same game play.

2.1.8   Gaming equipment must not use language that suggests the probability of a particular outcome is more likely to happen than its actual probability. Examples include the use of the terms, "Due", "Overdue", "Ready", and "Ready to Hit".

2.1.9   Gaming equipment must clearly indicate all information necessary to track the progress of bonus features (e.g. bonus features that play a limited number of rounds must include the number of rounds remaining during each game that the feature is present).

2.1.10   Any games which change the conditions of play during game play (e.g. number of decks in card games, reels in a slot game) must alert the player of the change.

In the case of a reel game where reel strip weightings are changed due to different wagering options being selected or during free or bonus spins, the gaming equipment must clearly state in the help screens that different reels are used for the particular game states and/or wagering options; and:

a)   Alter the appearance of the reels (i.e. change the appearance of the symbol, change the background color of the reel strip); or

b)   Display on the game screen that reels have changed, and/or different reels are in play.

2.1.11   The following statement must be clearly visible to the player on each machine:

"The game display does not indicate how close you were to winning, and cannot necessarily be used to determine your chances of winning or losing if you continue to play."

2.1.12   The following statement must be clearly visible to the player on each machine that provides a "stop reels" feature which does not impact the game outcome:

"A player cannot influence the result of a game by stopping the reel spins."

2.1.13   It is recommended that a disclaimer regarding "Malfunction Voids all Pays and Plays" (or some equivalent verbiage) be clearly displayed on all gaming equipment.

2.2   Display of Other Information on the Gaming Equipment

2.2.1   The following requirements apply to gaming equipment that uses the entire primary display for non-game related activities. These requirements do not apply to software or hardware that mixes video signals for the purposes of providing ancillary windows on the gaming equipment.

a) The gaming equipment must be in idle mode with no errors or tilts, no play and no credits on the game in order to utilize the primary display. If the use of the display is the direct result of a player request, it is not necessary for the game to be in idle mode with no credits.

b) At all times a patron must be able to cancel any non-gaming related activities being displayed on the primary display.

c) Gaming-related activities such as the acceptance of currency must automatically result in the cancellation of any non-gaming activities on the primary display.

2.2.2   Gaming equipment that contains technology to allow multiple windows to be displayed and/or resized on the primary display(s) for gaming or non-gaming activities must be able to do the following:

a) allow the player or operator to close any window on demand that is not pertinent to the primary game;

b) allow the operator to perform routine operations on the gaming equipment at any time; and

c) maintain the proper operation and legibility of the main game and related game information if the window of the main game has been resized or otherwise modified in any way.

2.2.3   Gaming equipment that uses demo or attract modes must not allow activation of the demo or attract mode if there are credits on the gaming equipment.

3. Bill Validator

3.1 Wagering Instruments

3.1.1   Only Canadian bills of $5, $10, $20, $50 and $100 denominations available for general circulation may be accepted after proper validation by the bill validator. Acceptance of other currency types must be submitted for approval by the Registrar and will be reviewed on a case-by-case basis.

3.1.2   The bill validator may accept other types of wagering instruments approved by the Registrar for such use, e.g. tickets/credit vouchers. All requirements described in this section also apply to these wagering instruments when processed through the bill validator.

3.1.3   Denominations accepted by the bill validator, and the orientation for insertion of the bill must be clearly shown at the appropriate place on the gaming equipment if the bill is only accepted in a specific orientation.

3.1.4   The bill validator must provide the flexibility to select and/or deselect bill denominations and/or other types of wagering instruments (e.g. vouchers) approved by the Registrar. Optionally, the game may also provide this capability.

3.1.5   The bill validator must authenticate the bills at the optimum security level to reject any counterfeit bills.

3.1.6   The bill validator must reject bills that are stacked atop one another during insertion.

3.2 Interaction with the Game

3.2.1   The game must not issue credits until:

    a) the bill has been stacked in the cashbox after proper validation,

    b) the bill validator has sent the "irrevocably stacked" message to the game,

    c) the game software has performed a validity check of all actions communicated to the game software by the bill validator to ensure proper logical actions have taken place, e.g. bill stacked message was preceded by all other messages.

3.2.2   The bill validator must communicate with the gaming equipment using a bidirectional protocol.

3.2.3   Any voucher must be rejected when it cannot be verified against the appropriate validation system for any reason.

3.2.4   The bill must be rejected, if proper credits cannot be given by the game.

3.3 Tilt Conditions

3.3.1 The gaming equipment must be disabled and normal play must not occur until the following error conditions have been cleared:

a) Bill jam;

b) Cashbox access door opened;

c) Illogical sequence of events sent by the bill validator that are detectable by the gaming equipment, e.g. bill stacked message issued prior to other messages such as bill denomination;

d) Bill Validator firmware CRC (Cyclic Redundancy Check) failure;

3.3.2 The bill validator must be automatically disabled and not be re-enabled until the following conditions have been cleared:

a) Cashbox Removed;

b) Cashbox Full;

c) Hardware/Software Error;

d) Validator Communication Error;

e) Host gaming equipment is in tilt, disabled, slot tournament or administrative mode;

f) Stolen bill where the bill was read and stacked without the communication of the "irrevocably stacked" message to the gaming equipment.

3.3.3 The bill validator must be designed to prevent the successful use of cheating methods such as stringing, the insertion of foreign objects and any other manipulation that may be deemed as a cheating technique.

3.3.4 The bill validator must be automatically disabled and not be re-enabled while the game has started active play and has not displayed the final result of the current wager to the patron except as necessary when the player has the choice to make additional wagers.

3.4 Software Integrity

3.4.1 The bill validator must perform a self-test at each power up. In the event of a self-test failure, the bill validator shall send a signal to the host gaming equipment and automatically disable itself until the error state has been cleared.

3.4.2 Host games using bill validators with alterable storage media must display the hash value of the bill validator code on demand.

3.4.3 During the programming operation on bill validators with alterable storage media, each byte programmed must be verified by a comparison program controlled by the programming device.

3.4.4   The bill validator software must be capable of authentication by the AGCO to ensure the contents match the approved version.

3.4.5   The authentication of bill validator software can be performed either by external tools, such as an EPROM verifier, or internally by the host game, in which case the methodology implemented must have the probability of error detection equal to or better than that with 16-bit CRC verification.

3.5   Hardware Integrity

3.5.1   The bill validator must satisfy Hardware Integrity Standards 4.4.

3.5.2   The cashbox must be equipped with a separate keyed lock that is required to remove the bills from within.

4.1   General Cabinet Construction

4.1.1   The cabinet must be of rigid construction and must resist forced illegal entry, tampering and wilful damage using human force such as kicking, blows and bending, or using small tools such as a screwdriver.

4.1.2   The cabinet design must be such that access to the inside of the cabinet is possible only by the use of a key.

4.1.3   There must not be any gaps or openings into the game cabinet other than those intended for the operations of the game.

4.1.4   No ventilation holes may compromise the integrity and security of the game.

4.1.5   All doors must resist forced illegal entry into the gaming equipment and must retain evidence of any such forced entry.

4.1.6   All doors must be secured with a lock and an electronic security switch.

4.1.7   The main access door, cashbox access door and the cashbox each must be capable of having a separate lock and key that may only be opened by the authorized personnel.

4.1.8   The game logic, program storage devices and any other circuitry affecting game outcome, accounting, communication, security and integrity including, but not limited to, game programs, RNG, RAM, ROM, Boot storage media and communication controllers, must be secured in a separately locked metal cabinet inside the main gaming equipment cabinet.

4.1.9   The bill validator assembly must not allow access to the cashbox from the gaming equipment cabinet when the cashbox access door is closed or when other types of locking mechanisms such as locking bars are activated.

4.1.10   The cashbox must be housed in a separate locked compartment inside the gaming equipment. Access to this compartment is to be through two layers of locked doors (the relevant outer door plus one internal locked door) before the cashbox can be removed. If dual doors are not available, access to this compartment is to be controlled using a single locked door with two separate locks and keys that may only be opened by the authorized personnel.

4.1.11   All gaming equipment must have a non-removable ID plate on the outside of the cabinet containing the following information:

a) Manufacturer's name;

b) Model number;

c) Date of manufacture;

d) Unique serial number;

e) Safety certification approval monogram.

4.1.12   All switches and/or jumpers must be fully documented.

4.1.13   Printed circuit boards (PCB) integral to the gaming equipment must be identifiable:

a) Each PCB must be identifiable by a name/number and revision level;

b) The top assembly revision level of the PCB must be identifiable; and

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

4.1.14   Security and communication related wires and cables that are routed into secured areas within the cabinet must be securely fastened within the interior of the cabinet.

4.2   Accessory Cabinets

4.2.1   All cabinets, wall mounts, or shelves used to support the gaming equipment must be of a rigid construction that does not compromise security or permit unauthorized access into the gaming equipment or the drop box.

4.2.2   The cabinets must be equipped with security features that allow access to the internal components to authorized personnel only.

4.2.3   Access to the coin drop box, when part of the gaming equipment, must have security features to limit access to only authorized personnel.

4.3   Tower Light

4.3.1   All gaming equipment cabinets must be equipped with a tower light that satisfies Section 26 of this document.

4.4   Electromagnetic Immunity

4.4.1   All assembled gaming equipment cabinets , including integral hardware components such as printers and bill acceptors, must be certified by an independent test lab that specializes in, and is accredited for, EMI testing to satisfy the following requirements:

a) The gaming equipment must exhibit total electro static discharge (ESD) immunity (no disruptions in game performance) for:
   i)   air discharge of up to ±15kV and

   ii)   contact mode with up to ±8kV;

b) The gaming equipment must recover from ESD and complete any interrupted play without loss or corruption of any stored or displayed information for air discharge of up to ±27kV; and

c) The gaming equipment must exhibit total immunity to electrical fast transients (EFT) for a discharge of up to 2.0 kV burst pulses repeatedly into the power line between the hot and neutral at any phase.

4.4.2 Associated equipment and peripherals installed in a gaming cabinet must be protected against EMI using appropriate means (e.g. grounding to the gaming cabinet that meets 4.4.1).

4.5   Top Boxes

4.5.1   All top boxes, bonus tops, or marquee must:

a) be of rigid construction,

b) not allow illegal entry or tampering,

c) not obstruct the view of the tower lights,

d) provide secure access to internal communication and/or game operation components to authorized personnel only,

e) tilt and report when they malfunction or when a door is open, if the top box, bonus top or marquee contains equipment that is critical to the operation of the game, and

f) tilt and report when a door is opened, if the top box bonus top or marquee contains equipment that is used for communication.

5.	Cashless Wagering System

5.1 General Requirements

5.1.1 Cashless wagering systems may allow tickets/vouchers, coupons or electronic promotion as direct wagering instruments.

5.1.2 All cashless wagering systems must employ an error detection and correction scheme approved by the Registrar to ensure the data is transmitted and received accurately.

5.1.3 All cashless wagering systems must be equipped to read and store the specific values indicated on the electronic digital storage meters in the gaming device, as applicable to the system. The following gaming equipment meter information must be stored in units equal to the denomination of the gaming equipment or in dollars and cents:

a) Voucher in;

b) Voucher out (for the metering of gaming equipment wagering ticket/vouchers and payout ticket/vouchers);

c) Cashable electronic promotion in;

d) Cashable electronic promotion out;

e) Non-cashable electronic promotion in;

f) Non-cashable electronic promotion out;

g) Coupon promotion in; and

h) Coupon promotion out.

Note: System meters shall be referred to with the above terms and shall accumulate applicable system generated information as well as information stored on gaming device meter as required by the Gaming Equipment Standards (Meters, Section 18).

5.1.4 All cashless wagering systems must have a mechanism in place to record all required meters, as specified above in Section 5.1.3 of this document, at the time a drop box (coin or currency) is removed or on demand.

5.1.5 All cashless wagering systems must maintain an internal clock that shall be used for the following:

a) Time stamping of significant events;

b) Reference clock for reporting; and

c) Time stamping of configuration changes.

If multiple clocks are used, then a means must be provided that will synchronize all clocks in devices attached to the system, including the gaming equipment, at least once in each 24-hour period.

5.1.6   All cashless wagering systems must include the following information on all gaming equipment wagering vouchers and coupons:

a) Gaming premises name;

b) Gaming device number or printer station number, as applicable;

c) Date and time of issuance;

d) Alpha and numeric dollar amount;

e) Sequence number;

f) Validation number;

g) Second printing of validation number on the leading edge of the ticket/voucher;

h) Unique identifier (e.g. bar code);

i) Transaction type or other acceptable method of differentiating ticket types;

j) Expiration period or date when voucher/ticket will not be cashable in gaming equipment, if applicable;

k) Instructions for how to redeem expired tickets, as applicable. These instructions may be pre-printed on the paper stock.

5.1.7   If communications between a gaming device or a gaming device interface component and a system are lost, the gaming device or the gaming device interface component may issue offline vouchers to a maximum approved by the Registrar provided that:

a) Printed on the voucher, there is an authentication code derived by a keyed hash algorithm, or other secure cryptographic method that will:

a. uniquely identify the voucher,

b. verify that the redeeming system was also the issuing system, and

c. validate the amount of the voucher.

For cases where a suitable authentication code is not printed on the voucher, the system must print at most one wagering instrument after the gaming device or gaming device interface component to system communications have been lost.

b) No more offline vouchers are issued than can be retained and displayed in the ticket out log;

c) The values of the seed, key etc. must never be viewable through any display supported by the gaming equipment;

5.1.8   Validation numbers of unredeemed tickets must be appropriately masked when viewable through any display to prevent generation of counterfeit tickets.

5.1.9 All cashless wagering systems' interface components must have a mechanism to prevent the loss of stored accounting meter information in the interface component.

5.1.10 All cashless wagering systems' interface components must allow for the configuration of a unique identification number to be used in conjunction with the gaming equipment file in the on-line slot system. This identification number will be used by the on-line slot system to track all mandatory information of the associated gaming equipment

5.1.11 All cashless wagering systems must assign to each patron initiated transaction a unique identifier of at least eight digits that includes an identifier of the gaming equipment.

5.1.12 All cashless wagering systems must provide for an on-line, real-time validation of tickets/ vouchers.

5.1.13 All cashless wagering systems must be incapable of authorizing payment on a ticket/voucher that is rejected, has been previously paid or voided. The system must display the status of the ticket/voucher.

5.1.14 All cashless wagering systems must be capable of displaying the ticket history.

5.1.15 All cashless wagering systems must prevent the removal or erasure of events and transactions from any communication device until that information has been successfully transferred and acknowledged by the communication device next in succession.

5.1.16 All cashless wagering systems must prevent unauthorized changes to cashless wagering system programs and databases.

5.2 Report Requirements for Cashless Systems

5.2.1 All cashless wagering systems must be designed to generate reports on a day, month, year-to-date, and on demand basis for at least the previous two year period on a cumulative basis.

5.2.2 At minimum, all reports generated must include the following:

1) For each report:

   a. Report title;

   b. Version number of the current software;

   c. Date and time of the activity;

   d. Date and time the report was generated.

2) Ticket/voucher issuance by date and identification of gaming device where issued;

3) Ticket/voucher redemption by date, time, and means of redemption (such as gaming device, cashier station, kiosk, etc.);

4) Ticket/voucher liabilities by date and time issued and by sequence number;

5) Ticket/voucher expired by date and time issued, sequence number, and identification of gaming device where it was issued;

6) Ticket/voucher voided by date and time issued, sequence number, and identification of gaming device where it was issued;

7) Ticket/voucher counted in the count room, by gaming device;

8) Gaming device meter cashable electronic promotion in vs. system cashable electronic promotion in;

9) Gaming device meter cashable electronic promotion out vs. system cashable electronic promotion out;

10) Gaming device meter non-cashable electronic promotion in vs. system non-cashable electronic promotion in;

11) Gaming device meter non-cashable electronic promotion out vs. system non-cashable electronic promotion in;

12) Gaming device meter ticket/voucher in vs. system ticket/voucher in form accepted;

13) Gaming device ticket/voucher out vs. system ticket/voucher out form issued;

14) System ticket/voucher in vs. ticket/voucher counted in the count room, by gaming device;

15) All cashiering activities including log on, redemptions, adjustments to wagering accounts deposits/withdrawals, and log off, by cashier;

16) All exceptions to include:

    a. Date and time of exception;

    b. Gaming device number or user identification number and terminal location where the exception occurred; and

    c. A description of the exception or a unique code that identifies the exception.

5.3   Report Requirements for Cashless Systems integrated with SMS

5.3.1   If the cashless wagering system is integrated with an on-line slot monitoring system, then the system must be able to generate the following additional reports:

1) Gaming equipment performance reports:

a) By Machine:

    i)   Denomination or an indication that the machine is a multi-denomination machine;

    ii)   Gaming equipment's unique identification number;

    iii)   Game type;

    iv)   Coin in;

v) Coin out;

vi) Number of games played;

vii) Metered or actual drop;

viii) Actual Jackpot payout receipt issued;

ix) Actual fill slips issued;

x) Win;

xi) Theoretical hold percentage;

xii) Actual hold percentage;

xiii) Percentage variance between theoretical hold vs. actual hold; and

xiv) Projected dollar variance.

b) By Denomination Type and In Total:

i) Weighted average theoretical hold (the sum of the theoretical hold percentages of all machines within a denomination weighted by coin in contribution for each denomination);

ii) Combined actual payout percentage (all wins divided by all coin in);

iii) Percentage variance (i.e., theoretical hold vs. actual hold); and

iv) Projected dollar variance (i.e. coin in times the percentage variance).

2) Exception Reports:

A complete exception report including the following at minimum, must be generated in the event where any data or parameters are altered:

a) Date and time of the alteration;

b) Name and unique identification number of the gaming device/system the alternations were performed to;

c) Identification of user (name, id) that performed alteration;

d) Data or parameter(s) altered;

e) Data or parameter(s) value before alteration; and

f) Data or parameter(s) value after alteration.

3) Accounting Reports:

The on-line slot monitoring system must be capable of generating additional accounting reports that are capable of displaying the following information:

a) Meter drop vs. actual drop for each drop type by machine and in total;

b) Meter attendant paid jackpots, cancelled credits, progressive payouts and external bonus payout in total versus actual attendant paid jackpots, cancelled credits, progressive payouts and external bonus payouts in total;

c) Meter fills vs. actual fills;

d) Meter gaming equipment paid and attendant paid external bonus payouts vs. external bonusing system gaming equipment paid and attendant paid external bonus payouts;

e) Meter voucher out vs. system payout receipt issued;

f) System payout receipt redeemed by cashier station indicating the shift;

g) Details of system payout receipts issued, including:

   i) The date/time issued as per the synchronized on-line clock;

   ii) Amount;

   iii) Sequence number;

   iv) The unique identification number of the gaming device;

   v) Game name; and

   vi) Receipt liabilities.

   vii) Machine paid and attendant paid external bonus payout; and

   viii) By machine, all required meter amounts read and recorded by the on-line slot system.

4) Additional Reports:

The on-line slot monitoring system must be capable of generating the following standard and other ad-hoc reports for the AGCO:

a) Accounting reports to reconcile coins, tickets, and other monetary items;

b) Significant Events/Error Conditions report;

c) Gaming equipment that paid jackpots greater than a specific amount within specific time frame or date range;

d) All events for a specific device or group of gaming equipment devices;

e) Metering information for a specific device or group of gaming equipment devices;

f) All events for a specific employee card within a date range for a specific device or all gaming devices;

g) All events for a specific player card within date range for a specific device or all gaming devices;

h) Games above or below a certain payback percentage/ hold percentage (above 99% or below 85%);

i) Number of games on-line currently on the gaming floor;

j) Progressive amounts based on coin in (Actual vs. Sign Amount);

k) Variance greater than one percent for all meters (Coin in, Coin out, drop, games played, etc.).

5.4   Security and Integrity

5.4.1   The system shall limit access to only authorized personnel, for various functions, based on segregation of duties and restrict access to authorized users for any viewing, modifying or deleting of critical files and directories:

a) System administration including setup of user access privileges;

b) Audit role;

c) Setting up of system configurations;

d) Cashier role; and

e) Logging of all gaming devices.

5.4.2   The system must provide at minimum, the capability for user passwords to:

a) Require to be changed at specific intervals as designated, or earlier;

b) Be of a minimum of six alpha-numeric characters;

c) Be locked out after certain number of unsuccessful attempts; and

d) Be stored in the database in an unreadable format (e.g. cryptographic hash).

5.4.3   The system must keep a log of all user activity and any attempts to process unauthorized transactions must be recorded.

5.4.4   The system must maintain an audit log of all pertinent data such as changes to user IDs, passwords, system configuration, etc.

5.4.5   The system must restrict access to sensitive database files/tables to prevent alteration of voucher information. The system must employ appropriate techniques to detect alterations of such data without the use of approved system functions, unless the database is encrypted.

5.4.6   Procedures to initiate remote access to the system must be approved by the Registrar. Such procedures must limit access to authorized users only.

5.5   Authentication of Software

5.5.1   The Cashless Wagering System supplier must provide the Registrar with an acceptable method of externally authenticating the contents of the program media to ensure the contents match the approved version.

6.1 General Information

6.1.1   All gaming equipment using coins for wagering must have an electronic coin validator to accept valid coins, and reject others to the coin tray.

6.1.2   The coin validator must accept or reject coins based on various parameters, including the coin's size, alloy composition, mass and composite makeup.

6.1.3   Each valid inserted coin must be acknowledged by the control program by either incrementing the credit meter and issuing and displaying the credits to the player or incrementing the bet meter and applying the coin towards the next play of the game, up to the maximum wager for a single play. Any coins not credited by the gaming equipment must be returned to the player.

6.1.4   The coin validator must be capable of accepting and accurately crediting rapidly inserted (fast-fed) valid coins.

6.1.5   The coin validator must reject all coins inserted under any one or more of the following conditions:

   a) When the game is in play, except as necessary when the player has the choice to make additional wagers;

   b) During a tilt condition, i.e. the host gaming equipment is non-operational;

   c) When the gaming equipment is disabled such as power off, slot tournament mode or out of service;

   d) When the game is in attendant pay mode;

   e) When the coin acceptance limit is reached; and

   f)   During a cashout process, voucher printing, or coin dispensing.

   Any coins accepted under the conditions 6.1.5 a) through f) above must be credited to the gaming equipment credit meter, applied toward the next play of the game, or returned to the player.

6.1.6   Coin validators used to accept $5 or higher denominations must have additional security features to ensure acceptance of valid coins only, e.g. use of pattern, security marks, etc.

6.1.7   Any coin jam or attempts at tampering must be reported to the game so that the game can enter a tilt. The game must be disabled until the problem has been rectified.

6.1.8   The coin validator must prevent the issuing of credits from the use of cheating methods or other security problems, including:

a) Fraudulent issuing of credits by inserting a foreign object into the coin in chute or by the use of any other device such as radio transmitter, etc.,

b) Stringing,

c) Slugging,

d) Spooning, and

e) Shaved coins that cannot be counted by the hopper during cash-out.

In such cases, the gaming equipment must be disabled and normal play must not occur until an attendant has cleared the above conditions.

6.1.9   The coin validator mechanism must be designed to minimize the possibility of altering any of its components for fraudulent use, e.g. coin validation system, diversion of coin from its normal destination, etc.

6.1.10   The "sample" coin used by the coin comparator for validation of inserted coins must be secured against tampering. If the sample coin is changed or tampered with, the game must be disabled until an attendant has cleared the error.

6.1.11   Any methods for adjusting coin validation sensitivity must be secure, or have the ability to be secured. When the sensitivity adjustment is set to minimum, it must be able to reject slugs.

6.2   Programmable Coin Validator

6.2.1   There must be a mechanism to verify the coin validator software installed in the gaming equipment to ensure it is the approved version.

6.2.2   It must not be possible to program the acceptance of any specific coin without special programming equipment.

6.2.3   Any programming device must be approved by the Registrar to ensure that it can be used to program the acceptance of approved coins and rejection of others. The programming device must have adequate security to ensure that only authorized personnel can program the coin validator.

6.2.4   It is preferred that the gaming equipment perform a validity check to ensure the coin validator software has not changed upon game initialization.

7. Communication with Associated Equipment

7.1.1 The gaming equipment hardware and the associated equipment must utilize a communication protocol which insures that erroneous data or signals will not adversely affect the operation of the device.

7.1.2 The host gaming equipment must continuously monitor and control all communication ports that are used to transmit or receive any data or signal to or from the associated equipment.

7.1.3 The function of all communication ports must be clearly defined.

7.1.4 Any communication between gaming equipment and associated equipment must implement a communication protocol which is able to detect and reject any erroneous data transfer.

7.1.5 The data communicated to the gaming equipment must be validated for proper logic and/or sequence, before the gaming equipment determines its action, e.g. a bill stacked message cannot be the first message for bill acceptance and crediting.

7.1.6 Any associated equipment that communicates with the host equipment must only pass the data or signals necessary for the operation of the game, such as acceptance of a specific bill denomination or valid coin in.

7.1.7 Any loss of communication with associated equipment that impacts game operation must be reported and logged automatically by the gaming equipment.

7.1.8 During the loss of communication with external associated equipment, any critical information related to revenue, integrity, and security of the equipment must be preserved and transmitted as soon as the communication resumes.

7.1.9 All associated equipment must have a mechanism to prevent loss of stored accounting information in the associated equipment.

7.1.10 Any internal associated equipment must immediately disable itself upon loss of communication with the gaming equipment.

7.1.11 All internal associated equipment capable of executing a software authentication/validation process and communicating the result must have a means to do so when initiated by the gaming equipment. Gaming equipment must initiate such authentication/validation processes upon game reset as a minimum.

7.1.12 Any communication hardware including lines such as harnesses and controllers must be secured against outside tampering.

7.1.13 Any communication between gaming equipment related to player input, game outcome, financial transactions, and game recall information must be transmitted along a physically secured communication line, or be encrypted using a strong asymmetrical encryption algorithm or another secure methodology approved by the Registrar.

7.1.14   After program interruption (e.g. processor reset), upon program resumption, any communications to an external device must not begin until the program resumption routine, including self-tests, is completed successfully.

7.1.15   Associated equipment that communicates with gaming equipment and awards mystery, progressive, or other types of bonus awards such that the awards are calculated into the theoretical payback percentage of the gaming equipment must be able to report the contribution of the associated equipment to the gaming equipment.

7.1.16   Gaming equipment that communicates with associated equipment and receive mystery, progressive or other types of bonus awards such that the award is calculated into the theoretical payback percentage of the gaming equipment must be able to do the following:

a) prevent any play if communication to the associated equipment is lost;

b) report the combined theoretical payback percentage of the gaming equipment and the associated equipment to a slot monitoring system;

c) meter all awards that are calculated into the theoretical payback percentage of the gaming equipment as standard paytable win (coin out or other appropriate meter(s)).

8.1.1   Cashable credits may be accumulated from wins, approved currency acceptors, electronic funds transfers, or any other transfers of cashable credits.

The total of all cashable credits accumulated from coins and currency must not exceed $3,000.

8.1.2   It is preferred that maximum credits accumulated from insertion of bills or coins have a separate settable limit from the other cashable credits.

8.1.3   The gaming equipment must incorporate a credit meter, which will display the player's current credits in dollars and cents unless the player chooses to display the current credits in credit amounts, where possible in current platforms. The credit meter must default to display credits in dollars and cents for each new player. All future (effective July 1, 2008) operating systems/control programs must satisfy this requirement.

8.1.4   The credit meter must be incremented by the proper value of credits after acceptance of a valid bill, coin or other wagering instrument approved by the Registrar, or by the value of credits won. The value of credits wagered on the game or the value of credits redeemed by the player must be subtracted from the player's credit meter.

8.1.5   The credit meter must be displayed to the player, at minimum, at the beginning and end of game play, during idle mode and any time the player is given an option to make a wager.

9.1   Credit Wagering

9.1.1   Wagering credits available for play must be wagered in the following order:

a) Non-cashable credits;

b) Promotional cashable credits; and

c) All other credits defined in this standard.

9.1.2   Wagering instruments that are less than the gaming equipment's smallest denomination, or not evenly divisible by any of the gaming equipment's denominations may be accepted by the gaming equipment provided either:

a) The gaming equipment has meters that record in units of cents, and

b) The gaming equipment is capable of printing a voucher for the remainder; or

c) The gaming equipment is capable of immediately printing a change voucher.

Note: For clarification, 9.1.2 may be complied with by either satisfying both a) and b), or by satisfying c) on its own.

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

a) Provide a means where 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 max bet limit, if one is set; and

d) Provide the player an opportunity not to participate.

9.2   Credit Redemption

9.2.1   The cash-out button or its equivalent must be operational at any time when credits are displayed on the gaming equipment except:

a) during game play,

b) when the gaming equipment is in test or administrative mode,

c) when the gaming equipment is in an error (tilt) condition that does not allow the collection of credits,

d) when the gaming equipment is in "out of service" mode,

e) when the game is in jackpot (hand pay) mode,

f) when the gaming equipment credit meter or win meter is incrementing, unless the entire amount is added to the meters when the cash-out button is pressed, or

g) during processing of bill, voucher.

9.2.2 If a player attempts to redeem available credits and the total value of these credits is less than the attendant pay limit, then the gaming equipment must dispense the appropriate number of coins from the hopper, printer or by other means approved by the Registrar.

9.2.3 Whenever the amount won by a player either exceeds, or matches or exceeds, the jackpot limit, or the amount either exceeds, or matches or exceeds, the maximum payout amount (printer, hopper or attendant pay limit, as applicable) during cash out, the gaming equipment must automatically lockup the game and enter into a hand-pay mode and must not exit from this mode until the game has been reset by the use of a reset key or other methods approved by the Registrar. The player must be alerted by a conspicuous display viewable from the front of the slot machine that alerts the player to see an attendant to receive full payment.

10.1.1   Each door of gaming equipment and its associated auxiliary cabinets must be equipped with one or more switches for security purposes. Security switches must be wired directly to the Slot Monitoring System and to the gaming equipment. Security switches must be capable of detecting the following conditions:

    a) Main Door open/close;

    b) Belly Door open/close;

    c) Cashbox Door open/close;

    d) Cashbox removed/returned;

    e) Logic Door open/close, if applicable; and

    f) Topbox Door open/close, if applicable.

10.1.2   Switches must be wired in a way that all door alarms can be reported under any game operational conditions.

10.1.3   Disconnecting the wiring from a switch or a malfunction of the switch (e.g. magnet or optical signal broken/missing, etc.) must result in a "door open" condition.

10.1.4   During a game blackout condition, any change in status of the switches must be immediately detected by the Slot Monitoring System. If the Slot Monitoring System is not capable of uniquely reporting the status of all switches, then multiple switches may be reported as the same alarm as long as 10.1.1 a) and 10.1.1 b) are reported; and 10.1.1 c) and/or 10.1.1 d) are reported.

11.   Error Conditions

Gaming equipment must be capable of immediately detecting and displaying the conditions listed in this section.

11.1.1   All of these error conditions must be immediately recorded in a game error log, and communicated to the Slot Monitoring System connected to the gaming equipment if technically possible.

11.1.2   The gaming equipment may automatically clear the following conditions upon completion of a new play sequence:

a) Power reset; and

b) Door opened and just closed.

11.1.3   The gaming equipment and all peripherals must be disabled under the following conditions, and may only be enabled after the condition has been resolved:

a) RAM error (RAM defective or corrupted) ;

b) Program error (defective software storage media, CRC failure, etc.);

c) Removal of control program storage media;

d) Empty hopper/hopper timeout, if there is no alternate means for the gaming equipment to make the payment;

e) Hopper runaway or extra coins paid out;

f) Any coin-out error or hopper failed to make payment;

g) Any coin-in accepted in error;

h) Any coin-in accepted while the acceptor should be in a disabled state;

i) Reverse coin-in;

j) Coin jam;

k) Bill validator jam;

l) Printer mechanism paper jam;

m) Printer cassette out of paper, if there is no alternate means for the gaming equipment to make the payment;

n) Low RAM battery (this condition may be cleared by an attendant as an interim measure until the battery is replaced);

o) Any reel spin error including a mis-index condition for mechanical reels. This is a position error of the final positioning of the reel of over one-half of the width of the smallest symbol excluding blanks on the reel strip, or reel jam. The specific reel number is to be identified in the error indicator; and

p) Bill validator CRC error.

11.1.4   The gaming equipment must, at minimum, immediately inform the patron if there is a loss of communication with the progressive system. This message must be visible to the patron at all times and may only be removed after the condition has been resolved.

11.1.5   A description of error codes and their meanings must be available at the gaming equipment.

11.1.6   The gaming equipment must retain all critical data and information while in tilt mode.

12. Field Authentication of Critical Software

The requirements outlined in this section pertain to the authentication of critical files by the AGCO before the game is made available for patron play.

12.1.1   Critical files will not be approved unless they can be authenticated in the field to ensure that the installed contents match exactly with the approved version.

12.1.2   The gaming supplier must provide authentication equipment to the AGCO for use in the field. The Registrar will determine the equipment's suitability for authentication purposes.

12.1.3   The authentication equipment provided by the supplier must meet the following criteria:

a) The authentication tool and all associated information must be resistant to tampering;

b) The authentication must be performed on a bit-by-bit level;

c) All critical files must be authenticated;

d) It must employ a one-way hashing algorithm producing a message digest output of 128 bits at minimum or an equivalent methodology as accepted by the Registrar;

e) It must have a fast authentication process, capable of authentication at a speed acceptable to the Registrar; and

f) It must be capable of displaying the results of the authentication including, but not limited to, pass/fail and the calculated hash value(s).

12.1.4   Suppliers must strive to minimize the number of authentication tools/devices used to authenticate across their platforms.

12.1.5   Any externally initiated authentication performed by the game must be secure so that it cannot be compromised.

12.1.6   Gaming equipment that supports "online verification" through a central system must be fully compliant with the protocol used for this verification.

12.1.7   Non-alterable program storage media devices must be clearly marked with sufficient information to identify the software and revision level of the information stored in the device.

13.   Game Options

13.1.1   The gaming equipment must have the capability to set and display specific game options through the use of restricted technical procedures, e.g. require the use of a separate configuration program, as applicable. The following options are considered to be restricted:

a) Jurisdiction;

b) Denominations (hopper, coin accepter, multi denom games, etc.);

c) Game configuration (percentage, lines, etc.);

d) Progressive (type, levels, address);

e) The set of games offered to the player for selection (for multigames);

f) Any configurable option pertaining to the payback of the skill component of the game, if applicable;

g) Any other option which, if configured incorrectly, would result in a violation of one or more of the Standards in this document and introduce a risk to the integrity, security or accounting capability or the game that is not mitigated through other controls (e.g. slot monitoring system).

13.1.2   The gaming equipment must have the capability to set and display the following additional game options, as applicable:

a) Credit Limit;

b) Jackpot Limits;

c) Attendant Pay/Printer Limit;

13.1.3   Once set, the game options in 13.1.2 must only be available to be changed while the game is in idle mode and while there are no credits on the machine.

13.1.4   Gaming equipment must be capable of locking up for wins above an amount set by the operator to comply with FINTRAC and any other legislation.

13.1.5   Gaming equipment must be capable of being remotely disabled by a disable command issued from the gaming management system.

14.1   Game Play

14.1.1   The gaming equipment must only initiate game play:

    a)   While in idle mode and with all doors closed;

    b)   After credits have been registered;

    c)   After the player has selected the number of credits to be bet on that game; and

    d)   After the player initiates game play by:

        i)   pressing a play button;

        ii)   a timer completing its countdown for game initiation (e.g. electronic roulette game); or

        iii)   another action the player needs to take to initiate the game.

14.1.2   There must be no hidden or undocumented buttons/touch points (if applicable) that affect game play anywhere on the screen, except as provided for by the game rules.

14.1.3   The gaming equipment must return to the player any coins or tokens accepted by it after the equipment has accepted the set maximum number of coins or tokens, or when the equipment is in a state which normally rejects additional coins.

14.1.4   The gaming equipment must use a random selection process per Random Number Generator standards, Section 23 in order to produce game outcomes.

14.1.5   The gaming equipment must not automatically alter paytables or any function of the equipment based on internal computation of the hold percentage or the playing history.

14.1.6   The gaming equipment must accurately display the game outcome as determined by the random number generator.

14.1.7   Video reel strips must be used when symbols are displayed, with symbol sequences followed as closely as technically possible, during video animation of reel spins. A symbol's appearance must remain the same during video animation of reel spins.

14.1.8   The following information must be clearly displayed on the gaming equipment:

    a)   Prior to committing a wager and at any time a game outcome is displayed during game play, each individual bet option relevant to the game (e.g. line to be played, bet amount to be wagered, denomination being played) so that the player is in no doubt as to which bet options are being played;

    b)   After the game is completed and until the player interacts with the game (e.g. wager placed, wagering instrument accepted, game/denomination selected) or the game enters an attract mode, the player options selected (e.g., bet amount, lines played,

denomination being played) and the amount won for each individual bet for the last complete game;

c) Whenever the player redeems credits, the number of credits paid (until the player interacts with the game or the game enters an attract mode); and,

d) Where applicable, the winning conditions, e.g. payline(s) (on a video game of chance this may be accomplished by drawing a line over the symbols on the paylines(s) and/or the flashing of winning symbols and line selection box. Where there are wins on multiple lines, each winning payline may be indicated in turn). If a progressive was awarded, it is sufficient to indicate the progressive was awarded and not display the value.

14.1.9   Games that show the result of a patron selection process during a bonus or other multi-event game may not reveal non selected outcomes that the patron had no opportunity to receive through the patron selection process

14.1.10   If the game contains a 'bonus feature', including a game-within-a-game, the following must be met:

a) The game must clearly instruct the player how to proceed through the current game state;

b) The game must display to the player sufficient information to indicate the current status towards the triggering of the next bonus game, except for those bonus games that occur randomly;

c) The game must not adjust the likelihood (odds) of a bonus occurring based on the history of previous games;

d) The game must make it clear to the player that they are in this mode to avoid the possibility of the player walking away from the machine not knowing the game is in a bonus mode.

14.1.11   The gaming equipment must return the credits wagered to the player in case of a draw, unless otherwise stated within the game rules.

14.1.12   The gaming equipment must have the following features concerning physical reels:

a) The gaming equipment must monitor the position of reels to detect reel malfunctions;

b) The software must interpret sensor outputs to determine when a reel does not stop in the position selected by the gaming equipment, and cause an error or a tilt condition;

c) Each reel must re-spin automatically to the last valid play-mode result after the main door is closed, if the reel position has changed after the last play; and

d) Each reel must spin at least one revolution per game.

14.1.13   Gaming equipment with reels must not provide a "nudge" feature which moves the reel(s) to a lower paying combination or from a winning to a non-winning combination.

14.1.14 After clearing critical memory, the game must not initialize at a top award or extended game trigger on any selectable payline.

14.1.15 Gaming equipment must provide players with a method to request assistance from the operator (e.g. change or service button).

14.1.16 The program must be designed so that it is not adversely affected by the simultaneous or sequential activation of the various inputs and outputs, such as "play buttons", which might, whether intentionally or not, cause malfunctions or invalid results. The AGCO may request evidence from the Supplier that this has been tested.

14.1.17 Gaming equipment that utilizes physical or touch screen buttons to initiate a wager must implement edge triggered activation of all buttons used to initiate game play or commit wagers (i.e. buttons cannot be held down to auto initiate wagers).

14.2 Multigames

14.2.1 The methodology employed by a player to select a particular game for play on a multigame must be clearly explained to the player and be easily followed.

14.2.2 Multigame paytable awards and game rules must be available to the player at the gaming equipment, prior to the player committing to play the game.

14.2.3 The player must at all times be made aware of which game has been selected for play and is being played, as applicable.

14.2.4 The player must not be forced to play a game just by selecting that game. The player must be able to return to the game selection menu.

14.2.5 It must not be possible to start a new game before the current play is completed and all relevant meters have been updated unless the action to start a new game terminates the current play in an orderly fashion.

14.3 Near Miss

14.3.1 After the selection of game outcome, the gaming equipment must not make a variable secondary decision which affects the result shown to the player. For instance, the RNG chooses an outcome that the game will lose. The game must not substitute a particular type of loss to show to the player.

14.4 Card Games

14.4.1 Games depicting cards being drawn from a deck must satisfy the following requirements:

a) Card selection must be from a deck of cards that correctly reflects the status of previously drawn cards;

b) Cards removed from the deck must not be returned to the pack except as provided by the rules of the game depicted;

c) The deck must not be reshuffled except as provided by the rules of the game depicted; and

d) As cards are removed from the deck they must be immediately used as directed by the rules of the game (i.e. are not to be discarded due to adaptive behaviour by the gaming machine).

14.5   Ball Drawing Games

14.5.1   Games depicting balls being drawn from a barrel (e.g. Keno) must satisfy the following requirements:

a) At the start of each play only balls applicable to the game are to be depicted;

b) Balls removed from the barrel must not be returned to the barrel except as provided by the rules of the game depicted;

c) The barrel must not be re-mixed except as provided by the rules of the game depicted; and

d) As balls are drawn from the barrel they must be immediately used as directed by the rules of the game (i.e. are not to be discarded due to adaptive behaviour by the gaming machine).

14.6   Other Games

14.6.1   Game behaviour for other games such as horse/car/animal racing, golf/football, virtual reality, etc. will be assessed on a case by case basis based on their representation, and any associated rules, of the corresponding live games.

14.7   Metamorphic Games

14.7.1   Metamorphic games must:

a) Display clearly to the player which game rules apply to the current game state;

b) Display to the player sufficient information to indicate the current status towards the triggering of the next metamorphosis of the game;

c) Not adjust the likelihood of a metamorphosis occurring, based on the history of prizes obtained in previous games;

d) Not be misleading. If a game's metamorphosis is triggered after accruing a certain number of tokens or combination of tokens of different kind, the probability of obtaining like tokens must not deteriorate as the game progresses.

14.7.2   The minimum theoretical payback percentage must be satisfied for all possible starting game states, and for all wagering strategies available during a metamorphic feature.

14.8   Skill Games

14.8.1   If the outcome of a game cannot be impacted by a player's physical skill, the game must not offer an option to the player which appears to require physical skill, unless the game provides a disclaimer that states that player interaction has no impact on game outcome.

14.8.2   Skill based games that do not disclose a strategy and are not traditional card games must indicate prominently on the gaming device that the payback of the game is affected by player skill.

14.8.3   Where strategy or selection advice is provided to the player, it must be fair and not misleading, and the player must be able to override automatic selection and reject any or all strategy advice provided, except under the condition in standard 14.8.4.

14.8.4   Once a player has achieved the highest award offered on a play by a strategy feature, the gaming equipment must not permit the player to risk the award by making an additional strategy choice.

14.8.5   Once a game containing a skill based feature is initiated, no aspect or function of the gaming device may be altered during the play of the game to make an event more or less likely to occur based on the skill of the player, except as otherwise disclosed to the player.

14.8.6   Gaming equipment which utilizes peripherals or other equipment that impact the game outcome as an input device for their skill based feature must:

a) Employ a mechanism to detect any failure of that peripheral/equipment prior to the initiation of a gaming session, and prevent gaming activity when a failure is detected.

b) Provide a mechanism to calibrate the technology, when applicable;

c) Prevent unintended perturbations of the peripheral's communication mechanism, such as physical, radio-frequency, or optical from impacting the proper operation of the game;

d) Have equivalent hardware on each gaming device necessary to implement a game;

e) Be installed, configured, and calibrated such that the hardware does not impact the proper operation of the game;

f) Have no variances in the installed peripherals that provide an advantage or disadvantage to a player; and

g) Upon initialization, automatically verify that the minimum hardware requirements necessary to properly conduct the game have been met. The gaming device must prevent initialization if these hardware requirements are not met.

Note: Suppliers are encouraged to additionally monitor available resource levels during operation to ensure continued proper game play.

14.8.7   Skill based games may use an identifier to determine which games are presented to or available for selection by a player.

14.8.8   A game that assigns identifiers or tracks their use must log appropriate information each

time an identifier is assigned in order to reconcile the assignment of an identifier to a player.

14.8.9   A game that uses identifiers must log appropriate information each time an identifier is issued or used in order to reconcile the use of the identifier. This information must be maintained for at least the most recent ten identifiers assigned and must be displayable on the gaming equipment.

Note: Skill games where the game charges the player for specific actions through the course of the game (e.g. in a high action shooting game where the player is charged for each shot) will be evaluated on a case-by-case basis in accordance with responsible gambling principles.

14.9   Competitive Skill Games

14.9.1   Skill based games that offer the opportunity to compete against other players for prizes must indicate on the gaming device that a player's payback from the game is affected by the results of the competition against other players.   If a rake or fee is charged to play the game, this must be displayed to the player in a readily available, accurate and non-misleading manner.

14.9.2   Skill based games may offer players the opportunity to compete against a computerized or skilled house-sponsored opponent, including cases where the computerized or house-sponsored opponent is the only other opponent, provided that:

a) It is clearly and conspicuously disclosed when a computerized or skilled house-sponsored opponent is participating; and

b) The computerized or house-sponsored opponent is prevented from having access to information that is otherwise unavailable to a player (i.e. the opponent's hole cards or upcoming events).

14.9.3   Skill based games may contain a feature allowing patrons to gain an advantage over other players provided that all patrons are advised of that feature. Such features may include but are not limited to patron purchased enhancements, randomly awarded enhancements or other advantages.

Skill based games offering such features that allow patrons to gain an advantage over other players must:

a) Clearly describe to all players that the feature is available and the benefit it gives to players; and

b) Disclose the method for obtaining the feature.

14.10   Subliminal Messages

14.10.1 Gaming Equipment Suppliers must certify that their gaming equipment contains no intentionally programmed subliminal messages.

14.11   Tournament Mode

14.11.1   Tournament mode must only be capable of being activated through a restricted technical procedure.

14.11.2   Gaming equipment in tournament mode must not accept or dispense wagering instruments, but utilize tournament credits only. Tournament credits must have no cash value.

14.11.3   Gaming equipment in tournament mode must not increment any meters unless they are meters designed exclusively for use with tournament software, and must not communicate any tournament related accounting information to the system unless the system is designed to process and store such information separately from cash play information.

14.11.4   Tournament mode paytables are not subject to the Paytable Requirements in Section 20.

14.11.5   All gaming equipment participating in a single tournament must use the same electronics and settings, including reel speed settings.

15.   Hopper

15.11.1   The hopper must be designed to dispense specific coins to the coin tray based on the physical properties of coins, such as size and mass.

15.11.2   The hopper must be located in a secure, locked area of the gaming equipment.

15.11.3   Access to the hopper bowl, mechanism or coins must not be possible from the outside of the gaming equipment.

15.11.4   The hopper must not provide an abnormal payout, (e.g. when it is exposed to higher levels of electrostatic discharge, or if power is lost at any time during a payout).

15.11.5   It is recommended that the hopper be equipped with additional "integrity checking" capability to cause a tilt condition if tampering and/or improper functioning of the hopper is suspected.

15.11.6   The game must detect and report the following tilt conditions as a minimum and normal play may not resume until the problem has been rectified:

a)   Hopper jam;

b)   Extra coins paid out or hopper runaway;

c)   Hopper empty;

d)   Hopper timed-out; and

e)   Failed attempt to communicate with hopper during hopper payout.

15.11.7   The hopper must accurately communicate to the gaming equipment all coins dispensed. The gaming equipment must increment the appropriate accounting meters to reflect the numbers of coins (including any shaved coins) paid by the hopper.

15.11.8   The hopper must be capable of detecting and reporting a "hopper full" condition. The gaming equipment must divert coins to the drop when this condition is met.

15.11.9   The hopper must be resistant to manipulation by the insertion of a light source or any foreign object.

16.1   General Construction

16.1.1   Kiosks must take appropriate action (e.g. recover, reject voucher, display error messages, etc.) for all transactions in case of communication or power loss.

16.1.2   A kiosk must resist forced illegal entry and must retain evidence of any entry until properly cleared or until a new transaction is initiated. A kiosk must have a protective cover over the circuit boards that contain programs and circuitry used in the system communication and control of the kiosk, including any electrically alterable program storage media.

16.1.3   The cover and all secure areas of the kiosk must have controlled access via separate locking mechanisms with electronic security switches and be designed to permit installation of a security locking mechanism by the end user of the kiosk.

16.1.4   Kiosks must be equipped with a tower light that displays their operational status.

16.2   Program

16.2.1   A kiosk must have settable limits for consecutive cash transactions and maximum redemption limit.

16.2.2   The kiosk supplier must provide the AGCO with an acceptable method of externally authenticating the contents of the program media to ensure the contents match the approved version. This authentication must be of a similar level as that in Section 12.

16.2.3   A mechanism must exist to prevent any unauthorized changes to the database information.

16.2.4   Each kiosk must restrict login access to authorized personnel only.

16.2.5   Kiosks must include a means to protect against transaction failure and data loss due to communications loss. The kiosk must update all critical information upon reconnection and must not alter the state of any transactions in the system until the completion of the transaction by the kiosk.

16.2.6   All kiosks must detect and display the following conditions:

   a) Power reset;

   b) Door open;

   c) Door just closed;

   d) Voucher Printer Paper Low; and

   e) System communication loss. Non-system transactions may continue while system communication is down.

These conditions may be automatically cleared by the kiosk when the condition no longer exists and upon completion of a new transaction.

16.2.7   All kiosks must detect and display the following error conditions that prohibit new transactions and may only be cleared by an attendant:

a) Failed to make payment;

b) Insufficient funds;

c) Bill validator failure; and

d) Printer failure (including printer out of paper, which may only be detected when a print attempt is made).

16.3   Communication with Slot Monitoring System

16.3.1   Each connected kiosk must be uniquely identified by the system. This includes kiosks that are connected to the system through a gateway or kiosk server.

16.3.2   Each kiosk must employ a secure communication method between the redemption kiosk and the system.

16.3.3   Each kiosk must be capable of synchronizing its real time clock to that of the Slot Monitoring System or Cashless Wagering System, or accurately report the time of transaction to the Slot Monitoring System or Cashless Wagering System.

16.4   Reports

16.4.1   All kiosks must be equipped with electronic digital storage meters of at least ten digits that can be displayed upon demand and that accumulate the following information in dollars and cents when applicable:

a) Physical Coin In: Accumulates the value of all coins accepted by the kiosk;

b) Physical Coin Out: Accumulates the value of all coins paid by the kiosk;

c) Voucher In: Accumulates the total value of all gaming equipment wagering vouchers accepted by the kiosk;

d) Voucher Out: Accumulates the total value of all gaming equipment wagering vouchers issued by the kiosk;

e) Bill In: Accumulates the total value of currency accepted. Additionally, the gaming equipment must have a specific meter for each denomination of currency accepted that records the number of bills accepted by the kiosk; and

f) Bill Out: Accumulates the total value of currency dispensed. Additionally, the gaming equipment must have a specific meter for each denomination of currency dispensed that records the number of bills dispensed by the kiosk.

g) Any other meters necessary to reconcile monetary transactions.

16.4.2   All kiosks must have the capacity to display a complete transaction history for the last thirty-five transactions at minimum prior to the most recent transaction for each of the following transaction types.

a) Voucher Redemption;

b) Jackpot Redemption;

c) Bill Breaking; and

d) Wagering Account Transactions.

The history must include disposition of transaction, date and time of transaction, and the amount of transaction.

16.4.3   Kiosk or kiosk-associated equipment must be capable of producing the following reports upon demand:

a) Voucher Transaction Report: Report must include the disposition (paid, partial pay, unpaid, etc.) of vouchers accepted by the kiosk, the validation number, the date and time of redemption, and the amount. This information must be available by reconciliation period (i.e. by day, shift or drop cycle). Validation numbers for vouchers that remain active in the system after acceptance by the kiosk must not be displayed in full; and

b) Reconciliation Report: Report must include the cash balance of the kiosk, the voucher balance in total by dollar amount and by voucher count of the kiosk, and the reconciliation period date and time.

17.   Last Game Recall

17.4.1   All gaming equipment must have the capability to display a complete play history for the most recent game played and nine games prior to the most recent game. Retention and display of prior games is also preferred. The display must indicate the following information conditions in a clear and understandable manner, and in the same sequence as the original game play:

a) Game outcome (or a representative equivalent);

b) Intermediate play steps (such as a hold, auto hold and draw sequence or a double-down sequence);

c) Information necessary to determine the credits available at the start and end of game;

d) Bets placed per line and the number of lines bet;

e) Credits or coins won;

f) Credits cashed out; and

g) Any progressive awarded.

17.4.2   The last game recall shall include all bonus, secondary and game-within-a-game activity. Gaming equipment offering games with a variable number of intermediate play steps per game may satisfy this requirement by providing the capability to display the last 50 play steps.

17.4.3   The last game recall must be available in the game idle mode, including when the gaming machine is tilted, except during critical error conditions (e.g. game freeze).

17.4.4   The gaming equipment must clearly indicate when it is in game recall mode.

17.4.5   All gaming equipment must have the capability to display a complete transaction history for the most recent transaction with a cashless wagering system, and the previous thirty-four transactions prior to the most recent transaction, that incremented any of the in-meters and out-meters identified in Section 18.2 i), j) r) and s). Retention of meter history for prior trans-actions is recommended.

18.1 **General Considerations**

18.1.1   Meters must provide sufficient information to calculate gaming equipment payback and track wagering instruments (such as bills, tokens, vouchers) in and out of gaming equipment.

18.1.2   Gaming equipment that uses a bill validator must retain in its memory and display, at minimum, the denominations of the last ten bills inserted.

18.1.3   Gaming equipment that uses a ticket printer must retain in its memory and display, at minimum, the following information for the last thirty-five tickets to resolve player disputes:

a)   Date and time of ticket issuance or acceptance;

b)   Alpha and/or numeric dollar amount;

c)   Sufficient information for ticket out to uniquely identify the ticket that was printed (e.g. a partial set of uniquely identifying digits of the validation number).

18.1.4   Gaming equipment must prevent the validation number of all wagering instruments issued by the gaming equipment from being displayed in its entirety in any operator or attendant mode of the gaming equipment.

18.1.5   The gaming equipment must retain all required meters in Section 18.2.1 in a way that preserves the data after power fluctuations and for a minimum of three days after a power loss to the gaming equipment .

18.1.6   The gaming equipment must communicate with the Slot Monitoring System used to collect accounting information.

18.2 **Accounting Meters**

18.2.1   All gaming equipment must be equipped with electronic digital storage meters of at least 10 digits capable of displaying the information listed in this section on demand. These meters, listed below, must accumulate the following information in units equal to the denomination of the equipment or in dollars and cents. Equipment configured for multi-denomination play must display the required information in dollars and cents.

a)   Coin In: Accumulates the total value of all wagers, whether the wagered amount results from the insertion of coins, tokens, currency, tickets, vouchers, deduction from a credit meter or any other means. This meter must:

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

   ii)   for multi-game multi-denomination/multi-game gaming equipment, provide the information necessary, on a per paytable basis, to calculate a weighted average theoretical payback percentage, and

iii) for gaming equipment which contains paytables with a difference in theoretical payback percentage which exceeds 4 percent between wager categories, 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 the paytables.

Note: this does not apply to Keno or skill games.

Wager categories with payback percentages differences of less than 0.1% may be grouped together and reported as one wager category.

b) Coin Out: Accumulates the total value of all amounts directly paid by the gaming equipment as a result of winning wagers, whether the payout is made from the hopper, to a credit meter or by any other means. This meter will not record amounts awarded as the result of an external bonusing, mystery, or progressive system that do not satisfy 7.1.15 and 7.1.16, awards listed under 20.1.14, or for bills inserted and cashed out without any wager being placed/played;

c) Coin Drop: Accumulates the total value of coins or tokens diverted to the drop, and the credit value of all bills and tickets inserted into the bill acceptor for play Note: it is acceptable to have separate 'drop' meters for coins, bills and tickets;

d) Attendant Paid Jackpots: Accumulates the total value of credits paid by an attendant resulting from a single winning alignment or combination, the amount of which is not capable of being paid by the gaming equipment itself. This does not include progressive amounts or amounts awarded as a result of an external bonusing system;

e) Attendant Paid Cancelled Credits: Accumulates the total value paid by an attendant resulting from a player initiated cash-out that exceeds the physical or configured capability of the gaming equipment to make the proper payout amount;

f) Physical Coin In: Accumulates the total value of coins or tokens inserted into the gaming equipment;

g) Physical Coin Out: Accumulates the value of all coins or tokens physically paid by the gaming equipment;

h) Bill In: Accumulates the total value of currency accepted. Additionally, the gaming equipment must have a specific meter for each denomination of currency accepted that records the number of bills accepted of each denomination;

i) Voucher In: Accumulates the total value of all gaming equipment wagering vouchers accepted by the gaming equipment;

j) Voucher Out: Accumulates the total value of all gaming equipment wagering vouchers and payout receipts issued by the gaming equipment;

k) Reserved;

l) Reserved;

m) Reserved;

n) Non-Cashable Electronic Promotion In: Accumulates the total value of non-cashable credits electronically transferred to the machine from a promotional account by means of an external connection between the machine and a cashless wagering system;

o) Cashable Electronic Promotion In: Accumulates the total value of cashable credits electronically transferred to the machine from a promotional account by means of an external connection between the machine and a cashless wagering system;

p) Cashable Promotion Credits Wagered. Accumulates the total value of promotional cashable credits which are wagered. This includes credits that are transferred to the machine electronically or through the acceptance of a wagering instrument;

q) Non-Cashable Electronic Promotion Out: Accumulates the total value of non-cashable credits electronically transferred from the machine to a promotional account by means of an external connection between the machine and a cashless wagering system;

r) Cashable Electronic Promotion Out: Accumulates the total value of cashable credits electronically transferred from the machine to a promotional account by means of an external connection between the machine and a cashless wagering system;

s) Coupon Promotion In: Accumulates the total value of all gaming equipment promotional coupons accepted by the gaming equipment;

t) Coupon Promotion Out: Accumulates the total value of all gaming equipment promotional coupons issued by the gaming equipment;

u) Machine Paid External Bonus Payout: Accumulates the total value of additional amounts awarded as a result of an external bonusing system and paid by the gaming equipment;

v) Attendant Paid External Bonus Payout: Accumulates the total value of amounts awarded as a result of an external bonusing system paid by an attendant;

w) Attendant Paid Progressive Payout: 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 gaming equipment itself;

x) Machine Paid Progressive Payout: Accumulates the total value of credits paid as a result of progressive awards paid directly by the gaming equipment. This meter does not include awards paid as a result of an external bonusing system;

y) Machine Paid Mystery Jackpot Payout, for games with mystery jackpots that do not use associated equipment that records this meter;

z) Attendant Paid Mystery Jackpot Payout, for games with mystery jackpots that do not use associated equipment that records this meter;

aa) Progressive occurrence meter: Accumulates the number of times each progressive meter is awarded by the gaming equipment; and

ab) Such other meters as may be required by the AGCO in the future.

18.2.2   Each game-within-a-game, other than a game with a theoretical payout percentage equal to 100 percent, shall have sufficient independent meters for reconciling the game.

18.2.3   For each type of double-up or gamble feature offered, there must be sufficient meters to determine the feature's actual return percentage. If the gaming equipment does not supply such meters, the feature must have the ability to be disabled.

18.2.4   For skill based games that do not disclose a strategy and are not traditional card games, suppliers are encouraged to provide sufficient meters to determine the skill component's actual return percentage.

18.2.5   All gaming equipment must be equipped with a mechanism, equipment or method which retains the value of all the required meters listed above in the event of power loss to the equipment.

18.2.6   For gaming equipment that are unable to display the specific meter labels required, gaming equipment may use a legend to indicate what information a specific meter accumulates.

18.2.7   For gaming equipment that does not use the associated functionality in the field, the Registrar may waive Section 18.2.1 i) through z).

18.2.8   Gaming equipment must have electronically stored meters of at least 8 digits that record and display on demand the number of games played:

a) Since last power reset;

b) Since most recent door close; and

c) Since game initialization (critical memory clear).

18.2.9   No accounting imbalance may exist due to rounding.

19.　Mystery Jackpots

19.1.1　Mystery jackpot games that have a progressive jackpot must fulfill the requirements consistent with the requirements for regular progressive games, except for 22.2.1.

19.1.2　The mystery jackpot must be triggered randomly.

19.1.3　The machine that receives the mystery jackpot must be playable with credit on the game, or in play, to be awarded the jackpot.

19.1.4　Mystery jackpots with multiple award levels are permitted:

a)　Provided that all jackpots can be randomly achieved by any of the linked machines that are in play; and

b)　By any eligible linked machine, wherein a specific (e.g., card) qualification is needed to provide eligibility.

19.1.5　Conditions for triggering the mystery jackpot must be displayed to the patron.

19.1.6　Gaming equipment that offers a mystery award must indicate the maximum amount a player can potentially win. If the method to receive the award involves skill, both the minimum and maximum amounts must be displayed.

19.2　Mystery Jackpot Equipment

19.2.1　All mystery jackpot controllers must be capable of being housed in a secured cabinet to preclude any unauthorized alterations to the progressive amounts.

19.2.2　Secure physical lines must be used for communication between mystery jackpot equipment.

19.2.3　The mystery jackpot odds must only be capable of being changed by using restricted technical procedures to make software or hardware changes.

19.2.4　When a mystery jackpot is hit, the winning gaming equipment must award and display the jackpot amount. The gaming equipment must lockup if an attendant pay is required. All other gaming equipment must continue the mystery jackpot game.

19.2.5　The mystery jackpot must be cleared by an attendant key or other approved restricted technical procedure upon jackpot verification for attendant paid amounts.

19.2.6　Mystery jackpot controller programs must employ self-authentication and data integrity checks equivalent to 16-bit CRC method or better. If the integrity checks detect program or data failure, the controller must clearly display an error code and the mystery controller must be disabled.

19.2.7　There must be a mechanism to authenticate all software components of mystery jackpot controllers on demand by a method approved by the Registrar.

19.3   Mystery Jackpot Communications

19.3.1   Mystery jackpot systems must include a means to protect against data loss due to power or communication loss. The system must update all critical information upon reconnection.

19.3.2   The communication between gaming equipment and mystery jackpot controllers must employ a secure, real-time, two-way communication protocol. Mystery jackpot communications may only be used for mystery jackpot functions and to complement game approved functions, such as those listed below:

   a) Exchange mystery jackpot data, such as mystery jackpot amounts and wagers;

   b) Transmit events, such as a mystery jackpot hit;

   c) Communicate the operational status, such as non-operational gaming equipment, or mystery jackpot controller error;

   d) Communicate security messages, such as gaming equipment door opened;

   e) Communicate other meaningful data such as game performance, gaming machine diagnostic information, and other similar data as approved by the Registrar.

19.3.3   Whenever mystery jackpot gaming equipment loses communication with the mystery jackpot controller, the equipment must either:

   a) Immediately inform the patron of the situation with a message that is visible to the patron at all times and is only removed after the condition has been resolved, or

   b) Immediately disable itself from further play, disable coin and bill acceptors, and may allow player to cash out current credits or lock-up in handpay.

19.4   Mystery Jackpot Meters

19.4.1   Meters must be available to reconcile, by machine, the values and number of mystery jackpots awarded and the amount wagered in the mystery jackpot game, either through the gaming equipment or the mystery jackpot controller.

19.4.2   Mystery jackpot controllers/system must have the following soft meters at minimum:

   a) Current mystery jackpot awards;

   b) The mystery jackpot increment rates;

   c) Base/reset mystery jackpot amounts; and

   d) Maximum mystery jackpot awards.

19.4.3   Mystery jackpot controllers must have a record of at least the last jackpot hit for each jackpot level.

19.4.4   Multi-level and secondary mystery jackpot awards are considered to be independent and separate events, and, as such must fulfill the requirements consistent with these standards.

19.4.5   For the purpose of auditing and tracking of progressive games, a feature must exist in the mystery jackpot controller/system to download or view mystery jackpot information including, but not limited to: mystery jackpot settings (minimum and maximum award, mystery jackpot increment rates), configuration (progressive games IDs), accounting data and jackpot history.

20. Paytables

20.1 Payback Percentage

20.1.1 The minimum theoretical payout percentage of a game must be met without including awards with odds greater than 1 million: 1.

20.1.2 The minimum theoretical payout percentage of games is eighty five (85.000) percent.

    a) The theoretical payout percentage of skill based games that are traditional card games (e.g. video poker) will be calculated using optimal strategy minus three (3.000) percent (i.e. the theoretical payout percentage calculated using the optimal strategy must be at minimum eighty eight (88.000) percent).

    b) The theoretical payout percentage of skill based games that advise the player of a strategy will be calculated using the greater of:

        i) The advised strategy minus three (3.000) percent (i.e. the theoretical payout percentage calculated using the advised strategy must be at minimum eighty eight (88.000) percent); or

        ii) The worst strategy.

    c) The theoretical payout percentage of skill based games that do not disclose a strategy and are not traditional card games, must be mathematically demonstrable (i.e. calculated based on an expected distribution of players' skill levels). The supplier must provide the mechanism and assumptions at the time of request for approval for how the theoretical payout percentage is calculated.

    Guidance: The expected distribution of players' skill levels is to be evaluated by the supplier, based on considerations including, but not limited to, historical performance of similar games, difficulty of the skill component, and availability of strategy information.

20.1.3 The gaming equipment must meet the minimum theoretical payout percentage for each wager and play available on the game.

20.1.4 The minimum theoretical percentage of a game must be met when playing any bet configuration. This requirement extends to games such as Keno, whereby the continuous playing of a certain spot combination may result in a theoretical payout percentage lower than the minimum required percentage.

20.1.5 A higher wager must not pay less than a lower wager payout percentage for the same paytable and wager category (i.e., number of lines bet or bet per line).

20.1.6 The theoretical payout percentage of a free play spin must be equal to or greater than the theoretical payout percentage of the primary game.

20.1.7 For multi-denomination games, the payout for any denomination must be the same or higher than all lower denominations for the identical game, unless the player is informed of

using a different payout/paytable. This requirement may be satisfied through the selection of paytables as a restricted game option.

20.1.8   The following must not be included in the calculation of minimum theoretical payout:

a)   Any cash or non-cash prize that is not part of the game;

b)   Any merchandise award above the minimum cash value provided to the Registrar at the time of submission;

c)   Any progressive amount above the reset value, which must be the same or greater than the normal amount paid by the game for that winning combination;

d)   Any limited time payout;

e)   Any game-within-a-game award;

f)   Offline tournament game play;

g)   Any externally controlled mystery or bonus awards that are not required for the game to operate.

20.1.9   The theoretical payout percentages of enabled games in gaming equipment must not be capable of being changed without making software or hardware changes in the gaming equipment, using restricted technical procedures. For the purposes of this standard, the addition of an attendant paid bonus, prizes, a progressive jackpot, or a change in rate of progression of an existing progressive jackpot is not considered to be a change in theoretical payout percentage of the gaming equipment.

20.2   Ensuring Minimum Theoretical Payback of Skill Based Games

20.2.1   Skill based games that do not disclose a strategy and are not traditional card games must be monitored to ensure the game is paying as expected (e.g. the game payback is within a statistically reasonable range from the theoretical return to player). In the case there is evidence that the minimum payout percentage of 85% is not being met:

a)   the game must be removed from play; or

b)   the condition must be addressed through a manual method (i.e. not an automated adaptive feature) that is disclosed at the time of product submission and approved by the Registrar.

Note: Consideration of the development of appropriate technical standards pertaining to automated features regarding payback, and other possible updates, will be made in the future once there is experience in the industry with skill-based games.

20.3   Volatility

The intent of the following standards is to avoid potentially large deviations of a game's actual payback from its theoretical payback, and to achieve the minimum required payback within the game's expected lifetime. These standards are only applicable to pure chance games,

traditional card games, and games where strategy advice is disclosed.

20.3.1   In the following calculations, the contribution of shared prizes (e.g. wide area progressive jackpots) is excluded, due to the large number of machines that share these prizes. These games will be considered on a case-by-case basis with the same intent in mind.

20.3.2   The volatility index calculated for 10,000 handle pulls at minimum bet level must not exceed 100%.

20.3.3   The volatility index (VI) and the game theoretical payback (GTP) calculated according to Sections 20.1.3, 20.1.4, 20.1.5, 20.1.6, 20.1.7 as applicable, and including 20.1.11 c), must satisfy the following relationship:

$$VI \leq (GTP - 85.000) \times 31.623$$

For example: Using the expected average volatility index of 18.500%, this formula works out to state the following:

$$18.500\% \leq (GTP-85.000\%) \times 31.623$$

$$85.585\% \leq GTP$$

20.4   Award Odds

20.4.1   The top award must not have odds exceeding 17 million: 1. All other awards and accumulated awards displayed on the gaming equipment must not have odds exceeding 34 million : 1.

20.4.2   Any single shared Wide Area Progressive award may have odds of up to 50 million: 1. These games will be evaluated on a case-by-case basis taking into consideration the prize amount, the intended use, number of games, etc.

20.5   Reel Strips

20.5.1   Games with reels must meet the following requirements for each of the game's reels:

a) For single-line games, jackpot symbols may not appear in their entirety more than 12 times, on average, adjacent to the payline, for every time they appear on the payline;

b) For multi-line games, jackpot symbols must not appear in their entirety more than 12 times, on average, not on any payline, for every time they appear on any payline; and

c) All symbols, including blanks, must each occupy a space with a minimum length of (L/N)*0.4 and maximum length of (L/N)*1.6, where L is the length of the physical reel strip and N is the number of physical stops on the reel strip. Each symbol must not overlap the space of any other adjacent symbol, including blanks.

20.5.2   All blank and non-blank symbols must be centered in their respective space allocation.

20.5.3   If virtual reels that map to displayed reels are used, each of the reel stops of the virtual reel strip shall be mapped to a displayed symbol and shall have the same probability of occurring (i.e. if the virtual reel consists of N positions, the probability of occurrence of each position

must be 1/N). There cannot be any displayed symbol with a virtual reel weight of zero; all displayed reel symbols must have a non-zero probability to occur.

20.6   Extended Play

20.6.1   All gaming equipment, offering a bonus game or extended feature that requires player interaction, is prohibited from automatically making selections or initiating games or features unless it clearly explains the auto-initiation or selection mechanism and meets one of the following requirements:

a) The patron is presented with a choice and specifically acknowledges their intent to have the gaming equipment auto-initiate the bonus or extended play feature by means of a button press or other physical/gaming equipment interaction;

b) The bonus or extended feature provides only one choice to the patron i.e., press button to spin wheel. In this case, the equipment may auto initiate the bonus or extended feature after a time out period of at least two minutes;

c) The bonus or extended feature is offered as part of community play that involves two or more patrons and where the delay of an offered selection or game initiation will directly impact the ability for other patrons to continue their bonus or extended feature. For such bonuses or extended features that automatically make selections or initiate games or features, prior to automatically making selections or initiating a community based bonus or feature the patron must be made aware of the time remaining in which they must make their selection or initiate play. When applicable, the auto-selection process must utilize an optimum strategy to make the selection.

20.6.2   Scripting may only be permitted if:

a) It does not include any outcome for which no prize is awarded;

b) It does not display any unachievable result; and

c) It is not otherwise deceptive (e.g. events displayed in the sequence should reflect a similar distribution of awards as would be expected if the events were randomly selected).

20.7   Double-Up

20.7.1   The gaming equipment may optionally provide a double-up feature. When a double-up feature is provided, the player must be given a choice of whether to enter the double up game. Initial entry to a double-up game must be conditional on an immediately preceding occurrence of a winning event in the primary game. A progressive prize must not allow entry into a double up game.

20.7.2   The patron must be asked clearly, in a manner acceptable to the Registrar, if they wish to take a chance to win a bigger prize with the possibility of losing their current award.

20.7.3   The double-up game must have a 100% theoretical payout percentage to the player.

20.7.4   The gaming equipment must provide a configurable option to limit the amount a player may wager in a double up game.

21.1   Interaction with the game

21.1.1   Printers must only print a voucher upon communication initiated by the gaming equipment.

21.1.2   The gaming equipment must only update the relevant meters and transaction logs upon successful printing of the voucher. As a minimum, the leading edge validation number must be printed on the voucher for the voucher to be considered valid.

21.1.3   The gaming equipment or printer must make an audible alarm or display a message to the patron when the voucher is ready for collection and must not allow the printing of another voucher until the previous voucher has been collected.

21.1.4   The printer must be automatically disabled as a cashout device under any of the following conditions:

a)   Host gaming equipment is in game play mode;

b)   Host gaming equipment is in slot tournament or administrative mode;

c)   Empty paper tray.

21.2   Tilts

21.2.1   The gaming equipment must enter an error condition and disable itself under any of the following conditions until the error condition is cleared:

a)   Printer mechanism paper jam;

b)   Print Failure (a failed attempt to print a complete or incomplete voucher), if the gaming device has no other means to make a payout. A replacement voucher may be printed once the failure condition has been cleared;

c)   Printer Mechanism paper out, if the gaming device has no other means to make a pay-out;

d)   Printer disconnected, which may only be detected when a print attempt is made.

21.2.2   The gaming equipment must enter an error condition under any of the following conditions until the error condition is cleared. Game play may continue if an alternative method is available to complete the transaction or the condition does not prohibit the transaction from being completed;

a)   Printer Mechanism paper out;

b)   Voucher presentation error, where a complete or incomplete voucher has been printed, however, the voucher is not presented to the patron for removal;

c)   Print Failure.

21.3   Printing Integrity

21.3.1   At minimum, the following information must be printed or displayed on the voucher:

   a) The name of the Gaming Site issuing the voucher;

   b) Gaming equipment or printer station identifier, as applicable;

   c) Date and time of issuance;

   d) Payment amounts in both alphabetic and numeric characters;

   e) Sequence number;

   f) Unique validation number;

   g) Second printing of validation number on the leading edge of the voucher;

   h) A magnetic strip or bar code consisting of at least the validation number;

   i) Transaction type or other acceptable method of differentiating between voucher/coupon types;

   j) Expiration date or period when the voucher will expire, if applicable; and

   k) At least one anti-counterfeiting measure (may be imbedded in paper stock).

21.3.2   The printer must not print duplicate vouchers.

21.3.3   Printers must be located in a locked area of the gaming equipment, but not in the logic area or the drop box.

21.3.4   The printer must satisfy Standards 4.4.

22.1   Progressive Jackpots

22.1.1   Progressive gaming equipment that contributes to a common progressive award must:

a) Have the same expected value (the product of jackpot amount and jackpot probability divided by wager) of progressive jackpot awards to play a single progressive game;

b) Increment the progressive meter at the same percentage of wager for each progressive game played; and

c) All use the same initial/reset progressive amount for a given progressive level, which must be equal to or greater than the corresponding award from the gaming equipment paytable.

22.1.2   No progressive jackpot award may have odds exceeding the odds specified in Section 20.3.1 for progressive games linked in a single gaming establishment.

22.1.3   No WAP progressive jackpot awards may have odds exceeding 50 million:1 for progressive games linked among multiple gaming establishments. The initial/reset amount for such awards that have odds exceeding 17 million:1 must be at least $100,000.

22.2   Progressive Equipment

22.2.1   Progressive meters must be available from all associated progressive gaming equipment for participating patrons to view prior to the player committing to a bet and at all times the progressive award is available to be won.

22.2.2   Progressive meters must be capable of displaying the maximum progressive amount rounded to two decimal digits in real time.

22.2.3   The progressive jackpot amount may be updated on the progressive meters in either scrolling, snap rollup mode or other method provided it is not confusing or misleading to the player.

22.2.4   If multiple items of information are prescribed to be displayed on a progressive meter, it is sufficient to have the information displayed in an alternating fashion.

22.2.5   All progressive controllers must be capable of being housed in a secured cabinet to preclude any unauthorized alterations to the progressive amounts.

22.2.6   The method by which system jackpot parameter values (e.g. reset amount, increment rate, etc.) are modified or entered must be secure.

22.2.7   The progressive jackpot odds must only be capable of being changed by using restricted technical procedures to make software or hardware changes.

22.2.8   Secure physical lines must be used for communication between progressive equipment.

22.2.9   When a progressive jackpot is hit, the winning gaming equipment must award the jackpot amount and the progressive controller must allow for the display of the winning gaming equipment's identifier on the device and/or progressive display if more than one game is attached to the controller. If an attendant pay is required, then:

a) The winning gaming equipment must lockup;

b) The imbedded progressive meter on the winning gaming equipment must immediately display the jackpot amount; and

c) All other gaming equipment must display the reset progressive amount and continue the progressive game.

22.2.10   An attendant key and key switch on the gaming equipment, or other restricted technical procedure, must be used to clear the progressive jackpot on the gaming equipment upon jackpot verification for attendant paid amounts.

22.2.11   Progressive controller programs must employ self-authentication and data integrity checks equivalent to 16-bit CRC method or better. If the integrity checks detect program or data failure, the progressive meters and controller must clearly display an error code in place of the progressive award, the progressive controller must be disabled and all gaming equipment connected to the controller must be disabled. For multi-game machines, non-progressive games may continue to be played provided the patron is informed that the progressive is no longer available.

22.2.12   There must be a mechanism to authenticate all software components of progressive controllers on demand by a method approved by the Registrar.

22.3   Progressive Communications

22.3.1   Progressive systems must include a means to protect against data loss due to power or communication loss. The system must update all critical information upon reconnection.

22.3.2   The communication between gaming equipment and progressive controllers must employ a secure, real-time, two-way communication protocol.

22.3.3   Progressive communications may only be used for progressive functions and to complement game approved functions, including:

a) Exchange of progressive data, such as progressive configuration, progressive amounts, progressive award amounts, and progressive wagers;

b) Transmission of events, such as a progressive jackpot hit;

c) Communication of the operational status, such as non-operational gaming equipment, or progressive controller error;

d) Communication of security messages, such as gaming equipment door opened;

e) Other meaningful data such as gaming machine diagnostic information and other similar data as approved by the Registrar.

22.3.4   Progressive controllers must continually monitor all gaming equipment on the link for credits bet and appropriately increment the progressive meter(s).

22.3.5   Any new or modified gaming equipment which is used with a progressive controller or any other associated equipment that is intended to signal a jackpot hit of any level must provide a complex signal consisting of at least eight logical transitions involving time and magnitude. The gaming equipment may optionally provide an additional jackpot signal intended for use with older progressive equipment.

22.3.6   Whenever progressive gaming equipment loses communication with the progressive controller, the equipment must immediately disable itself from further play, disable coin and bill acceptors, and may allow player to cash out current credits or lock-up in handpay. If communication is lost while a game is in progress, the equipment may complete its game before disabling itself from further play, as long as the player's potential for winning the progressive prize is not impacted. On multi-game machines, only games participating in the progressive must be disabled.

22.3.7   When a controller error occurs, an appropriate error message must be displayed that is visible to the players.

22.3.8   Progressive gaming equipment must have the following progressive soft meters:

a) The amount wagered in the progressive game (individual contribution to the common progressive award); and

b) Number of times a progressive jackpot is hit (progressive occurrence meter).

22.3.9   Progressive controllers must have the following information for each progressive prize offered, at minimum:

a) Current progressive award;

b) The rate of progressive increments (including secondary and hidden increments if available);

c) Base/reset progressive amount;

d) Maximum progressive award;

e) The cumulative amounts paid on each progressive level if the progressive display has more than one winning amount;

f) Overflow amount, if applicable; and

g) The participating gaming equipment.

22.3.10   Progressive controllers must have a record of at least the last progressive jackpot hit for each progressive level.

22.3.11   Multi-level and secondary progressive jackpot awards are considered to be independent and

separate events, and, as such must fulfill the requirements set out in these standards.

22.3.12   Game outcomes or events that trigger the progressive jackpot must be clearly displayed.

22.3.13   If, under some circumstances, the same winning combination can be associated to multiple progressive levels; such combinations must trigger the highest progressive amount.

22.3.14   For the purpose of auditing and tracking of progressive games, a feature must exist to download or view progressive information including: progressive game settings (minimum and maximum award, progressive increment), configuration (progressive games IDs), accounting data and jackpot history.

23.   Random Number Generator (RNG)

23.1.1   Random numbers must be:

a) statistically independent,

b) uniformly distributed over their range,

c) able to pass various recognized statistical tests, and

d) unpredictable.

23.1.2   The RNG must be capable of generating all possible game outcomes (winning and losing combinations) in each play

23.1.3   Each possible permutation or combination of game elements which produce winning or losing game outcomes must be available for random selection at the initiation of each play.

23.1.4   Except as provided by the rules of the game (i.e. for metamorphic games), the probability of achieving any specific game outcome must be constant.

23.1.5   The probabilities of game outcomes in live games must be preserved (the same) in electronic games (e.g. card games).

23.1.6   The RNG output must not exhibit detectable patterns of game elements or correlation with any previous game play.

23.1.7   The game outcome must not exhibit detectable patterns of game elements or correlation with any previous game play, except as provided by the rules of the game (i.e. metamorphic games).

23.1.8   The RNG output and its corresponding game outcome must not be dependent upon the amount wagered, style or method of play.

23.1.9   The range of random numbers must be scaled (projected) to match the range used in the particular game, and as such, the scaled random numbers must also meet the requirements from 23.1.1. Specifically, the scaled random numbers must produce statistics that lie within the 95% confidence interval for various game specific, empirical statistical tests. The applicable tests are chosen in a way to match the grouping of random numbers to form game outcomes.

23.1.10   The gaming equipment must not make any secondary decision to change the RNG numbers or their associated outcomes.

23.1.11   Software RNGs must cycle continuously at a speed that cannot be timed by the player.

23.1.12   The method of seeding must ensure that the same sequence is not repeated in more than one device at the same time.

23.1.13   The RNG and/or gaming equipment must implement a mechanism to prevent the determination of seeds.

23.1.14 The RNG seed must be re-initialized, if corrupted.

23.1.15 Current random numbers, corresponding to the current game outcome, must be stored in non-volatile memory.

23.1.16 Gaming equipment that produces a predetermined set of outcomes (e.g. a shuffled deck of cards) must:

a) Sufficiently encrypt or otherwise protect this information from being accessible to anyone;

b) Prevent the use of this information for the purposes of tracking deck composition and "count".

23.1.17 Physical RNGs used in electronic games must be constructed of materials to prevent decomposition of any component over time. The player must not have the ability to physically interact or come into physical contact or manipulate the physical RNG.

Note: the AGCO may require replacement parts after a pre-determined amount of time for the RNG to comply with this requirement. In addition, the device may require periodic inspections to ensure the integrity of the RNG. Each physical RNG will be reviewed on a case-by-case basis.

23.1.18 Gaming equipment that uses a physical/hardware random number generator as part of the random selection process must be able to do the following:

a) Continuously produce samples of recent games played to perform various game appropriate, empirical statistical tests, and determine if their statistics lie within the 95% confidence interval.

b) Display a visual notification, clearable by an attendant, if at any time the RNG has failed the evaluation for a particular test.

c) Disable play in the event that the RNG has failed the evaluation for two consecutive testing periods of a particular test. Attendant interaction is required before enabling the gaming equipment for play.

d) Produce a report that shows the results of the last evaluation as well as the previous nine evaluations. The report must contain the following:

   a. The name of the test(s);

   b. The time and date that the test(s) were performed;

   c. The gaming equipment unique identifier;

   d. The game name being played;

   e. The number of game plays used to perform the test(s); and

   f. The outcome of the test(s).

23.1.19 The gaming equipment must use appropriate communication protocols to protect the RNG and random selection process from influence by associated equipment which is conducting data communications with the gaming device.

24.   Safety

24.1.1   All assembled gaming equipment cabinets, including integral hardware components such as printers and bill acceptors, must be certified for safety by an accredited laboratory to meet standards established by the Canadian Safety Association. Any subsequent hardware modifications must be reviewed for safety by safety authorities and be confirmed to meet CSA safety standards

24.1.2   Cabinets must have a safety mark from an organization accredited by the Standards Council of Canada for such safety certification.

24.1.3   The supplier must provide written confirmation (i.e. a certificate) that the gaming equipment and all associated equipment meet the appropriate safety standards for operation in Ontario.

25. Test Modes

25.1.1   The gaming equipment must provide the following test modes:

   a) Audit mode - used for the purposes of verifying the last game including any status indicators, meters, etc.;

   b) Game option and test mode - for the test setting and verification of game and machine options.

25.1.2   The gaming equipment must have the following minimum test modes, if applicable:

   a) Game and associated device software/firmware identification;

   b) Printer test;

   c) Reel symbol & position test for mechanical reel spinning games;

   d) Paytable test for mechanical reel spinning games;

   e) Bill validator test;

   f) Coin validator test;

   g) Touch screen calibration and test.

25.1.3   The game option and test modes described in Section 25.1.1 must be provided under the following conditions:

   a) Gaming equipment is in idle mode;

   b) Main door open status; and

   c) Attendant key or a restricted technical procedure is followed by authorized personnel to gain access to the available functions.

25.1.4   While the game is in test mode, the gaming equipment must clearly indicate that it is in a test mode and not in normal play

25.1.5   The gaming equipment must maintain all current states of the game, including any credits and reel positions, while in test mode and must restore these states upon completion of the test.

25.1.6   The gaming equipment must not increment any electronically stored digital meters during test mode.

25.1.7   Any credits obtained during test mode must be automatically cancelled when the game is returned to normal play mode.

25.1.8   The gaming equipment must return to in the original state it was in when the test mode was entered, after the main door is closed,

25.1.9   The test mode must not allow any changes to the operation of the game that will compromise security or integrity of the gaming equipment.

26.1   General Considerations

26.1.1   Gaming equipment must be equipped with a tower light located on top of the gaming equipment cabinet, or in the case of bar top games, there must be at least one tower light that is shared among all games on the bar.

26.1.2   The tower light must consist of two separate lights, one on top of the other, except as otherwise provided in 26.1.3 below, that function in accordance with the requirements specified in this section. Any additional lights may be approved by the Registrar provided they do not alter the purpose, operation and/or cause confusion regarding the function of the other two lights.

26.1.3   Notwithstanding the provisions of 26.1.2 above, the tower lights on any slot machine that has a horizontal display screen mounted at a bar (a "bar-top" slot machine) or an angled display screen (a "slant-top" slot machine) may be side by side, as opposed to one on top of the other, provided that the following requirements are met:

a)   When viewed from the front of the slot machine, the left light shall assume the functions of the top light described in 26.2.1, and the right light shall assume the functions of the bottom light described in 26.2.1;

b)   The left and right lights shall be similar in height from the floor, and shall be located at or near the highest point on the slot machine; and

c)   The left and right lights shall be immediately adjacent with no obstruction or other object between them.

26.1.4   The tower light must be viewable from the floor and for surveillance.

26.2   Tower Light Colours

26.2.1   The upper light must always be white. The bottom light must identify the denomination of the respective gaming equipment. The colours of the bottom tower light for each denomination are as follows:

Gaming Equipment Denomination	Bottom Tower Light Cover Colour
$0.01	Brown
$0.02	White
$0.03	White
$0.05	Pink
$0.10	Light Green
$0.25	Yellow
$0.50	Orange
$1.00	Blue
$2.00	Grey

$5.00	Red
$10.00	Teal
$20.00	Green
$100.00 and greater	Purple
Multi-denomination	Default denomination colour, or maximum denomination colour if no default available.

26.3   Tower Light Signals

26.3.1   At any one time, each of the two tower lights may be in one of the five states as follows:

a) "Off" means the light is off;

b) "On" means the light is on continually;

c) "Fast Flash" means the light is flashing regularly.

d) "Medium Flash" means the light is flashing regularly at a slower rate than "fast flash".

e) "Slow Flash" means the light is flashing regularly at a slower rate than "medium flash".

26.3.2   For the purposes of this section, there are three separate methods by which gaming equipment may be placed in an unplayable state:

a) "Administrative mode" means an authorized person has placed the gaming equipment in an unplayable state in order to access the setup or recall functions of gaming equipment;

b) "Disabled mode" means that an authorized person or the connected SMS system has placed the gaming equipment in an unplayable state for any reason other than those described in administrative mode; and

c) "Tilt mode" means the gaming equipment placed itself in an unplayable state due to some type of malfunction or an exception condition whereby the gaming equipment cannot return to a playable state without intervention by an authorized person.

26.3.3   Each of the following combinations of light states must be displayed by the gaming equipment's tower light to indicate the appropriate gaming equipment operational status that is described below until the status is changed:

White (top) Light	Coloured (bottom) Light	Gaming Equipment Operational Status
Off	Off	Idle and the gaming equipment door(s) is closed
Off	Medium Flash	Idle and the gaming equipment door(s) is opened
Off	Fast Flash	Idle and the gaming equipment drop door is open
On	Off	Change or another service request by patron and the gaming equipment door is closed
On	On	Gaming equipment is in disabled mode

White (top) Light	Coloured (bottom) Light	Gaming Equipment Operational Status
On	Medium Flash	The gaming equipment door is open and a) a patron is requesting change or another service; or b) the gaming equipment is in disabled mode
On	Fast Flash	The gaming equipment is in disabled mode or a patron is requesting change or another service, and its drop door is open
Slow Flash	Off	The gaming equipment is in tilt mode and its door(s) is closed
Slow Flash	Slow Flash	The gaming equipment is displaying a hand-paid jackpot combination and a) its door is closed; or b) it has gone into tilt mode while its door is closed
Slow Flash	Medium Flash	1. The gaming equipment is displaying a hand-paid jackpot combination and a) its door is open; or b) it has gone into tilt mode while its door is open 2. The gaming equipment is in tilt mode and its door(s) is opened
Slow Flash	Fast Flash	The gaming equipment is displaying a hand-paid jackpot combination and a) its drop door is open; or b) it has gone into tilt mode while its drop door is open
Fast Flash	Off	The gaming equipment is in administrative mode and its door(s) is closed
Fast Flash	Medium Flash	The gaming equipment is in administrative mode and its door(s) is open
Fast Flash	Fast Flash	The gaming equipment is in administrative mode and its drop compartment door is open

26.3.4 The drop door and gaming equipment door open operational status conditions must have higher priority when more than one condition triggers the display of tower light.

26.3.5 Any other combination(s) of tower light states that are not indicated above must be submitted to the Registrar for approval before their use.

26.3.6 The operation of the tower light bulbs and, when provided, the configuration of the candle mode must be verified via the administrative mode or another method approved by the Registrar.

26.3.7 There must be no method of disabling the tower light via the administration mode.

## 27.		Wide Area Progressives (WAP)

In addition to the Progressive Standards in Section 22, WAP systems must meet the following requirements:

### 27.1		WAP systems, hardware components and configuration

27.1.1	The main WAP system and associated database must be installed at a central monitoring site in the Province of Ontario. The central site must meet the Registrar's security requirements and procedures, including surveillance and authorized access. This system must have adequate backup systems to minimize loss of data. Only one central site may be live at any time. If two central sites are configured, the same configuration must be maintained at both central sites, and only one site may have its network interface active at a time. Database replication must be done at both central sites at all times, or there must be a method to ensure that data has been replicated before the backup site is available.

27.1.2	Any WAP progressive or communication controllers must be installed in a secure location at each gaming premises. Only one (primary) progressive control server can be active at any time.

27.1.3	The central system must use an Uninterrupted Power Supply (UPS).

### 27.2		WAP Systems, Specific Progressive Game Requirements

27.2.1	In case of a jackpot event, there must be a clear audible and visual indication, or another method to draw attention, at the central site providing the following information:

a)	Date and time of jackpot;

b)	Jackpot amount;

c)	Jackpot ID (if applicable);

d)	Gaming premises' ID where the jackpot is hit;

e)	Winning gaming equipment ID.

27.2.2	In case of a jackpot event, the progressive meter(s) must reset automatically to the reset jackpot amount.

27.2.3	The WAP system must be capable of monitoring the linked progressive gaming equipment in real-time for security events, accounting information and operational status. This includes the number of active and inactive games.

27.2.4	There must be no information loss or any degradation to the operation of the system at any time.

27.2.5	The data collected from gaming equipment monitoring and system settings must be saved electronically at the central site. Data must not be overwritten or altered, but may be archived. Any archived data must be available for generating reports. Access to database

must be secured and controlled to prevent unintentional or unauthorized changes to data.

27.2.6   Current gaming equipment security events and changes in operational status of the on-line WAP system must be displayed, and preferably printed, immediately to the operator at the central site and preferably at the applicable gaming premises.

27.3   WAP Reports – General Requirements

27.3.1   Reports must provide sufficient information to support the intended purpose. Reports of gaming equipment security, accounting and operational status must be available to operators through a user friendly menu. On-demand reports must be available.

27.3.2   Reports must be available for display and for printing.

27.3.3   Reports must include summary totals for each gaming premises and a grand total for all gaming premises, as applicable.

27.3.4   Reports must include:

   a) Gaming premises name/ID, where appropriate;

   b) Date and time of the report; and

   c) Name of the report.

27.3.5   Security reports must provide the following minimum information for all or selected gaming equipment within a specified date & time range:

   a) Gaming equipment doors open/closed;

   b) Gaming equipment ID; and

   c) Date and time for each event.

27.4   Required WAP Reports

The following reports and specified data for each are required.

27.4.1   Accounting reports must contain the following minimum information:

   a) Jackpot reset amount;

   b) Maximum jackpot amount, if applicable;

   c) Game denomination;

   d) Progressive increment;

   e) Credits wagered;

   f) The amount of all jackpots.

27.4.2   Operational status reports must contain the following minimum information:

   a) On-line gaming equipment;

b) Off-line gaming equipment;

c) Gaming equipment errors; and

d) Progressive controller errors.

27.4.3   The Contribution-To-Meter Report details the amount contributed to a specific jackpot by a gaming premises, indicating the contribution from each gaming equipment device. This report must contain the following minimum information:

a) Gaming premises name;

b) Link ID;

c) Jackpot ID;

d) Jackpot start date;

e) Jackpot award date;

f) Total bet;

g) Reset amount;

h) Jackpot amount (current progressive amount);

i) Gaming premises bet;

j) Gaming premises contribution;

k) Denomination;

l) Cabinet and gaming equipment ID;

m) Gaming equipment bet amount; and

n) Gaming equipment jackpot contribution.

27.4.4   The Event and Error Log must contain the following minimum information:

a) From date / to date (period);

b) Event ID;

c) Error ID (exception code);

d) Log ID;

e) Gaming premises ID;

f) Link ID;

g) Jackpot ID;

h) Gaming equipment ID;

i) Gaming equipment controller ID;

j) Date and time for each event and error; and

k) Event and error source and description.

27.4.5   The Audit Log Report lists changes to system link parameters or jackpot data values. This report must contain the following minimum information:

a) Current system parameters: base amount, maximum amount and increment for all progressive levels;

b) The user ID of the person who made the change;

c) The date and time of the change;

d) The value of altered parameters before and after the change.

27.5   WAP Communication and Security

27.5.1   The system must have security to restrict access to only authorized personnel, for the following functions at minimum, based on segregation of duties:

a) System administration including setup of user access privileges;

b) Central system operation;

c) Audit;

d) Report generation;

e) Setting up of system configurations; and

f) Logging of all gaming devices.

The system must restrict access to only authorized users for any viewing, modifying or deleting of critical files and directories.

27.5.2   The system must provide at minimum, the capability for user passwords to:

a) require to be changed at specific intervals as designated, or earlier,

b) be of a minimum of six alpha-numeric characters,

c) be locked out after certain number of unsuccessful attempts,

d) be stored in the database in a format that is unreadable to any individual (encrypted).

27.5.3   Dedicated and secure communication lines must be used for communication between central site and gaming premises. Physical, secured communication lines must be used for communication from controllers at each gaming premises to all gaming equipment controllers. All such in-house communication lines must be designed and installed in a way to shield out any communication interference and to prevent any communication delays and jams that can adversely affect WAP operation.

27.5.4   When the method of communication is a shared line, appropriate encryption and security must be in place to avoid corruption or compromise of data.

27.5.5   All communication ports not used by the WAP system must be disabled, or must not allow any changes to the operation of the progressive system.

27.5.6   There must be a mechanism to allow only assigned computers (servers) to communicate within the WAP network, e.g. through the use of an access list.

27.5.7   All communication protocols implemented at all levels of WAP communications must be approved by the Registrar. All communication must be encrypted, or be transmitted on physically secure communication lines. All server computers, routers and other WAP components exposed to external communications must use firewall protection.

27.5.8   Computer access to WAP database server and controllers may only be possible through dedicated ports, using a method that includes user IDs, passwords and authorization/security levels and similar security measures.

27.5.9   Authorized remote access to the system must only be initiated through a procedure approved by the Registrar that limits such access.

27.5.10   In the case of communication loss between the gaming equipment and the gaming premises WAP controller, the associated gaming equipment must be disabled automatically as specified in Section 22, Progressives. In addition, the WAP central site must display an alarm message and record the off-line gaming equipment to a log.

27.5.11   In the case of communication loss between the gaming premises WAP controller and the central site WAP system, there must be a clear indication or alarm at the central site of the specific gaming premises which went off-line to draw attention to the central site operator. All gaming equipment at the off-line gaming premises may stay in play; however, the WAP controller at the off-line gaming premises must preserve all of its progressive information during this time, and update the central WAP upon communication recovery. Specifically, the progressive award must be reconciled for contributions from off-line and on-line gaming premises. If a progressive jackpot is hit while one of gaming premises is off-line, the WAP system must have the capability to reset the progressive meter by the central site.

27.5.12   Any adjustments to the jackpot meters must be performed through a procedure approved by the Registrar. At minimum, the system must have additional security features to perform this function and maintain a log of all changes.

27.5.13   In the case that the central site is unavailable and the progressive jackpot cannot be processed at the local gaming premises, the WAP gaming equipment at the specific gaming premises must be disabled and the appropriate message displayed to patrons on progressive signs.

27.5.14   Submissions of multi-site systems must include documentation that outlines the proposed system architecture and configuration to demonstrate security in depth.

27.6   WAP Testing

27.6.1   Testing of a multi-site system shall include on-site testing of the installed production system prior to the system being approved for patron play.

28. Wireless and External Communication

28.1 Wireless Communication

28.1.1 Wireless communication must be approved by the Registrar before it can be used at any gaming premises to send information regarding gaming transactions that include, but are not limited to:

a) Accounting;

b) Revenue;

c) Security;

d) Player points;

e) Progressive jackpot information;

f) Bonuses to be awarded by the game;

g) Awarding of credits; and

h) Redemption of wagering instruments.

28.1.2 Information transmitted by wireless communication and used for the purposes described above must be protected by encryption or by other means to prevent it from being:

a) Intercepted by unauthorized personnel;

b) Interpreted by unauthorized personnel; or

c) Modified by unauthorized personnel.

28.1.3 Wireless communication must be resistant to signal jamming.

28.2 External Communication

28.2.1 The operator must ensure that all networks connecting gaming equipment and/or gaming management systems are protected from unauthorized access.

28.2.2 The operator must ensure that any connection to gaming equipment and/or gaming management systems from any other computer system does not impact the integrity, security and accounting capability of the game of chance.

29.   Submission Requirements

29.1.1   All submissions for approval of gaming equipment must be accompanied with all necessary AGCO submission forms.

30.   Requirements for Game Source Code Review

30.1.1   The AGCO requires that an independent[2] review of all submitted source code be conducted for all new platforms/operating systems[3] developed by the supplier (e.g. new platform). The results of this independent review must be submitted to the AGCO with the new platform/operating system submission. The review must include the following topics, as a minimum:

a) RNG algorithm: the RNG must produce random numbers that satisfy AGCO's RNG standards.

b) Updating of meters and displays associated with credits and cash/ticket transactions: Meters and displays must be processed in their intended manner, without consideration of unrelated previous events, or inputs; no illegitimate credits are added/subtracted at any time; all legitimate credits are added/subtracted, displays reflect accurate values. The meters must be updated from the proper transaction, e.g. must be performed according to AGCO Bill Validator Standards 3.2.1 for bill/ticket insertion, 8.1.4 for win, etc.

c) Updating of critical game data: critical game data must be updated only by legitimate processes at appropriate times.

d) Detection and recovery of corrupted memory: Memory must be verified by appropriate means (CRC, etc), at minimum, following game resets, power up, and loading into the electrically erasable or volatile memory to ensure corruption of memory is detected. Functions which handle data recovery of critical memory must perform as intended.

e) Implementation of communication protocols: All communication protocols must be implemented according to their design specification.

f) Redundant code and/or implementation of cheat code: There must not be any code that can affect the proper operation of the software (e.g. cheating, easter egg, etc.).

g) Flow of code from calling the RNG during base/bonus game events to the determination of the game outcome: the RNG result must be the only result used to determine the game outcome. No other routines may exist that modify the outcome, or that bypass the RNG outcome in exchange for something else.

h) All other procedures that use the RNG: All calls to the RNG must be determined and accounted for, e.g. shuffling, pick with/without substitution, pick from bonus table. Each

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[2] a gaming laboratory with demonstrated experience and accredited to ISO/IEC 17025:2005 for source code review of gaming equipment operating systems/platforms that is acceptable to the Registrar.

[3] software that controls the functions listed in this section.

call must use the RNG output appropriately, without modification, so that the scaled output has its expected probability.

i)   Mapping of game outcome to paytable data: the RNG result must be mapped properly to paytable arrays that are populated with paytable data. If denomination changes affect paytables, the appropriate data must be mapped. The game code must only access legitimate paytable data.

j)   Evaluation of game outcome to determine pay: Once the game outcome is determined by the RNG, it must be accurately evaluated against the paytable and the correct prize must be awarded to the patron.

k)   Display of game outcome to the patron: The display of the game outcome to the patron must not be modified from that chosen by the RNG. This includes all base game and bonus game outcomes.

l)   Logic of bonus games, mystery feature, progressive jackpots: Logic used in determination of game outcome must be consistent with the game presentation (reel spins, card draws, bonus games, progressive jackpot, mystery feature).

m)   Verification procedures of all critical software: Self-authentication by game must be performed according to AGCO Authentication of Critical Files Standards Section 1

30.1.2   Modifications to control programs/operating systems that impact on one or more of the preceding topics in 30.1.1 may require that a source code review be performed on the modifications, depending on the complexity and number of changes. These will be assessed on a case-by-case basis.

30.1.3   The Registrar may require additional reviews of source code, as deemed necessary depending on the complexity of changes made, the timing of the last review, etc.

Glossary

Accumulated Award: A payout that is calculated by adding multiple awards that result from a single wager.

Alterable Storage Media Device: Any electronic storage media whose contents can be modified during normal game operations without being removed from the gaming equipment. This does not include volatile RAM or media that has its write functionality disabled.

Associated equipment: Any internal or external equipment that is not part of the gaming equipment itself and is required for its complete operation, e.g. progressive controllers, bill validators, Slot Monitoring System interface, etc.

Attendant Pay Limit: The value which all cash-outs either below, or at or below, are paid by printing a ticket and/or dispensing a token.

Authorization List: A file (possibly dynamic) containing sufficient data to identify and verify integrity of each critical file. The authorization list may include a hash table, or signature table.

Award: A payout associated with a unique combination of symbols or a game event as a result of wagering and game play that is displayed on the gaming machine. If one or more symbols can be substituted by a wild symbol, resulting in a winning combination with the same pay as that using the original symbols, then both combinations are considered to be the same award.

Bill Validator/Acceptor: An electronic device that accepts or rejects inserted bills or tickets/vouchers after validation.

Blackout: The state when the gaming equipment has its power removed.

Cashless Wagering System: The collective hardware, software and other equipment used to facilitate wagering without chips, tokens, or other legal tender of Canada.

Coin: Monetary coin or token accepted by the gaming equipment from the patron for the intent to place wagers, or received as a payout from the gaming equipment.

Coin Validator: A coin acceptor or coin comparator used by the gaming equipment that accepts or rejects inserted coin(s) after validation.

Coin Acceptor: An electronic device programmed to accept specific coins and reject others. It may have the additional capability of rejecting specific coins.

Coin Comparator: An electronic device used to validate the inserted coin based on comparison with the sample coin in the coin comparator.

Coupon: A printed wagering instrument that has a fixed dollar wagering value that can only be used to acquire non-cashable credits.

Critical Files: Any software and data which affects the integrity or outcome of the game or the inter-

pretation of game play or game outcome. This includes, but is not limited to, any software that comprises the operating system; or is used to control game functions, game outcome, payout, security or accounting functions; and related data including fixed data and graphics files used to interpret game play or outcome. Critical Files do not include Critical Game Data.

Critical Game Data: Stored data that is considered vital to the continued operation of the gaming equipment. This includes, but is not limited to:

    a) RNG outcome corresponding to the current game;

    b) all auditing meters;

    c) current credits;

    d) gaming machine/game configuration data;

    e) information pertaining to the last 10 plays (including the current play if incomplete)

    f) software state (the last normal state the gaming machine software was in before interruption)

    Critical Memory: Memory locations storing critical game data.

Disabled: Any condition when the game is unplayable.

Digital Signature: an asymmetrically encrypted hash. Typically used to authenticate the source of a file.

Extended play: A play or series of plays awarded by the primary game upon obtaining a specific combination or symbol without making any additional wagers.

Extended play award: A payout that is awarded as a result of an extended play.

Game: A betting scheme with the outcome based on pure chance or mixed chance and skills.

Game program: Executable computer code used to control the operation of electronic gaming equipment.

Game within a Game: A play or series of plays within the primary game which requires a separate wager and which has a separate theoretical payout percentage from the primary game.

Gaming premises: A place which is kept for the purpose of playing games of chance.

Gaming equipment: Equipment, including a slot machine, that:

    a) could influence the outcome of a game of chance that is held in a casino, charity casino or slot machine facility; or

    b) is integral to the conduct, management or operation of a game of chance described in clause (a)

Gaming Equipment Door: Any of, but not limited to, the following:

a) Main game door;

b) Belly door;

c) Drop door;

d) Cashbox compartment door;

e) Cashbox Removal or insertion;

f) Top box (if equipped);

g) Auxiliary cabinet door;

h) Auxiliary Fill door (in base);

i) Drop door (in base);

j) Any door that provides access to external gaming equipment.

Hash: the value returned by a hash function (a one-way algorithm that deterministically generates fixed-length output data based upon a set of input data).

Identifier: Any specific and verifiable fact, used by a slot machine or skill based game, concerning a player or group of players which is based upon objective criteria relating to the player or group of players, including, without limitation:

a) The frequency, value or extent of predefined commercial activity (such as the player's frequency of visitation or wagering activity at a gaming site or activity on a particular EGM or during a play session (carded or not / anonymous play); activity on social media; or accumulation of rank, points, or standing in either gaming or non-gaming activity)

b) The subscription to or enrollment in particular services (such as membership in a customer loyalty program);

c) The use of a particular technology concurrent with the play;

d) The skill of the player (as identified or maintained by the gaming system or self-identified by the player);

e) The skill of the player relative to the skill of any other player participating in the same game;

f) The degree of skill required by the game; or

g) Any combination of (a) to (f), inclusive.

Idle: The condition when the game is ready to be played.

Jackpot Limit: The value which all prizes either below, or at and below, are paid by crediting the player's credit meter.

Kiosk: A device that is connected to a Slot Monitoring System and/or a ticket in/ticket out system that is capable of accepting wagering instruments and providing cash redemption or automated jackpot redemption functionality, or other gaming related functions.

Metamorphic Game: A game where free games, feature games or prizes (other than progressive jackpots) are triggered by the cumulative result of a series of plays.

Example: a metamorphic game may award tokens during game play which accumulate from game to game and trigger a prize once a certain number are accumulated. When no tokens have been accumulated, it may not be possible to trigger the prize on the next game; however, once a certain number of tokens have been accumulated, it would be possible to trigger the prize.

Mystery jackpot: An award that is not associated to any specific game outcome, and is awarded randomly.

Optimal strategy: The choice from among more than one option presented to a player by a game which, if selected by the player, offers the greatest theoretical payout percentage to the player.

Play: All gaming events that may be initiated by the making of a specific wager. A play includes the making of a wager, the activation of the gaming equipment game by the patron and an indication to the patron of the outcome of the wager including, if an award is won, the payment of the award.

Primary game: Base game that is initiated upon placing a wager.

Printer Limit: The maximum amount that can be paid by printing a ticket.

Progressive game: A game that contributes a portion of wagers to a jackpot award or other feature of the game.

Promotional Account: an electronic ledger used in a cashless wagering system to record transactions involving a patron or patrons that are not otherwise recorded in a wagering account.

Randomness or Chance: Observed unpredictability and absence of a pattern in a set of events that have definite probabilities of occurrence.

Random number generator: Hardware and/or software used to generate numbers which exhibit randomness.

Scripting: a programmed sequence of events included in a slot machine game that is used to disclose a randomly pre-selected variable outcome to a patron in a particular manner but does not otherwise affect the outcome.

Secondary game: A game initiated by the primary game where an additional wager is required for a

chance to obtain additional prizes.

Skill: The knowledge, dexterity or any other ability or expertise of a natural person.

Skill based gaming: Any slot machine game where the expected payback of a committed wager is dependent in whole or in part upon the player's skill. (A game is considered skill based when the ratio of the expected return from optimal play to the expected return from worst play is at least 1.005).

Strategy: A choice, or set of choices, for how to proceed in a game where the decision impacts the expected payback of a committed wager.

SMS: The Slot Monitoring System used at the gaming premises.

Switch: An optical, magnetic or electro-mechanical device used to detect the opening and closing of doors or other security conditions.

Ticket: A printed wagering instrument that has a fixed dollar wagering value that can only be used to acquire an equivalent value of cashable credits or cash.

Tilt: A programmed error state for gaming equipment.

Top award: The highest displayed award.

Volatility Index: The half-width of the 95% confidence interval of a game's actual payout percentage for 10,000 handle pulls at the lowest available wager. The confidence interval is centred on the game theoretical payout percentage. The confidence interval for any number of games played determines the range of statistically expected actual payback percentages. Highly volatile game payback may result in a large deviation of the actual game payback from the theoretical payback, either above or below the theoretical value.

This index is calculated using the following formula:

$$VI = 0.0196 \times \sqrt{\sum_i \left[(prize_i)^2 \times prob_i \right] - GTP^2}$$

Voucher: Same as ticket.

Wager: The total value of coins, currency, coupons, tokens or other approved credits that are required to activate a particular play.

Wagering Instrument: Monetary coins, tokens, bills, ticket/vouchers or coupons accepted by gaming equipment with intent to place wagers by the patron or receive as a payout from the gaming equipment.

Wide Area Progressive (WAP) game: A game with a progressive jackpot that is shared among multiple gaming premises.