INTEGRITY CERTIFICATION REQUIREMENTS: **SLOT MACHINES**

Saskatchewan Liquor and Gaming Authority

April 2006

Document History

Changed April 2006	Topic	Old Section(s)	Old Page	New Section	New Page
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Introduction

The Saskatchewan Liquor and Gaming Authority (SLGA) is responsible for the regulation of gaming in Saskatchewan as mandated under *The Alcohol and Gaming Regulation Act, 1997*.

SLGA may, according to *The Alcohol and Gaming Regulation Act, 1997*, set the terms and conditions of gaming supplier certificates of registration. In the event that SLGA issues a gaming supplier certificate of registration to you, that certificate of registration will include a term that you shall at all times comply with all applicable Gaming Integrity Standards established by SLGA from time to time.

This document outlines the integrity certification requirements for slot machines.

Background

These standards were developed in consultation with Gaming Laboratories Incorporated, North American Gaming Regulator's Association, Saskatchewan Gaming Corporation, Western Canada Lottery Corporation; SLGA and discussions with other Canadian and American jurisdictions.

Purpose

These standards are intended to provide regulatory guidance to manufacturers, suppliers and gaming operators about acceptable technical gaming integrity requirements in Saskatchewan. Where practices amongst operators may differ from acceptable standards, SLGA as the regulator, will review to determine acceptable practices.

These standards provide the basis for consistent public policy. They are founded on objectives that meet the test for: fairness, accountability, security, honesty, reliability, and safety.

1.00 General

1.01 Ownership and Control of Technical Gaming Integrity Document

The ownership and control of this document and all subsequent amendments rests with SLGA.

1.01.1 Document Revision

Technological change in the industry may require SLGA to issue corresponding amendments and changes to previously approved standards. Reasonable notice will be given to all manufacturers, suppliers, testing laboratories, and operators, for implementation.

1.02 Parameters of Document

This document is intended to outline those standards that apply to electronic gaming devices utilized; including: specifications, hardware, safety, and testing.

1.03 Technology

SLGA recognizes that game technology changes. New technology will be evaluated, as required, and the standards amended accordingly, as per section 1.01.1 Document Revision of this document.

2.00 Physical Requirements

2.01 Security

A gaming device shall be robust enough to withstand forced illegal entry which would leave behind evidence of the attempted entry, unless such entry causes an error code that must be reset by authorized staff.

2.02 Machine and Player Safety

Electrical and mechanical parts and design principals of the gaming device may not subject a player to any physical hazards. It is the responsibility of the manufacturer to ensure that the gaming device (and ALL associated hardware) meets CSA and/or ULC standards and complies with Federal regulatory standards. For the province of Saskatchewan, a gaming device MUST be certified safe as a complete assembly. This includes all hardware (example: hopper, coin mech, etc…) residing and operational within the gaming device. Individual hardware may be approved separately by the province of Saskatchewan providing the aforementioned hardware has met the outlined standards described AND the manufacturer provides documentation to SLGA describing the purpose or reason for testing equipment separately from the gaming device.

2.03 Game Integrity Standard

Outside influences shall not affect game fairness to the player or create cheating opportunities.

2.04 Environmental Conditions

A gaming device shall withstand the unique environmental conditions of Saskatchewan. The gaming device shall be designed and manufactured robustly enough to withstand:

a) Dust;
b) Dirt;
c) Extreme ranges of humidity levels (10%RH – 95%RH);
d) Ambient temperatures varying from 0 to +40 degrees Celsius; and
e) Storage at temperatures ranging from –40 to +40 degrees Celsius with humidity levels varying from 5 to 95%. Due to the difficult nature to quantitatively assess environmental conditions on a gaming device, the aforementioned environmental conditions can be viewed as guidelines rather than firm standards. Each gaming device can be assessed on a case by case basis by SLGA, a Saskatchewan casino, SLGA agent or approved gaming lab to determine environmental suitability.

2.05 Machine Identification

A gaming device shall have a not easily removable, identification badge permanently affixed to the exterior of the cabinet by the manufacturer, and this badge shall include the following information:

a) The manufacturer;
b) A unique serial number;
c) The gaming device model number; and
d) The date of manufacture.

2.06 Tower Light

The gaming device shall have a light located conspicuously on top of the gaming device that automatically illuminates when:

a) A player has won an amount; or

b) Is redeeming credits that the machine cannot automatically pay; or

c) An error condition has occurred (including 'Door Open'); or

d) A 'Call Attendant' condition has been initiated by the player.

2.07 Power Supply

The machine shall not be adversely affected, other than resets, by surges or dips of ± 20% of the supply voltage. NOTE: It is acceptable for the equipment to reset provided no damage to the equipment or loss or corruption of data is experienced in the field.

2.08 Diverter

For games that accept coins or tokens, the software shall ensure that the diverter directs coins to the hopper, or to the drop box when the hopper is full. The hopper full detector shall be monitored to determine whether a change in diverter status is required. If the state of the detector changes, the diverter shall operate as soon as possible, or within two (2) games, after the state change, without causing a disruption of coin flow, or creating a coin jam. Hopper-less gaming devices shall always divert coins to the drop box.

2.09 Drop Box

If the game is equipped to accept coins or tokens, then the following rules shall be met:

a) Each gaming device equipped to accept coins or tokens shall incorporate a method to divert coin into a slot drop box to collect and retain all such slot coins or tokens that are diverted into the drop box;

b) A slot drop bucket shall be housed in a locked compartment separate from any other compartment of the gaming device; and

c) There must be a method to monitor the drop box area, even if manufactured by a different company.

2.10 General External Doors/Compartments Requirements

a) The interior of the device should not be accessible when all doors are closed and locked;

b) Doors shall be manufactured of materials that are suitable for allowing only legitimate access to the inside of the cabinet (i.e. doors and their associated hinges shall be capable of withstanding determined illegal efforts to gain access to the inside of the gaming device and shall leave evidence of tampering if an illegal entry is made);

c) The seal between the cabinet and the door of a locked area shall be designed to resist the entry of objects;

d) There shall be a candle on the top of the device that is clearly visible that automatically illuminates when the door to the gaming device, or doors to any devices connected to the gaming devices which may affect the operation of the gaming device, are opened. This requirement may be substituted for an audible alarm if such a security event is communicated to a central on-line (host) system;

e) Bar-top Game Exception. All bar-top gaming devices shall have a light alarm, or an audio door alarm, installed. The alarm shall be designed to activate when the inside of the machine is accessed, with power on;
f) All external doors shall be locked and monitored by door access sensors, which shall detect and report all external door openings, both to the machine by the way of an error and to an on-line system.
g) It shall not be possible to insert a foreign mechanism into the gaming device that will disable a door open sensor when the machine's door is shut for the purpose of fraudulent activity; and
i) The sensor system shall register a door as being open when the door is moved from its fully closed and locked position.

2.11 The Logic Door and Logic Area

The logic area is a locked cabinet area (with its own locked door), which houses electronic components that have the potential to significantly influence the operation of the gaming device. There may be more than one (1) such logic area in a gaming device.

2.12 Electronic Components

Electronic component items that are required to be housed in one (1) or more logic areas are:
a) CPUs and other electronic components involved in the operation and calculation of game play (e.g. game controller electronics and components housing the game or system firmware program storage media);
b) Electronics involved in the operation and calculation of game result determination;
c) Electronics involved in the calculation of game display, and components housing display program storage medium (passive display equipment exempted);
d) Communication controller electronics, and components housing the communication program storage media. This does not include interface boards that are "dumb" such as splitters and so forth. The only requirement for these boards is that they be housed within the main cabinet of the gaming device in a secure manner; and
e) All flash memory devices that affect the game play function of the gaming device.

2.13 Currency Compartments

a) Access to currency storage area is to be secured via separate key locks and shall be fitted with sensors that indicate door open/close or stacker/cassette removed; and
b) Access to the currency storage area is to be through two (2) levels of locks (the relevant outer door plus one other door or lock) before the stacker/cassette can be removed. See 2.38 Bill Acceptors.

2.14 Program Memory, RAM and Non-Volatile Devices Used to Store Data

The following are the requirements for RAM:
a) Battery Back-up. A battery back-up, or an equivalent, shall be installed on the game for the electronic meters and shall be capable of maintaining the accuracy of all information required for ninety (90) days after power is discontinued from the machine. The back-up device shall be kept within the locked Logic Area;

b) If the battery back-up is used as an 'off chip' battery source. The shelf life shall be at least three years.
c) Random access memory that uses an off-chip back-up power source to retain its contents when the main's power is switched off shall have a detection system which will provide a method for software to interpret and act upon a low battery condition; and
d) Clearing non-volatile memory shall only be able to be undertaken by accessing the logic area in which it is housed.

2.15 Function of RAM Reset

Following the initiation of a RAM reset procedure (utilizing a certified RAM Clear method), the game program shall execute a routine, which initializes each and every bit in RAM to the default state. For games that allow for partial RAM clears, the methodology in doing so must be accurate and the game must validate the un-cleared portions of RAM.

2.16 Default Reel Position or Game Display

The default reel position or game display after a RAM reset shall not be the top award on any selectable line. The default game display, upon entering game play mode, shall also not be the top award. This applies to the base game only and not any secondary bonus devices.

2.17 Configuration Setting

It shall not be possible to change a configuration setting that causes an obstruction to the electronic accounting meters without a RAM clear. Notwithstanding, a change to the denomination or percentage must be done by a secure means which includes access to the locked logic area. The monitoring of denomination changes will assist in preventing bill validator fraud.

2.18 Requirements for Program Storage Devices

All program storage devices, including: ROMs, EPROMs, FLASH ROMs, DVD, CD-ROM, 'Hard Drives', 'Disk-On-Chip' and any other type of program storage devices shall identify with sufficient information to identify the software and revision level of the information stored in the devices either on the PSD or viewed electronically within a service menu of the device.

2.19 Logic Board

The CPU board will be designed to ensure that its memory can be preserved if the board is removed from the logic area.

2.20 Contents of Critical Memory

Critical memory is used to store all data that is considered vital to the continued operation of the gaming device. This includes, but is not limited to:
a) All electronic meters required in sections: 3.24 Electronic Metering within the Gaming Device and 3.30 Electronic Accounting and Occurrence Meters; including last bill data and power up and door open metering;
b) Current credits;
c) Gaming device/game configuration data;

d) Information pertaining to the last five (5) plays with the RNG outcome (including the current game, if incomplete); and
e) Software state (the last normal state the gaming device software was in before interruption).

2.21 Maintenance of Critical Memory

Critical memory storage shall be maintained by a methodology that enables errors to be identified and corrected in most circumstances. This methodology may involve signatures, checksums, partial checksums, multiple copies, timestamps and/or effective use of validity codes.

2.22 Control Program

The control program (software that operates the gaming device's functions) shall allow for the gaming device to ensure the integrity of all control program components during execution of said components. Any gaming devices that have control programs residing in critical memory that is not alterable through the use of any circuitry or programming must employ a mechanism that verifies executable program code and data which may affect payouts, data, and gaming device behaviour. If the program is contained in any other medium, the following rules shall be met:
a) The gaming device shall authenticate all critical game files including, but not limited to, executables, data, and operating system files and other files, which may affect the game outcome or operation, which reside on the medium. This authentication shall employ a hashing algorithm which produces a 'Message Digest' (the mathematical results/signature of the hashing algorithm) output of at least 128 bits (this value will constantly be re-evaluated, based on technology advancements and new security methods available);
b) The Message Digest(s) for all files as defined in (a) shall reside on a memory device (ROM based or other medium) within the slot. Message Digests which reside on any other medium shall be encrypted, using a public/private key algorithm with a minimum of a 512 bit key, however, a 768 bit key is recommended (this value will constantly be re-evaluated based on technology advancements and new security methods available);
c) The gaming device shall authenticate all critical files against the stored Message Digest(s). This authentication shall meet the requirements of 2.23 PSDs;
d) In the event of a failed authentication, after the game has been powered up, the gaming device should immediately enter an error condition with the appropriate tower light signal, and record the details, including time and date of the error in a log. This error shall require operator intervention. The game shall display specific error information and shall not clear until either the file authenticates properly, following the operator intervention, or the medium is replaced or corrected, and the device's memory is cleared, the game is restarted, and all files authenticate correctly.

The control program must also have a mechanism to test unused or unallocated areas of any alterable memory for unintended programs or data and tests the structure of the critical memory integrity. The mechanism must prevent further playing of the gaming device if unexpected data or programming/structural inconsistencies are discovered.

The control program will also provide a mechanism to record changes or alterations discovered by the program during it's internal checking that will record date, time, and (if possible) area of code or memory affected.

The control program shall utilize an integrity check, preferably a secured hashing method to authenticate that the program and/or support files have not been corrupted or altered prior to use/loading. Integrity checks of critical memory shall be made during each gaming device restart (e.g. power up cycle). Gaming device control programs (software that operates the gaming device's functions) shall test for possible corruption caused by failure of the program storage medium and all critical game functions.

Under no circumstances will the payout percentage of a gaming device be vulnerable to manipulation, or change due to circuitry, programming or memory modifications that occur beyond the intended procedures designed by the manufacturer for normal payout percentage changes.

2.23 PSDs

All PSDs (program storage devices), in the executable address space of a main processor, shall be validated during the following conditions:
a) Any power up; and
b) The first time the files are loaded for use (even if only partially loaded).

2.24 RAM and PSD Space

RAM and PSD space that is not critical to machine security, or critical memory (e.g. video or sound ROM) are not required to be validated.

2.25 Unrecoverable Critical Memory

An uncorrectable corruption of RAM shall result in a RAM error. The RAM should not be cleared automatically, but shall require a full RAM clear performed by an authorized person.

2.26 Write Once Read Many (WORM) Program Storage

A WORM used as a program storage device shall only contain the program files that operate the game.

2.27 CD-ROM "Re-Writeable Disk"

In the case of a CD-ROM, a re-writeable disk will not be used.

2.28 CD-ROM "Session Closed"

In the case of a CD-ROM, "the session" shall be closed to prevent any further writing.

2.29 Write Protection

In the case of a hard disk, a write-protected drive shall be used. Any type of drive will be required to be designed with a method that prohibits methods known or unknown that may permit software and programming to be altered.

2.30 Flash Memory Devices

Flash memory devices that contain the control program are allowed as long as the ability to 're-write' or 'flash' the device, while installed in the logic board, is physically disabled (i.e. write line cut on the logic board). Each use of flash memory devices will be assessed.

2.31 Multi-Station Games

A Multi-Station game is a gaming device that incorporates more than one (1) player terminal, and only has one (1) random number generator, which is controlled by the master terminal. The master terminal, containing the games CPU, will house the game display which is shared among the player terminals. Each station must meet the technical standards outlined throughout this document, including machine identification and metering. There must be a method for each player to know when the next game will begin and view the previous game.

2.32 PCB Identification Requirements

Requirements for PCB identification:

a) Each printed circuit board (PCB) shall be identifiable by some sort of name (or number) and revision level;

b) The top assembly revision level of the PCB shall be identifiable (if track cuts and/or patch wires are added to the PCB, then a new revision number or level shall be assigned to the assembly); and

c) Manufacturers shall ensure that circuit board assemblies, used in their gaming devices, conform functionally to the documentation and the certified versions of those PCBs that were evaluated.

2.33 Patch Wires

All patch wires and track cuts shall be documented, in an appropriate manner, in the relevant service manual and/or service bulletin and shall be submitted to SLGA. This does not prohibit required repairs in the field. If the game contains 'Switches and Jumpers,' the following rules shall be met:

a) All switches or jumpers shall be fully documented for evaluation by an SLGA recognized, independent testing body; and

b) Hardware switches which may affect the integrity of the slot such as pay tables, payout percentages and operations, must meet section 2.17 Configuration Setting requirements of this document and must be housed within a logic department of the slot. This includes top award changes (including progressives), selectable Blackjack settings, or any other option that would affect the payout percentage.

2.34 Mechanical Devices Used for Displaying of Game Outcomes

If the game has mechanical or electro-mechanical devices, which are used for displaying game outcomes, the following rules shall be observed:

a) Electro-mechanically controlled display devices (e.g. reels or wheels) shall have a sufficiently closed loop of control so as to enable the software to detect a malfunction, or an attempt to interfere with the correct operation of that device. This requirement is

designed to ensure that if a reel or wheel is not in the position it is supposed to be in, an error condition will be generated;
b) Mechanical assemblies (e.g. reels or wheels) shall have some mechanism that ensures the correct mounting of reels' artwork, if applicable;
c) Displays shall be constructed in such a way that winning symbol combinations match up with pay lines or other indicators; and
d) A mechanical assembly shall be so designed that it is not obstructed by any other components.

2.35 Video Monitors/Touch Screens

All video games shall meet the following rules:
a) Touch screens (if applicable) shall be accurate and, once calibrated, shall maintain that accuracy for at least the manufacturer's recommended maintenance period;
b) A touch screen (if applicable) should be able to be re-calibrated by venue staff without access to the machine cabinet other than opening the main door;
c) Touch screens are highly resistant to breakage;
d) There shall be no hidden or undocumented buttons/touch points (if applicable) anywhere on the screen, except as provided for by the game rules that affect game play; and
e) The screen bezel must be installed so as to prevent access to the gaming device from an external source.

2.36 Coin or Token Acceptors

All coin acceptors/comparators must have a readily identifiable model and version number attached to the outer assembly which includes the current version of software installed or in use by the coin acceptor.

2.37 Coin or Token Acceptors

If the gaming device uses a coin acceptor, the acceptor shall accept or reject Canadian coin or SLGA approved tokens on the basis of metal composition, mass, composite makeup, or equivalent security. In addition, it shall meet the following rules:
a) Coin Acceptor Security Features/Error Conditions. The coin acceptor shall be designed to prevent the use of cheating methods such as slugging (counterfeit coins), stringing (coin pullback), the insertion of foreign objects and other manipulation;
b) Rapidly Fed Coins. The gaming device shall be capable of handling rapidly-fed coins or piggy backed coins so that occurrences of cheating are eliminated;
c) Invalid Coins. Coins deemed invalid by the acceptor shall be rejected to the coin tray and shall not be counted as credits;
d) Coin Acceptance Conditions. Acceptance of coins for crediting to the credit meter shall only be possible when the gaming device is enabled for play. Other states, such as error conditions, including door opens, audit mode, and game play, shall cause the disabling of the coin acceptor system; and
e) Credit Meter Update on Coin Insertion. Each coin inserted shall register the actual monetary value or a number of credits on the player's credit meter for the current game or bet meter. If registered directly as credits, the conversion rate shall be clearly stated, or be easily ascertainable from the gaming device.

NOTE: The error conditions within this section shall also comply with 5.00 Error Conditions.

2.38 Bill Acceptors

All acceptance devices shall be able to detect the entry of valid Canadian currency, coupons, paper tokens, or other notes approved by SLGA, if applicable, and provide a method to enable the gaming device software to interpret and act appropriately upon a valid or invalid input. The acceptance device(s) shall be electronically-based and be configured to ensure that they only accept valid bills of legal tender. Bill acceptors may also accept coupons, paper tokens, or other approved notes and reject all others in a highly accurate manner. The bill input system shall be constructed in a manner that protects against vandalism, abuse, or fraudulent activity and be designed to ensure that once bills are accepted, they cannot be withdrawn. Credits shall only be registered when:
a) The bill or other note has passed the point where it is accepted and stacked; and
b) The acceptor has sent the "irrevocably stacked" message to the machine.

2.39 Bill Acceptor Version

All bill acceptors must have a readily identifiable model and version number attached to the outer assembly which includes the current version number of EPROM or Flash programmed within the bill acceptor.

2.40 Access to Currency

Access to currency storage area is to be secured via separate key locks and shall be fitted with sensors that indicate door open/close or stacker removed. Access to the currency storage area is to be through two (2) levels of locks (the relevant outer door plus one other door or lock) before the stacker/cassette can be removed.

2.41 Communications

All bill acceptors shall communicate to the gaming device using a bi-directional protocol.

2.42 Factory Set Bill Acceptors

If bill acceptors are designed to be factory set only, it shall not be possible to access or conduct maintenance or adjustments to those bill acceptors in the field, other than:
a) The selection of bills, coupons, paper tokens, or other approved notes and their limits;
b) Changing of certified EPROMs or downloading of certified software;
c) Adjustment of the tolerance level for accepting bills or notes of varying quality should not be allowed externally to the machine. Adjustments of the tolerance level should only be allowed with adequate levels of security in place. This can be accomplished through lock and key, physical switch settings, or other accepted methods approved on a case-by-case basis;
d) Maintenance, adjustment, and repair per approved factory procedures; or
e) Options that set the direction or orientation of acceptance.

2.43 Tokenization

For games that allow tokenization, the game shall receive from the bill acceptor and post to the player the entire amount inserted.

2.44 Machine Metering of Bill Acceptor Events

A gaming device, which contains a bill acceptor device, shall maintain sufficient electronic metering to be able to report the following:

a) Total monetary value of all items accepted;

b) Total number of all items accepted; and

c) A break down of the items accepted:

i. For bills, the game shall report the number of bills accepted for each bill denomination; and

ii. For all other notes, the game shall have a separate meter that reports the number of notes accepted, not including bills.

2.45 Bill Acceptor Recall

A gaming device that uses a bill acceptor shall retain in its memory and display the denomination of the last five (5) valid Canadian currency, coupons, paper tokens, or other notes approved by SLGA, (minimum) inserted.

2.46 Bill Acceptor Error Conditions

Each gaming device and/or bill acceptor shall have the capability of detecting and displaying (for bill acceptors, it is acceptable to disable or flash a light or lights) the following bill acceptor error conditions:

a) Stacker Full – the bill acceptor should disable itself to accept no more bills. The game should generate an error message when the stacker is full;

b) Bill Jams – it is acceptable for the bill acceptor to indicate there is a bill jam by disabling itself to accept no more bills or by some other method;

c) two or more bills are stacked atop of one another during insertion;

d) Bill Acceptor Door Open – where a bill acceptor door is the belly glass door, a door open signal is sufficient;

e) Stacker Door Open or Stacker Removed.

2.47 Power Failure During Bill Acceptance/Validation

If a power failure occurs during acceptance, the bill acceptor shall give proper credits for the bill or return the bill to the player, notwithstanding that there may be a small window of time where power may fail and credit may not be given. In this case, the window shall be less than one (1) seconds.

2.48 Self Test

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

2.49 Bill Acceptor Structural Requirements

A bill acceptor shall not be adversely affected by the following:

a) Electro-static discharge;

b) Power surges;

c) Radio frequency interference;
d) Electro-magnetic interference;
e) Environmental extremes;
f) Interconnecting cables from the bill acceptor device to the gaming device shall not be exposed external to the gaming device; and
g) If liquids are spilled into a bill acceptor, the only degradation permitted is for the acceptor to reject all bill inputs or generate an error condition.

2.50 Bill Acceptor Stacker Requirements

Each bill acceptor shall have a secure stacker and all accepted bills shall be deposited into the secure stacker. The secure stacker is to be attached to the gaming device in such a manner so that it cannot be easily removed by physical force and shall meet the following rules:
a) The bill acceptor device shall have a 'stacker full' sensor;
b) There shall be a separate key to access the stacker area. This key shall be separate from the main door. In addition, a separate key shall be required to remove the bills from the stacker;
c) A tower light or alarm shall be activated whenever there is access to the bill door or the stacker has been removed; and
d) Stacker must be designed to ensure that once bills are accepted, they cannot be withdrawn by any means other than authorized opening with the appropriate key.

2.51 Credit Redemption

Available credits may be collected from the gaming device by the player pressing the "COLLECT" button at any time other than during:
a) A game being played;
b) Audit mode;
c) Any door open;
d) Test mode;
e) A Credit Meter or Win Meter incrementation, unless the entire amount is placed on the meters when the collect button is pressed; or
f) An error condition.

2.52 Cancel Credit

If credits are collected, and the total credit value is greater than or equal to a specific limit (e.g. Hopper Limit for hopper games or Printer Limit for printer games), the game shall lock up until the credits have been paid, and the handpay is cleared by an attendant.

2.53 Hoppers

There shall be under no circumstances, an abnormal payout from the hopper when the hopper is exposed to higher levels of electro-static discharge or if power is lost at any time during a payout. The hopper shall be interfaced in such a way as to allow the gaming device control program to monitor the hopper mechanism, in all game states, to identify at least the following events and shall meet the rules in 5.00 Error Conditions:
a) Extra coin paid ("runaway"); and
b) Hopper jam or empty.

The hopper shall be resistant to manipulation by the insertion of a light source or any foreign object capable of "cheating" methods.

2.54 Printers

If the gaming device has a printer that is used to make payments, the gaming device may pay the player by issuing a printed ticket. The printer shall print on a ticket and provide the data to an on-line data system that records the following information regarding each payout ticket printed. The information listed below can be obtained from the gaming device, interface board, the on-line data management system, or another means:
a) Value of credits in monetary units in numerical form;
b) Time of day the ticket was printed in twenty-four (24) hour format showing hours and minutes;
c) Date, in any recognized format, indicating the day, month, and year;
d) Gaming device number or machine number; and
e) Validation number.

Each slot must contain a mechanism or other means of capturing and retaining an electronic copy or the ticket-out data as approved by SLGA.

2.55 Printer Location

If a gaming device is equipped with a printer, it shall be located in a locked area of the gaming device (e.g. require opening of the main door to access), but not in the logic area or the drop box. This requirement ensures that changing the paper does not require access to the drop (cash) or logic areas.

2.56 Printer Error Conditions

A printer shall have mechanisms to allow software to interpret and act upon the following conditions:
a) Out of paper/paper low;
b) Printer jam/failure;
c) Void ticket; and
d) Printer disconnected which may only be detected when the software tries to print.
NOTE: These conditions shall trigger an error condition to indicate the error has occurred. See also 5.00 Error Conditions

2.57 Card Readers

A card input system shall be constructed in such a manner to protect against vandalism, abuse and fraudulent activity. A card input system must:
a) Not allow card travel paths to be easily altered without leaving evidence of tampering;
b) Have the ability to resist liquid spills;
c) Be designed to resist jams and impaired use that would otherwise render the card useless;
d) Be constructed to detect card insertion and enable software to identify valid or invalid acceptance; and
e) Preferably have mechanisms to allow software to identify and act on significant event such as:

i. Card acceptor/reader disconnected;
ii. Card acceptor/reader jammed; and
iii. Card acceptor/reader malfunctioning.

3.00 Software Requirements

3.01 Rules of Play

a) Payglass/Video Display. Payglasses or video displays shall be clearly identified and shall accurately state the rules of the game and the award that will be paid to the player when the player obtains a specific win. The payglasses or video displays shall clearly indicate whether awards are designated in denominational units, currency, or some other unit. The gaming device shall reflect any change in award value, which may occur in the course of play. This may be accomplished with a digital display in a conspicuous location to the gaming device, and the game must clearly indicate such. All pay table information should be able to be accessed by a player, prior to them committing to a bet. Payglasses or video displays shall not be certified if the information is inaccurate or may cause confusion. The "reasonable player" standard shall be used for evaluation;
b) Upcoming wins. The game shall not advertise 'upcoming wins';
c) Fever Mode. Each game which features a "fever" mode (a mode which gives the player an opportunity for the following 'X' number of hands to achieve a certain winning combination with the pay-off being some number of bonus credits) should include the number of hands remaining for the "fever" mode pay-off during each game that fever mode is present. The same shall apply to free games awarded as a result of a previous event; and
d) Multiple Decks of Cards. Any games which utilize multiple decks of cards should alert the player as to the number of card decks in play.

3.02 Information to be Displayed

A gaming device shall display, or shall have displayed on the glass, the following information to the player at all times the machine is available for player input:
a) The player's current credit balance;
b) The current bet amount. This is only during the base game or if the player can add to the bet during the game;
c) All possible winning outcomes/combinations, or be available as a menu item or on the help menu;
d) Win amounts for each possible winning outcome, or be available as a menu or help screen item;
e) The amount won for the last completed game (until the next game starts or betting options are modified); and
f) The player options selected (e.g. bet amount, lines played) for the last completed game (until the next game starts or a new selection is made);
g) Each individual line to be played shall be clearly indicated by the gaming device so that the player is in no doubt as to which lines are being bet on; and
h) The winning playline(s) shall be clearly discernable to the player. (e.g. on a video game it may be accomplished by drawing a line over the symbols on the playline(s) and/or the flashing of winning symbols and line selection box. Where there are wins on multiple lines, each winning playline may be indicated in turn. This would not apply to reel slot games).

3.03 Game Cycle

A game is considered completed when the final transfer to the player's credit meter takes place (in case of a win), or when all credits wagered or won that have not been transferred to the credit meter, are lost. The following are all considered to be part of a single game:

a) Games that trigger a free game feature and any subsequent free games;
b) "Second screen" bonus feature(s);
c) Games with player choice (e.g. Draw Poker or Blackjack);
d) Games where the rules permit wagering of additional credits (e.g. Blackjack insurance or the second part of a two-part Keno game); and
e) Double-up/Gamble features.

3.04 No "Near Miss"

After selection of the game outcome, the gaming device shall not make a variable secondary decision, which affects the result shown to the player. For instance, the random number generator chooses an outcome that the game will be a loser. The game shall not substitute a particular type of loser to show to the player. This would eliminate the possibility of simulating a 'Near Miss' scenario where the odds of the top award symbol landing on the payline are limited but frequently appear above or below the payline.

3.05 No Corruption from Associated Equipment

A gaming device shall use appropriate communication protocols to protect the random number generator and random selection process from influence by associated equipment, which may be communicating with the gaming device.

3.06 Random Number Generator Requirements

The use of an RNG results in the selection of game symbols or production of game outcomes. 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. The selection shall:

a) Be statistically independent;
b) Conform to the desired random distribution;
c) Pass various recognized statistical tests; and
d) Be unpredictable.

3.07 Applied Tests

SLGA will employ the use of various recognized tests to determine whether or not the random values produced by the random number generator pass the desired confidence level of 99%. These tests shall include, but are not limited to:

a) Chi-square test;
b) Equi-distribution (frequency) test;
c) Gap test;
d) Overlaps test;
e) Poker test;
f) Coupon collector's test;
g) Permutation test;

h) Kolmogorov-Smirnov test;
i) Adjacency criterion tests;
j) Order statistic test;
k) Runs tests (patterns of occurrences should not be recurrent);
l) Interplay correlation test;
m) Serial correlation test potency and degree of serial correlation (outcomes should be independent of the previous game);
n) Tests on subsequences; and
o) Any other tests deemed a requirement by SLGA.

3.08 Background RNG Activity Requirement

The RNG shall be cycled continuously in the background between games and during game play at a speed that cannot be timed by the player. SLGA recognizes that some time during the game, the RNG may not be cycled when interrupts may be suspended. SLGA recognizes this but shall find that this exception shall be kept to a minimum.

3.09 RNG Seeding

The first seed shall be randomly determined by an uncontrolled event. After every game there shall be a random change in the RNG process (new seed, random timer, delay, etc.). This will verify the RNG doesn't start at the same value, every time. It is permissible not to use a random seed; however, the manufacturer must ensure that games will not synchronize.

3.10 Scaling Algorithms

a) If a random number with a range shorter than that provided by the RNG is required for some purpose within the gaming device, the method of re-scaling, (i.e. converting the number to the lower range), is to be designed in such a way that all numbers within the lower range are equally probable.
b) If a particular random number selected is outside the range of equal distribution of re-scaling values, it is permissible to discard that random number and select the next in sequence for the purpose of re-scaling.

3.11 Live Game Correlation

Unless otherwise denoted on the payglass, where the gaming device plays a game that is recognizable such as Poker, Blackjack, Roulette, etc. the same probabilities associated with the live game shall be evident in the simulated game. For example, the odds of getting any particular number in Roulette where there is a single zero (0) and a double zero (00) on the wheel, shall be 1 in 38; the odds of drawing a specific card or cards in Poker shall be the same as in the live game. For other gaming devices (such as spinning reel games or video spinning reel games), the mathematical probability of a symbol appearing in a position in any game outcome shall be constant.

3.12 Card Games

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

a) At the start of each game/hand, it is recommended that the first hand of cards shall be drawn fairly from a randomly-shuffled deck; the replacement cards aren't drawn until needed;
b) Cards once removed from the deck shall not be returned to the deck except as provided by the rules of the game depicted;
d) As cards are removed from the deck they shall be immediately used as directed by the Rules of the Game (i.e. the cards are not to be discarded due to adaptive behaviour by the gaming device).

3.13 Ball Drawing Games

The consequences for games depicting balls being drawn from a barrel (e.g. Keno) are as follows:
a) At the start of each game, only balls applicable to the game are to be depicted. For games with bonus features and additional balls that are selected, they should be chosen from the original selection without duplicating an already chosen ball;
b) The barrel shall not be re-mixed except as provided by the rules of the game depicted; and,
c) As balls are drawn from the barrel, they shall be immediately used as directed by the Rules of the Game (i.e. the balls are not to be discarded due to adaptive behaviour by the gaming device).

3.14 Software Requirements for Percentage Payout

Each game shall theoretically payout a minimum of eighty-five percent (85%) during the expected lifetime of the game. The game must meet the following rules:
a) Optimum Play Used for Skill Games. Gaming devices that may be affected by player skill shall meet the requirement of a minimum payout of 85% when using a method of play that will provide the greatest return to the player over a period of continuous play;
b) Minimum Percentage Requirement Met at All Times. The minimum percentage requirement shall be met at all times. The minimum percentage requirement shall be met when playing at the lowest end of a non-linear pay table (i.e. if a game is continuously played at a minimum bet level for its total game cycle and the theoretical RTP is lower than the minimum percentage, then the game is unacceptable). This example also extends to games such as Keno, whereby the continuous playing of any spot combination results in a theoretical return to player lower than the minimum percentage; and
c) Double-up or Gamble. The Double-up or Gamble options shall have a theoretical return to the player of one hundred percent (100%) or zero (0%) but will still maintain the theoretical payout minimum of eighty-five percent (85%) during the expected lifetime of the game.

3.15 Progressive Game Calculations

Whenever a progressive handpay is offered as part of the gaming device payout, the base amount (the lowest starting value possible) shall be included in the theoretical payout percentage for purposes of satisfying the minimum percentage requirements. This rule shall not supersede the theoretical payout minimum of eighty-five percent (85%) during the expected lifetime of the game.

3.16 Multiple Percentages

For games that offer multiple percentages, please refer to the 'Configuration Setting' section of this document.

3.17 Odds

The highest single advertised payout on each gaming device shall occur, statistically, at least once in 50,000,000 games. This does not apply to multiple awards won together on the same game play where the aggregate prize is not advertised. This odds rule shall not apply to games which make it possible for a player to win the highest win multiple times through the use of free games. This rule does apply to each wager that wins the maximum award.

3.18 Merchandise Prizes in Lieu of Cash Awards

Payout Percentage. No payout of any merchandise or thing of value shall be included in determining whether a gaming device meets the established minimum payout requirement.

3.19 Bonus Games

If the game contains a 'bonus feature' including a game within a game, the following rules shall be met:

a) The game shall display clearly to the player which game rules apply to the current game state;

b) The game, other than those that occur randomly, shall display to the player sufficient information to indicate the current status towards the triggering of the next bonus game (i.e. if the game requires obtaining several events/symbols towards a feature, the number of events/symbols needed to trigger the bonus shall be indicated along with the number of events/symbols collected at any point);

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

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

e) The game shall 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.

3.20 Extended Play

Games that have an award calculated, occurring from game play within the base game's cycle made upon the completion of a series of random occurrences, shall meet the following:

a) Extended play awards are part of the game cycle with predetermined award values. Extended play award contributions to the program payout percentage are calculated consistent with awards of the regular game cycle. Specifically, if the cycle for extended

play awards is different from the base game cycle, then the extended play awards, occurring within the base game's cycle, will be calculated as part of the game's payout; and

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

3.21 Extra Credits Wagered during Bonus Games

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 shall:

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.

3.22 Bonus Game's Return

The game's player return over the cycle of both the bonus and non-bonus part of the game shall conform to the theoretical return to player.

3.23 Multiple Games on the Gaming Device

a) The methodology employed by a player to select and discard a particular game for play on a multi-game gaming device shall be clearly explained to the player on the gaming device, and be easily followed.

b) The gaming device shall be able to clearly inform the player of all games, their rules and/or the pay tables before the player must commit to playing them;

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

d) The player shall not be forced to play a game just by selecting that game. The player shall be able to return to the main menu.

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

f) The set of games offered to the player for selection, or the pay table, can be changed only by a secure certified method which includes turning on and off games available for play through a video screen interface. The rules outlined in 2.17 Configuration Setting of this document shall govern the RAM clear control requirements for these types of selections. However, games that keep the previous pay table's (the pay table just turned off) data in memory, a RAM clear is not required.

g) No changes to the set of games offered to the player for selection (or to the pay table) are permitted while there are credits on the player's credit meter or while a game is in progress.

3.24 Electronic Metering within the Gaming Device

The credit meter shall be maintained in credits or cash value.

3.25 Tokenization

If the current local currency amount is not an even multiple of the tokenization factor for a game or the credit amount has a fractional component, the credits displayed for that game may be displayed and played as a truncated amount, (i.e. fractional part removed). However, the fractional credit information shall be made available to the player when the truncated credit balance is zero. The fractional amount is also known as 'Residual Credit'.

3.26 Credit Meter – Incrementing

The value of every prize (at end of game) shall be added to the player's credit meter, except all handpays or merchandise.

3.27 Progressives

Progressives may be added to the credit meter if either:
a) The credit meter is maintained in the currency amount; or
b) The progressive meter is incremented to whole credit amounts; or
c) The prize in the currency amount is converted to credits on transfer to the player's credit meter in a manner that does not mislead the player (i.e. make unqualified statement "wins meter amount" and then rounds down on conversion) or cause accounting imbalances.

3.28 Collect Meter

There shall be the facility for a collect meter which will show the number of credits or cash collected by the player (the number of credits or cash collected shall be subtracted from the player's credit meter and added to the collect meter).

3.29 Software Meter Information Access

The software meter information shall be accessible by an authorized person.

3.30 Electronic Accounting and Occurrence Meters

Electronic accounting meters shall be at least eight (8) digits in length. If the meter is being used in dollars and cents, at least eight (8) digits must be used for the dollar amount. The meter must roll over to zero upon the next occurrence, any time the meter is eight (8) digits or higher and after 99,999,999 has been reached or any other value that is logical. Occurrence meters shall be at least three (3) digits in length and roll over to zero upon the next occurrence, any time the meter is higher that the maximum number of digits for that meter.
a) **TOTAL IN** (credits-in);
b) **TOTAL OUT** (credits-out);

c) The **AMOUNT WAGERED** meter shall cumulatively count the total amounts wagered during game play, except credits that are won during the game that are subsequently risked in a double up mode;
d) The **AMOUNT WON** meter shall cumulatively count all amounts won by the player at the end of the game, that were not paid by an attendant, including amounts paid by a ticket printer. This meter must not increment for bills inserted and cashed out (used as a change machine);
e) The **DROP METER** shall maintain a cumulative count of the number of coins that have been diverted into a drop bucket. It is acceptable to have credit value of all bills and tickets/coupons inserted into the bill acceptor for play included as part of the total for the drop meter provided the manufacturer meets the specifications outlined by protocols for doing so. It is also acceptable to have separate 'drop' meters for coins, bills, tickets and coupons;
f) The **HANDPAYS** (cancel credit) meter shall reflect the cumulative amounts paid by an attendant for progressive and non-progressive handpays;
g) The **GAMES-PLAYED** (strokes) meter shall display the cumulative number of games played since the last RAM clear;
h) A **CABINET DOOR** meter shall display the number of times the front cabinet door was opened since the last RAM clear;
i) The **DROP DOOR** meter shall display the number of times the drop door or the bill acceptor door was opened since the last RAM clear;
j) The cancelled credit meter shall reflect the cumulative amounts paid by an attendant that are in excess of the credit limit and residual credits that are collected.
NOTE: printer games do not require a cancelled credit meter unless, a 'printer limit' option exists on the game;
k) The **PROGRESSIVE** (jackpot) occurrence meter shall count the number of times each progressive meter is activated; and,
l) Any additional meter(s) as required for compatibility with the central system.

3.31 Multi-Game Game Specific Meters

In addition to the Electronic Accounting Meters required above, each individual game available for play shall have at least "Credits Bet" and "Credits Won" meters in either credits or dollars. Even if a 'double up or gamble' game is lost, the initial win amount/credits bet amount shall be recorded in the game specific meters. Alternatively, there can be separate meters that accounts for the double-up or gamble information. Either way, the method of metering must be understood on the screen.

3.32 Double-Up or Gamble Meters

For each type of Double-up or Gamble offered, there shall be two meters to indicate the amount doubled and the amount won, which should increment every time a Double-up or Gamble occurs. If the gaming device does not supply accounting for the Double-Up or Gamble information, the feature must not be enabled for use.

3.33 Tokenization – Residual Credits

If residual credits exist, the manufacturer may provide a residual credit removal feature or allow a cancel credit or ticket print to remove the residual credits or return the gaming

device to normal game play (i.e. leave the residual credits on the player's credit meter for betting). In addition:

a) Residual credits bet on the residual credit removal play shall be added to the Coins-In (or Cash In) meter;

b) If the residual credit removal play is won, the value of the win shall either:

i. Increment the player's credit meter; or

ii. Be automatically dispensed, and the value of the coin(s) added to the Coins-Out (or Cash Out) meter;

c) All other appropriate gaming device meters (e.g. Hopper Level) shall be appropriately updated;

d) If the residual credit removal play is lost, all residual credits are to be removed from the credit meter;

e) If the residual credits are cancelled rather than wagered, the gaming device shall update the relevant meters (e.g. cancelled credit) and the last play information;

f) The player's current options and/or choices shall be clearly indicated electronically or by video display. These options shall not be misleading;

g) If the residual credit removal play offers the player a choice to complete the game (e.g. select a hidden card), the player shall be also given the option of exiting the residual credit removal mode and returning to the previous mode;

h) It shall not be possible to confuse the residual credit removal play with any other game feature (e.g. Double-up or Gamble);

i) If the residual credit removal play is offered on a multi-game gaming device, the play shall (for meter purposes of each individual game) either be considered to be a part of the game from which the play was invoked, or be treated as a separate game; and

j) The Last Game Recall shall either display the residual credit removal play result or contain sufficient information (e.g. updated meters) to derive the result.

4.00 Communications Protocol

4.01 Protocol

Gaming devices are required to communicate with an online electronic game management system. Gaming device protocol shall be compliant with the requirements set forth in '**Integrity Certification Requirements – Central Systems for Slot Machines**.'

4.02 Remote Lock Up

The gaming device shall support the ability of a central slot system to remotely disable, or "lock up" the gaming device. The gaming device will be made unavailable for play by a disable command issued by the central system. The gaming device will respond to such a command by disabling all input and output features associated with the gaming device.

5.00 Error Conditions

5.01 Errors

Gaming devices shall be capable of detecting and displaying the following error conditions and illuminate the tower light for each or sound an audible alarm. They shall be cleared either by an attendant or upon initiation of a new play sequence and be communicated to an on-line monitoring and control system, if applicable:

a) Coin-in jam;
b) Coin-out jam;
c) Hopper empty or timed out;
d) Hopper runaway or extra coin paid out, see also 2.53 Hoppers;
e) Printer error;
f) Low RAM battery, for batteries external to the RAM itself or low power source;
g) RAM error;
h) Program error or authentication mismatch;
i) Door open (including bill acceptor);
j) Reverse coin-in (coin traveling wrong way through acceptor);
k) Meter corruption;
l) Reel spin errors, including a mis-index condition for rotating reels, that affects the outcome of the game:

i. The specific reel number shall be identified in the error code;
ii. In the final positioning of the reel, if the position error exceeds one-half of the width of the smallest symbol excluding blanks on the reel strip; and
iii. Microprocessor controlled reels shall be monitored to detect malfunctions such as a reel which is jammed, or is not spinning freely, or any attempt to manipulate their final resting position;

m) Power reset; and,
n) Currency-in jam.

NOTE: This rule also applies to: 2.38 Bill Acceptors, 2.46 Bill Acceptor Error Conditions and 2.56 Printer Error Conditions.

5.02 Error Condition Description

For games that use error codes, a description of gaming device error codes and their meanings shall be affixed inside the gaming device. This does not apply to video-based games; however, video based games shall display meaningful text as to the error conditions.

5.03 Program Interruption & Resumption

After a program interruption (e.g. power down), the software shall be able to recover to the state it was in immediately prior to the interruption occurring.

5.04 Restoring Power

If a gaming device is powered down while in an error condition, then upon restoring power, the error message shall be displayed and the gaming device shall remain locked-up. This is unless power down is used as part of the error reset procedure, or if on power

up or door closure, the gaming device checks for the error condition and detects that the error is no longer in existence.

5.04 Simultaneous Inputs

The program shall not be 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.

5.05 Resumption

On program resumption, the following procedures shall be performed as a minimum requirement:

a) Any communications to an external device shall not begin until the program resumption routine, including self-tests, is completed successfully;

b) Gaming device control programs shall test themselves for possible corruption due to failure of the program storage media. The authentication may use the checksum; however, it is preferred that the Cyclic Redundancy Check (CRC) calculations are used as a minimum (at least 16 bit). Other test methodologies shall be of a certified type; and

c) The integrity of all critical memory shall be checked.

5.06 Microprocessor Controlled Reels

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

5.07 Required Door Metering

The software shall be able to detect and meter access to the following doors or secure areas:

a) All external doors;

b) Drop box door; and

c) Bill acceptor door.

5.08 Door Open Procedures

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

5.09 Door Close Procedures

When the gaming device’s main door is closed, the game shall return to its original state and display an appropriate error message, until the next game has ended.

5.10 Test/Diagnostic Mode

If in a test mode, any test that incorporates credits entering or leaving the gaming device (e.g. a hopper test) shall be completed on resumption of normal operation. In addition, there shall not be any test mode that increments any of the electronic meters. Any credits on the gaming device that were accrued during the test mode shall be cleared before the test mode is exited. Test meters are permissible provided the meter indicates as such.

5.11 Entry To Test/Diagnostics Mode

The main cabinet door of the gaming device may automatically place the gaming device in a service or test-mode. Test/diagnostics mode may also be entered, via an appropriate instruction, from an attendant during an audit mode access. Test/diagnostics mode may also be entered, via an appropriate key.

5.12 Exiting From Test/Diagnostic Mode

When exiting from test mode, the game shall return to the original state it was in when the test mode was entered.

5.13 Test Games

If the device is in a game test mode, the machine shall clearly indicate that it is in a test mode, not normal play.

6.00 Last Game Recall

6.01 Number Of Last Plays Required.

Information on at least the last five (5) games is to be always retrievable on the operation of a suitable external key-switch, or another secure method that is not available to the player.

6.02 Last Play Information Required

Last play information shall provide all information required to fully reconstruct the last five (5) plays (minimum). All values shall be displayed, including the initial credits, bills in, tickets/vouchers in, credits bet, credits won, and credits paid. If a progressive was awarded, it is sufficient to indicate the progressive was awarded and not display the value. This information should include the final game outcome, including all player choices and bonus features. In addition, the results of double-up or gamble (if applicable).

6.03 Bonus Rounds

The five (5) game recall (minimum) shall reflect bonus rounds in their entirety. If a bonus round lasts 'x number of events', each with separate outcomes, each of the 'x events' shall be displayed with its corresponding outcome, if the outcome results in an award. The recall shall also reflect position dependent events if the outcome results in an award. For games that may have infinite free games, there shall be a minimum of fifty (50) games recalled.

7.00 Verification

7.01 Introduction

The device shall have the ability to allow for an independent integrity check of the device's software from an outside source. This must be accomplished by being able to be authenticated by a third-party device which may be embedded within the game software, or having an interface port for a third-party device to authenticate the media. This integrity check will provide a means for field-testing the software to identify and validate the program. The SLGA approved gaming laboratory shall recommend the method of integrity checking to SLGA for approval for use in Saskatchewan. Other considerations for verifying shall invoke section 7.02 Approval of this document.

7.02 Approval

Due to technological changes permitting manufacturers to take advantage of a variety of different methods of program execution and storage media, SLGA reserves the right to impose requirements for manufacturers to provide a method of verification where traditional verification methods are no longer applicable or reliable. The method of verification is subject to SLGA approval and may be confirmed through third party testing laboratory for confirmation. Designs and concepts implemented by manufacturers will be reviewed on a case by case basis where necessary.

7.03 Bonus Games/Secondary Games

In some instances where the manufacturer uses any of the methods used in the preceding sections to generate a secondary game that is in addition to the base game either within the main cabinet or attached to the gaming device, this bonus game shall be subject to ALL of the criteria outlined within these standards and are subject to the verification process identified in the 7.00 Verification of this document.

7.04 System Verification

Should a central system support the use of "on-line verification" for verifying gaming devices, the said gaming device shall support system verification and be fully compatible with the central system in this respect.

8.00 Tournament Description

8.01 Tournament

A slot tournament is an organized event that permits a player to either purchase or be awarded the opportunity to engage in competitive play against other players. Each gaming device may be equipped with a certified program which allows for tournament mode play. If tournament is an option, it shall be enabled by a switch key (reset feature) and/or total replacement of the logic board with a certified tournament board.

8.02 Tournament - Hardware

The game shall comply with the requirements set forth in 2.01 Security.

8.03 Tournament - Software

No machine, while enabled for tournament play, shall:

a) Accept coins or tokens, nor;
b) Pay out coins or tokens, but;
c) Shall utilize credit points only.
d) Tournament credits shall have no cash value.
e) These machines shall not increment any mechanical or electromechanical meters, and;
f) All machines in the tournament shall be identical.
g) The percentage requirements as addressed in 3.00 Software Requirements are waived for tournament games.

8.04 Machine Settings

All machines used in a single tournament shall utilize the same electronics and machine settings, including reel speed settings.

9.00 Definitions

Cassette – For the purposes of this document, cassette shall refer to the bill acceptor box, or receptacle. “cassette” is Casino industry term to describe this. “stacker” and “cassette” are interchangeable terms.

CD ROM – Compact disc read only memory. A compact disk that is used with a computer (rather than with an audio system); a large amount of digital information can be stored and accessed but it cannot be altered by the user.

Chi-Squared Test – A test that uses the chi-square statistic (a test statistic that is calculated as the sum of the squares of observed values minus expected values divided by the expected values) to test the fit between a theoretical frequency distribution and a frequency distribution of observed data for which each observation may fall into one of several classes.

Control program – Software that operates the gaming device’s functions.

Corrupt – Technical term to describe computer data, information or code that has be destroyed, manipulated or erroneous.

CPU – Central processing unit. The part of a computer (a microprocessor chip) that does most of the data processing; the CPU and the memory form the central part of a computer to which the peripherals are attached.

Coupons – “Coupons” or “paper tokens”, are notes approved by SLGA for use as method for players to transfer credits between gaming devices or redemption as a substitute for legal Canadian currency where the gaming device is configured to issue and accept the aforementioned coupons.

Cyclic Redundancy Check (CRC) – CRCs are similar in concept to checksums, but they use polynomial division to determine the value of the CRC, which is usually 16 or 32 bits in length.

Critical Files – Files of information or computer code that affect the play, operation or outcome of a gaming device.

Drop – Casino specific term used to identify coin, bills coupons and any other SLGA approved paper notes or tokens that are “stowed” by the gaming device.

EPROM – Erasable, programmable, read only memory. Usually in the form of a computer chip that can have information put onto but only erased if placed under ultra-violet light.

Free Games/Fever Mode – A mode which gives the player an opportunity for the following ‘X’ number of games to achieve a certain winning combination with the pay-off being some number of bonus credits.

Flag – For the purposes of this document, the term "flag" shall mean a security event or notification sent to the central system.

Flash – A form of memory for computer code that is typically non-permanent. This can be updated via communications interface.

Flashable – A description of the "style" of memory device, or a verb used to describe the method of changing or updating memory.

Gaming Device – see Section 198 of the Canadian Criminal Code. For the purposes of this document, a "gaming device" will refer to a "slot machine" unless otherwise specified.

Hashing Algorithm – Encryption is based on a hash value. This is a value that is computed from a base input number using a hashing algorithm. Essentially, the hash value is a summary of the original value. It is nearly impossible to derive the original input number without knowing the data used to create the hash value.

Hold Percentage – The percentage that represents the amount withheld by the gaming device during play. The value is calculated as follows: **100%- Payout Percentage**. Can represent either "theoretical" or "actual," depending on which type of "Payout Percentage" is used in the calculation.

Interrupt – Computer programming definition used to describe a method by which peripheral devices interacts with the processing routine of a microprocessor, or central processor.

Kolmogorov-Smirnov test – (KS-test) tries to determine if two datasets differ significantly. The KS-test has the advantage of making no assumption about the distribution of data.

Leased Game – Term used to describe a unique financial agreement between a specific gaming device manufacturer and a casino. The terms of which typically exchange "right of ownership" for revenue sharing as agreed upon by both parties (sometimes referred to as: "Participation Games").

Logic – Term used to describe any CPU board and associated circuit boards collectively that can affect the outcome of a game.

Memory – A method for a computer processor to store information to continue with its normal functions.

Message Digest – The mathematical results/signature of the hashing algorithm.

Microprocessor – An integrated circuit semiconductor chip that performs the bulk of the processing and controls the parts of a system; a microprocessor functions as the central processing unit of a microcomputer.

Multi-Denomination – Similar in concept to "tokenization." However, it is not dependent on a base value, or the intrinsic value of the coin or note inserted into the gaming device to accumulate credits. Rather, a customer can choose what base value is preferred and played based on personal choice.

Mystery Progressive – Casino term for a type of secondary prize available to players on gaming devices where each device participating in the Mystery Progressive contributes to a total prize amount. Payout of the prize IS NOT dependent on a particular winning combination of a specific gaming device that is linked to the bonus prize amount.

Non-Volatile – A term describing a storage device whose contents are preserved when its power is off. A form of memory that typically has battery back up in the event of power loss.

Payout Percentage (**Actual**) – The mathematical value correlating to total credits played vs. total credits won where winnings are divided by amount played. This relationship is expressed as: **(Credits Won + Jackpots)/Credits Played**. Referred to as "actual" because the value is representative of the actual payout percentage of the machine at the time of calculation (see "Payout Percentage (Theoretical)" for comparison).

Payout Percentage (Theoretical) – The payout percentage as calculated by a gaming device manufacturer to describe the anticipated, or expected, future payout percentage of the gaming device (sometimes referred to as: "Target Percentage").

PCB – Printed circuit board.

Permutation Tests – The tests are formed by averaging a function of estimated distribution functions that are calculated from independent sampling units.

PSD – Program storage device – a form of memory media.

Private-Key encryption – An encryption key that is known only to your computer.

Progressive – Casino term for a type of secondary prize available to players on gaming devices where each device contributes to a total prize amount on top of a base value usually initialized by a casino. Payout of the prize is dependent of a particular winning combination on a specific gaming device that is linked to the progressive.

Public-key encryption – A combination of a private key and a public key. The public key is given by your computer to any computer that wants to communicate securely with it. To decode an encrypted message, a computer must use the public key, provided by the originating computer, and its own private key.

RAM – Random Access Memory

RAM Clear – Technical term for erasing the data or information stored in RAM.

RNG – Random Number Generator. The fundamental basis for gaming device technology.

SAS – An acronym developed by International Gaming Technology used to describe a type of communications protocol.

SLGA – Saskatchewan Liquor and Gaming Authority

Seed Value – Term used to describe the start value of a progressive configuration.

Seeding – For the purpose of this document, the term "seeding" shall be used to describe the method of which random numbers are generated and used by the gaming device. "Seeding" is a technological term used to describe the placement of information.

Stacker – For the purposes of this document, stacker shall refer to the bill acceptor box, or receptacle. "Stacker" is a casino industry term to describe this. "Stacker" and "cassette" are interchangeable terms.

Touch Screen – a form of interface between a user and a computer monitor.

Tokenization – A configuration for gaming devices where the value of the coin, bill or token used on the gaming device does not correlate directly to an exact amount or face value amount that the individual coin, token, or bill is worth. An example: Nickel tokenization refers to a gaming device that will accept one quarter or token whose intrinsic value is 25 cents, but issue 5 credits available for play.

Verification – Casino specific term that describes the process of authenticating critical memory or programming.

WORM – Write Once, Read Many. A method of describing a style of memory.