

Gaming Policy and Enforcement Branch (GPEB)

Master Document and Submission Requirements

Technical Gambling Standards

Technical Standards Document (TSD) Version 2.0



Gaming Policy and Enforcement Branch

3rd Floor, 910 Government Street
P.O. Box 9202 Stn. Prov. Govt.
Victoria, British Columbia, Canada
V8W 9J1

© Gaming Policy and Enforcement Branch

All rights reserved. No part of this document may be reprinted, reproduced, stored in a retrieval system or transmitted, in any form or by any means, without prior permission in writing from the Gaming Policy and Enforcement Branch, other than for the internal business use of the British Columbia Lottery Corporation.

Revision Date: May 1, 2017.

Table of Contents

Gaming Policy and Enforcement Branch	1
Revision Date: May 1, 2017.	1
1 Overview of Document.....	4
1.1 Introduction	4
1.1.1 General Statement I.....	4
1.1.2 General Statement II.....	4
1.1.3 General Statement III.....	4
1.1.4 Accredited Testing Facility	5
1.2 Acknowledgment of Other TSDs Reviewed	5
1.2.1 General Statement.....	5
1.3 GPEB Standards	5
1.4 Legislated Acts or Regulations	5
2 Submission Requirements - General	5
2.1 Introduction	5
2.1.1 General Statement.....	5
2.1.2 Previous Submission.....	6
2.2 Machine / Hardware Submission Requirements – Prototype (Full Submission).....	6
2.2.1 General Statement.....	6
2.2.2 Submission Letter Requirements.....	6
2.2.3 Presentation of Identical Gaming Supplies to the ATF	6
2.2.4 Accompanying Documentation	6
2.2.5 Accompanying Hardware/Software.....	7
2.3 Software Submission Requirements – Prototype (Full Submission).....	7
2.3.1 General Statement.....	7
2.4 Software Programming Requirements and Compilation	7
2.4.1 General Statement.....	7
2.4.2 Source Code Commented	7
2.4.3 Source Code Completeness.....	7
2.5 Program Storage Device (PSD) Identification	8
2.5.1 General Statement.....	8
2.6 Additional Requirements	8
2.7 Submissions of Modifications (Partial Submissions) to a Previously Certified Item.....	8
2.7.1 General Statement.....	8
2.7.2 Modification of Hardware	8
2.7.3 Modification of Main Software Functions or Correction of Software Error.....	8
2.7.4 Modification to Existing or Create New System Functionality	8
2.8 System Security Submission Requirements	9
2.8.1 General Statement.....	9
2.9 Joint Venture Submissions	9
2.9.1 General Statement.....	9
2.10 Random Number Generator (RNG) Submissions	9
2.10.1 General Statement.....	9
2.10.2 RNG Analysis Overview.....	9
2.10.3 Source Code Review	9
2.10.4 Statistical Data Analysis.....	10
2.10.5 Software Verification	10
2.10.6 RNG Source Code	10
2.10.7 RNG Final Outcome Collection Tool.....	10
2.10.8 Raw Output Collection Tool	10
2.10.9 RNG Description and Documentation.....	10
2.10.10 Game Description and Documentation	11
2.10.11 Technical Source Code Description and Documentation	11
3 TGS1 – Technical Gambling Standards for Electronic Gambling Devices (EGDs) in Gambling Venues.....	12
3.1 Software Submission Requirements – Prototype (Full Submission).....	12

3.2	Software Submission Requirements - New Game Personality	12
4	TGS2 – Technical Gambling Standards for Progressive Gambling Devices in Gambling Venues.....	15
4.1	Hardware/Software Submission Requirements – Prototype (Full Submission)	15
5	TGS3 – Technical Gambling Standards for On-Line Monitoring and Control Systems (MCSs) and Validation Systems in Gambling Venues	16
5.1	Hardware/Software Submission Requirements – Prototype (Full Submission)	16
6	TGS4 – Technical Gambling Standards for Electronic Bingo Systems in Gambling Venues	17
6.1	Hardware/Software Submission Requirements – Prototype (Full Submission)	17
7	TGS5 – Technical Gambling Standards for Internet Gambling Systems (IGSs)	18
7.1	Hardware/Software Submission Requirements – Prototype (Full Submission)	18
8	TGS6 – Technical Gambling Standards for Electronic Raffle Systems.....	22
8.1	Hardware/Software Submission Requirements – Prototype (Full Submission)	22
9	TGSNE1 – Technical Gambling Standards for Non-Electronic Pull Tab (Break Open) Tickets	23
9.1	Product Submission Requirements – Prototype (Full Submission).....	23
9.1.1	General Statement	23
9.1.2	Submission Letter	23
9.2	Previous Submission	23
10	TGSNE2 - Technical Gambling Standards for Non-Electronic Scratch and Win Tickets	24
10.1	Product Submission Requirements – Prototype (Full Submission).....	24
10.1.1	General Statement	24
10.1.2	Submission Letter	24
10.2	Previous Submission	24
	Glossary of Terms	26

1 Overview of Document

1.1 Introduction

1.1.1 General Statement I

Before being permitted to operate in the live environment, all gaming supplies used in the Province of British Columbia must be tested to the applicable requirements set forth in the following Technical Standards Documents (TSDs):

- a) TGS1 – Technical Gambling Standards for Electronic Gambling Devices (EGDs) in Gambling Venues. An EGD means gaming supplies as defined in Section 1 of the Gaming Control Act of British Columbia and includes gaming supplies that are operated on or through a computer, video device or slot machine as defined in Section 198(3) of the Criminal Code of Canada.”
- b) TGS2 – Technical Gambling Standards for Progressive Gambling Devices in Gambling Venues. A Progressive Gambling Device means, “A gambling device that has an increasing jackpot, based on a function of credits that are bet. This includes games that award progressive jackpots or a ‘pool’ based on criteria other than obtaining winning symbols on the machine, such as ‘Mystery Jackpot.’ However, this does not include games that incorporate a bonus feature as part of the game theme, which offers awards that increase as the game is played and, as well, is not configurable.”
- c) TGS3 – Technical Gambling Standards for On-line Monitoring and Control Systems (MCSs) and Validation Systems in Gambling Venues. An MCS means, “A game management system that continuously monitors each EGD via a defined communication protocol by either a dedicated line, dial-up system, or other secure transmission method such as Wireless Ethernet Communications. An MCS is primarily tasked to provide logging, searching, and reporting of gambling significant events, collection of individual device financial and meter data, reconciliation of meter data against hard and soft counts, and systems security.”
- d) TGS4 – Technical Gambling Standards for Electronic Bingo Systems in Gambling Venues. An Electronic Bingo System means “A game management system that is primarily tasked to provide logging, searching, and reporting of gambling significant events, collection of financial data, and display and verification of winning cards for Bingo games, or other similar draw games.”
- e) TGS5 – Technical Gambling Standards for Internet Gambling Systems (IGSs). An IGS means “A gambling system that operates primarily using the Internet as a medium of account registration, game play, and game payout.”
- f) TGS6 - Technical Gambling Standards for Electronic Raffle Systems (ERS). An ERS means a gambling system consisting of computer software and related equipment used by raffle licensees to sell tickets, account for sales, and facilitates the drawing of tickets either manually or electronically to determine a winner.
- g) TGSNE1 – Technical Gambling Standards for Non-Electronic Pull Tab (Break Open) Tickets
- h) TGSNE2 – Technical Gambling Standards for Non-Electronic Scratch and Win Tickets

1.1.2 General Statement II

It is the policy of GPEB and BCLC, in consultation with the Province of British Columbia, to update this Master Document at minimum once annually, to reflect any changes in technology, testing methods, or known cheating methods.

Note: GPEB reserves the right to modify (or selectively apply) the requirements set forth in this Master Document as deemed necessary to ensure the integrity of gambling in the Province of British Columbia.

1.1.3 General Statement III

Throughout the course of live gambling operations, it is expected that BCLC will encounter a number of field anomalies (i.e.: gambling equipment malfunctions). GPEB recognizes that a significant majority of these malfunctions are to be expected in any gambling venue, and need not

be scrutinized by GPEB auditors. Most gambling equipment is designed to gracefully handle a wide variety of error conditions, and therefore these typical field anomalies need not be reported to GPEB.

Pursuant to Section 75 (2) (a) of the Gaming Control Act, BCLC must officially report any malfunctions that represent a direct and adverse impact on the integrity and security of gambling in the Province of British Columbia.

1.1.4 Accredited Testing Facility

- a) The British Columbia Lottery Corporation (BCLC) may select an Accredited Testing Facility (ATF), or other equivalent body, that has been accredited by and registered with the Gaming Policy and Enforcement Branch (GPEB), to perform this testing.
- b) The appointed testing body must provide their final evaluation results, reports, and any additional documentation as may be required directly to GPEB and to BCLC for review, and where required, subsequent discussion.
- c) For certainty, any ATF, or other equivalent body, that is employed to perform this testing and is approved by GPEB must essentially treat BCLC as its client, and GPEB as the regulatory authority for issuing approvals. Although the appointed testing body may recommend the approval of any gaming supplies for use in the Province of British Columbia, the ultimate authority to approve gaming supplies rests solely with GPEB. Only GPEB can issue a Certificate of Technical Integrity under Section 75 of the Gaming Control Act of British Columbia.

1.2 Acknowledgment of Other TSDs Reviewed

1.2.1 General Statement

This document has been developed by reviewing and using portions of the documents listed below:

- a) GLI (Gaming Laboratories International, LLC) GLI Standards Composite Submission Requirements – Version 1.2

1.3 GPEB Standards

This document must not contradict any provisions of the following standards:

- a) Advertising and Marketing Standards for the BC Gambling Industry, and
- b) GPEB Responsible Gambling Standards.

1.4 Legislated Acts or Regulations

This document must not contradict any provisions of the following legislation:

- a) The Criminal Code of Canada,
- b) The Gaming Control Act and Gaming Control Regulation of British Columbia, and
- c) The British Columbia Freedom of Information and Protection of Privacy Act.

2 Submission Requirements - General

2.1 Introduction

2.1.1 General Statement

This chapter shall govern the types of information that are required to be submitted by a submitting party in order to have equipment tested to one of BC's technical standards. Where the information has not been submitted, or is not otherwise in the possession of an ATF, the submitting party shall be asked to supply additional information. Failure to supply the information can result in denial of the submission and/or lead to testing delays.

2.1.2 Previous Submission

Where the testing laboratory has been previously supplied with the information on a prior submission, duplicate documentation is not required, provided that the previous information is referred to by the submitting party, and those documents are easily located by the testing laboratory. Every effort shall be made to reduce the redundancy of submission information.

2.2 Machine / Hardware Submission Requirements – Prototype (Full Submission)

2.2.1 General Statement

A Prototype (full submission) is a first-time submission of a particular piece of hardware or software that has not previously been reviewed by an ATF. For Modifications of previous submissions, including required changes to a previously submitted Prototype certification, whether certified or pending certification, see 'Submissions of Modifications (Partial Submissions) to a Previously Certified Item' Section 2.7 below. The following items shall be submitted with each Prototype (full submission):

2.2.2 Submission Letter Requirements

Each submission shall include a request letter, on company letterhead, dated within one (1) week of the date the submission is received by the ATF. The letter should include the following:

- a) A formal request for certification specifying British Columbia as the jurisdiction for which the hardware, software, or product will be approved; and
- b) The items requested for certification. In the case of software, the submitting party shall include ID numbers and version numbers, as applicable. In the case of hardware, the submitting party shall indicate the manufacturer, supplier and model number of the associated components of hardware. If the hardware has undergone any electrical and/or safety certification, such as Underwriter's Laboratory or equivalent, the submitting party shall provide supporting documentation for same; and
- c) A list, if appropriate, of all compatible and associated devices, games, components or interfaces; and
- d) If a wireless network solution is desired, then the design and scope of the wireless solution needs to be reviewed for security considerations. Upon installation at the gambling venue location, an independent network security auditing company (or qualified ATF) may be asked to review the installation and security procedures; and
- e) A contact person who will serve as the main point of contact for engineering questions raised during evaluation of the submission. This may be either the person who signed the letter or another specified contact

2.2.3 Presentation of Identical Gaming Supplies to the ATF

Each item of gaming supplies (Hardware/Software/Product) supplied by a manufacturer to the field shall be functionally identical to the specimen tested and certified. For example, hardware supplied as a certified device shall not have different internal wiring, components, firmware, circuit boards, circuit board track cuts or circuit board patch wires from the certified specimen, unless that change is also certified. See also 'Submissions of Modifications (partial submissions) to a Previously Certified Item,' Section 2.7.

2.2.4 Accompanying Documentation

All accompanying technical documents, manuals and schematics shall be submitted. In addition, the following items shall be provided:

- a) If applicable, all UL, CSA, CE, AS3100, etc. or equivalent certification, see also 'Machine and Player Safety' Section 3.3 in TGS1- Technical Gambling Standards for Electronic Gambling Devices (EGDs) in Gambling Venues. This certification information may be supplied at a later date if unavailable, concurrent with testing by the ATF;
- b) Any other proprietary equipment that may be used in the field in conjunction with the

Submission, if necessary to test the requirements set forth;

- c) Accompanying or associated software, see also 'Software Submission Requirements', Section 2.3 in this document;

2.2.5 Accompanying Hardware/Software

If the submitting party has specialized equipment and/or software which is needed by the ATF to test the submitted system, then the following items shall be provided:

- a) Specialized equipment and/or software and all appropriate operation manuals for the equipment;
- b) Any other equipment that may be used in the field in conjunction with the submission;

NOTE: Commercially available products are not required for submission unless omission will impact testing and proper operation of the system.

2.3 Software Submission Requirements – Prototype (Full Submission)

2.3.1 General Statement

Where an ATF has already tested a software component, resubmission may not be necessary. Additional submission requirements may be required that are specific to the technical standard that a device or devices are being tested against and can be found in sections 3 through 10 of this document. Generally, each submission of software shall contain the following:

- a) Two sets of all EPROMs, CD-ROMs, or other program storage media which contain identical contents. Where applicable, this includes:
 - i. All program executables,
 - ii. System component firmware, bin files, etc.
 - iii. All video, sound, printer, touchscreen, bill validator, NV memory clear and game software,
- b) All user manuals in electronic format to include a general overview of the system from a component level, describing how the software and hardware are setup and integrated, and system block diagrams and flow charts for the communication program, if required.
- c) Source Code, a Link Map and Symbol Table for all primary software executables. In addition, if requested, an explanation of all Non-Volatile (NV) memory stored on any system device with the NV memory locations described;
- d) NV memory clear procedures;
- e) Program block diagrams and flow charts for the game program, game device, or communication program, if applicable;

2.4 Software Programming Requirements and Compilation

2.4.1 General Statement

The following items shall appear in all source code or related modules:

- a) Module Name;
- b) Brief description of module function; and
- c) Edit History, including who modified it, when and why.

2.4.2 Source Code Commented

All source code submitted shall be commented in an informative and useful manner.

2.4.3 Source Code Completeness

All source code submitted shall be correct, complete and able to be compiled. The result of the compiled object code shall be identical to that in the storage medium submitted for evaluation.

NOTE: The addition of 'Date' and 'Time' stamps may cause additional differences in a compiled version. It is the manufacturer's responsibility to provide the ATF with a method to compensate for, or resolve, these differences.

2.5 Program Storage Device (PSD) Identification

2.5.1 General Statement

A PSD shall be clearly labeled with sufficient information to identify the software and revision level of the information stored in the device. Each PSD shall be uniquely identified, as applicable, by the following information:

- a) Program ID number;
- b) Manufacturer identification;
- c) Version number, if applicable; and
- d) Location of installation if there are multiple locations possible.

NOTE: For EEPROM based games, the identification label shall be placed over the UV window to avoid erasing or alteration of the program.

2.6 Additional Requirements

For additional submission requirements specific to a game, device, or system, please see the appropriate listing under the technical standards in Sections 3 through 10 of this document.

2.7 Submissions of Modifications (Partial Submissions) to a Previously Certified Item

2.7.1 General Statement

For any updated submission (e.g., a revision to existing hardware or software that is currently under review, certified or has been reviewed and not certified), the following information shall be required to process the submission in addition to the requirements set forth in 'Submission Letter', Section 2.2.2. All modifications require re-testing, examination, and re-certification by an ATF.

2.7.2 Modification of Hardware

Each hardware submission shall:

- a) Identify the individual items being submitted (including part number);
- b) Supply a complete set of schematics, diagrams, data sheets, etc. describing the modification along with the reason for the change(s); and
- c) Provide the updated or new device, a description and the method of connection to the original gambling device or hardware.

2.7.3 Modification of Main Software Functions or Correction of Software Error

The submitter should use the same requirements as in the 'Software Submission Requirements – Prototype (Full Submission) Certification' section listed above, except where the documentation has not changed. In this case, a resubmission of identical documents is not required. However, the submission must include a description of the software change(s), modules affected, and new source code for the entire program. Source code is required for the entire program to allow for its verification.

2.7.4 Modification to Existing or Create New System Functionality

For a system specific submission (e.g., new workstation software), the following information may be required to process the submission:

- a) If new, a complete description of the function, including amendment manual and user documents, and new source code if applicable; and
- b) If modifying, the submission must include a description of the software change(s), modules affected and new source code, if applicable.

2.8 System Security Submission Requirements

2.8.1 General Statement

Where a system requires the use of defined user roles with associated passwords or pin numbers, a default list of all users and passwords or pin numbers must be submitted including a method to access the database.

2.9 Joint Venture Submissions

2.9.1 General Statement

A gambling device is considered a joint venture when two or more companies are involved in the manufacturing of one system/platform. Due to the increasing amount of joint venture submissions and to alleviate any confusion to the suppliers the following procedures must be followed for such submissions (pending approval by GPEB).

- a) One company will prepare and submit the entire submission, even if they are using parts from other suppliers, and must identify the part numbers of all components. This company will be the primary contact for the submission.
- b) The company submitting an approval request should do so on their letterhead.
- c) The primary contact will be called when questions arise. However, the ATF will work with all parties involved in order to complete the review.
- d) Upon completion, it is the primary contact company that will receive the approval letter, provided the submission meets the jurisdictional requirements. The primary contact company may then release copies of the approval letter to any associated manufacturer(s).

2.10 Random Number Generator (RNG) Submissions

2.10.1 General Statement

The Random Number Generator (RNG) is an integral part of gambling device software and other game related systems/platforms. The RNG must be carefully tested to ensure that it will meet the applicable technical standards defined where required in each technical standard. ATF's have developed methods necessary to test that an RNG and its associated logic to ensure it is suitable for its intended usage in the desired market. In order to analyze the RNG utilized by gambling device software in an accurate, efficient, and timely manner, GPEB requests that the manufacturer read the overview below to understand the submission

In some cases, the RNG shall be submitted with the prototype (full submission) request. An RNG shall be submitted for certification where:

- a) The RNG code has changed or the RNG implementation has changed; or
- b) Where a previously certified RNG is being implemented on a new hardware platform (i.e. change of microprocessor); or
- c) Where a previously certified RNG is generating numbers that are outside the range of numbers previously tested; or
- d) The RNG has never been certified before under this standard. In this case, the RNG will be certified as a part of the overall submission.

2.10.2 RNG Analysis Overview

The RNG analysis contains three primary items: source code review, statistical data analysis, and software verification. The conclusion contained within the final ATF report will be based off the results of testing conducted within the source code review and the statistical data analysis. The conclusion will only be applicable to the RNG that is identified through software verification. If this identification changes, then the conclusion will no longer be applicable unless the reasons for the changes are also examined by the ATF.

2.10.3 Source Code Review

An ATF will review the code associated with generating random numbers utilized in game play. The RNG and associated logic must be understood so that potential weaknesses may be addressed. In order to perform this area of testing, an ATF requires submission of the final source code package associated with the RNG and game software. In the case that a test application is created to pull data from the RNG, the source code for the test application must also be provided such that the ATF can confirm that it generates data in the same manner as the production software.

2.10.4 Statistical Data Analysis

An ATF will apply a battery of statistical tests to the data generated by the RNG. The data must be collected using methods that are as close as possible to those used when generating outcomes for game play in the field. If a hardware RNG is utilized in the field, it must also be utilized in data collection. Depending on testing scope, the ATF may also collect binary data from the RNG that is not formatted for a specific game and apply a specific analysis adapted for that type of data.

2.10.5 Software Verification

For the final report, the ATF will need to be able to uniquely identify the RNG that was tested. This means that the ATF will record the key files and their respective checksums (SHA1, MD5, or SHA256) in the report.

- a) A verification method will need to be developed based upon the manufacturer's RNG implementation and system architecture.
- b) The ATF can begin source code review after a local copy of the source code for the field application and test application are submitted.
- c) In order to begin data analysis, the ATF will need to have a clear understanding of all the calls made to the RNG and the specific parameters used by the game(s). The data sets will be based off of these calls. To provide efficient pricing and turnaround time for RNG evaluations, the ATF may prefer to review the source code first to confirm that everything is in order before the data is collected and analyzed.
- d) Software verification will become clearer during source code review.

2.10.6 RNG Source Code

Source code shall be final and no longer in testing or development stages. Source code shall be delivered in full along with the compiled binaries. Source code will be compiled by the ATF and digital signatures will be taken during compile to ensure that the product being tested is the final release version that will be implemented in the field.

2.10.7 RNG Final Outcome Collection Tool

A data collection tool along with source code shall be available to allow the ATF to collect data in a manner similar to the manner in which game data is produced in the final release version of the production application. This tool must utilize the same RNG and associated methods that are used to generate game outcomes. The tool shall allow the user to specify, at a minimum, the following input: number of draws/games. The collection tool shall output data in a computer-parsable format.

Note: the ATF's data collection requirements are large. Please expect that the ATF may require hundreds of millions of draws, depending on game format. In most cases, the larger the game range, the larger the number of draws required. Depending on the implementation, data may be collected in hours, days, weeks, or months.

2.10.8 Raw Output Collection Tool

If required by scope of work, a binary data collection tool shall be available to allow the ATF to collect output from the RNG prior to scaling, shuffling, etc. The data collection should be capable of generating approximately 96 million bits of data written in binary format. Alternatively, the tool may output raw data (un-scaled) in ASCII format.

2.10.9 RNG Description and Documentation

A technical description of the RNG shall be submitted. This may include appropriate documents detailing the RNG design and construction, as well as details related to methods that manipulate the RNG output (i.e., algorithms related to scaling, shuffling, selection, etc.).

2.10.10 Game Description and Documentation

A document explaining the game rules, including help screens, pay tables, etc. shall be submitted.

2.10.11 Technical Source Code Description and Documentation

A document explaining the source code shall be submitted. This document shall have sufficient documentation of the files and methods used so that one can follow the source code logic from the instantiation of the RNG to the generation of final outcome data.

3 TGS1 – Technical Gambling Standards for Electronic Gambling Devices (EGDs) in Gambling Venues

3.1 Software Submission Requirements – Prototype (Full Submission)

3.1.1 General Statement

In addition to the general submission requirements that are detailed in **Section 2, Submission Requirements** and applicable to all technical standards, the following submission requirements apply uniquely to TGS1 - Technical Gambling Standards for Electronic Gambling Devices (EGDs) in Gambling Venues. Each submission of software shall contain the following:

- a) Percentage calculation sheets (i.e., PAR sheets);
- b) A written Statement of Verification that a previously certified Random Number Generator is used within the submitted software;
- c) A legible, color copy or digital image of the artwork (if applicable).
- d) A manual explaining all diagnostic tests, meters, game configurations, error conditions and how to clear them;
- e) For all software involved in the control of critical gambling functions, provide an assembler, linker, formatter, or other computing utility as is necessary to compile the gambling software from the source code supplied. This requirement may be waived where program code is written in machine code and the listing file (showing the assembled and linked code) is provided. If a non-PC-based platform development system is used, the manufacturer shall supply the ATF with the necessary computer equipment and software necessary to compile and verify the final executable program. Any alternative to compilation by the ATF (e.g., witnessing source code compilation) must be discussed prior to submission;
- f) The manufacturer shall supply the ATF with all critical memory allocation addresses including how critical memory is checked and when it is checked; and
- g) The manufacturer shall supply the ATF the ability to download NV memory in order to review the NV memory data contents for cases where a forensic investigation is required. In addition, the manufacturer shall supply a method, which will allow the ATF to upload a copy of the NV memory to another logic board populated with identical control program components. Upon the completion of this procedure, the new logic board should allow the gambling device to reproduce the last known game state that was present on the forensic logic board.

NOTE: In some cases, the ATF may have the wording on the artwork or game graphics translated to the English language, or have the manufacturer supply an independent translation;

3.2 Software Submission Requirements - New Game Personality

3.2.1 General Statement

For a game-specific submission (e.g., a new game or a new game personality), the following information is required to process the submission:

- a) A complete description of the game, including documents that individually or collectively indicate the following:
 - i. For Reel Games:
 - The number of reels;
 - The number of lines and description of each line;
 - The maximum credits per line;
 - All artwork which shows any game rules or payable information;
 - A list of each winning combination along with the pay amount and hits for each prize;
 - A listing of the logical reel strips, indicating the exact symbols' sequence, if applicable;
 - A listing of the physical reel strips, or the method of implementation used to obtain the virtual reel strips, as applicable;
 - A summary of each symbol's frequency, if applicable;
 - A table to cross-reference each symbol type against the abbreviation, if

- abbreviations are used;
 - For games that use technologies other than physical mapping or virtual reel mapping, a detailed description of the relationship and steps between the time the RNG value is determined and the symbol is selected and the relative odds of each symbol being selected via the method;
 - The denomination(s); and
 - The minimum and maximum bet.
- ii. For Blackjack Games:
- Dealer rules;
 - Double-down rules;
 - Pair-splitting rules.
 - Insurance/surrender rules;
 - Existence of any side bets;
 - All artwork which shows any game rules or pay information;
 - A list of pays for each type of win;
 - Number of decks;
 - The denomination(s); and
 - The minimum and maximum bet.
- iii. Poker Games:
- Poker style (e.g., Draw, Stud, etc.);
 - Special rules (e.g., Wild Cards, etc.);
 - Strategy for auto-hold, if allowed (indicate if auto-hold satisfies an optimal strategy, versus satisfying minimum RTP only);
 - Existence of any side bets;
 - Any mathematical work indicating the payback return when using optimum play strategy, if applicable;
 - All artwork which shows any game rules or pay information;
 - A list of pays for each type of win;
 - The denomination(s); and
 - The minimum and maximum bet.
- iv. Keno/Bingo Games:
- Number of balls/spots that can be selected;
 - Number of balls drawn;
 - Special rules (e.g., Wild Cards, etc.);
 - All artwork which shows any game rules or pay information;
 - A list of pays for each type of win;
 - The denomination(s); and
 - The minimum and maximum bet.
- v. Craps Games:
- Odds for each spot;
 - Number of player stations utilized with the game;
 - All artwork which shows any game rules or pay information;
 - A list of pays for each type of win;
 - Time frame (if any) for betting; and
 - The minimum and maximum bet.
- vi. Roulette Games:
- Number of spots (use of '00' or not);
 - Number of player stations utilized with the game;
 - All artwork which shows any game rules or pay information;
 - A list of pays for each type of win;
 - Time frame (if any) for betting; and
 - The minimum and maximum bet.
- vii. Games with Skill:
- Description of skill element(s) and how they impact return percentage for the game;
 - Description of Player vs. Player Advantage features, if applicable;

- Description of Virtual Opponents, if supported;
 - Description of Player Advice features, if applicable;
 - Description of any “discovery features”, if supported;
 - Supporting information related to any “knowledge store” database used by the game design, for example, a trivia database;
 - Information on any special log files or metering that is supported, as applicable; if available, actual game return statistics from simulations or field trials of the game;
 - Assumed player strategy used for theoretical hold calculations and related details for same; and
 - If available, simulators or bots that may be used to facilitate mechanized testing or any other specialized tools that may facilitate testing and analysis by the ATF.
- viii. Virtual Event Wagering:
- Details of all virtual event wagering types to be provided including descriptions of the virtual events and wager types;
 - Copies of all proposed rules, including all prize tables or other such parameters, for each virtual event wagering type;
 - A description of how virtual event wagers are settled; and
 - A description of the in-play wagering process, if applicable, including selection of events, information offered to players in advance, dedicated technology, etc.

3.2.2 Additional Test Hardware

If requested, extension cables for door photo-optic detectors and any other hardware should be provided, so that the machine may be tested with doors open. In addition, where a processor board is oriented in a machine in such a way that it would be difficult to install a plug and/or cable for an emulator, extension cables should be provided to allow the board to be accessed or relocated. The use of such extension cables shall not adversely affect the machine's operation.

3.2.3 Calculation Sheets

For each game submitted, the manufacturer shall supply the calculation sheets (i.e., PAR sheets) that determine the theoretical return to the player (including the base game, double-up options, free games, bonus features, etc.).

3.2.4 Player Options

Where different player options (e.g., number of credits bet) result in variations to the payable, a separate calculation for each option is required.

4 TGS2 – Technical Gambling Standards for Progressive Gambling Devices in Gambling Venues

4.1 Hardware/Software Submission Requirements – Prototype (Full Submission)

4.1.1 General Statement

In addition to the general submission requirements that are detailed in **Section 2, Submission Requirements** and applicable to all technical standards, the following submission requirements apply uniquely to TGS2 - Technical Gambling Standards for Progressive Gambling Devices in Gambling Venues. Each submission of software shall contain the following:

4.1.2 Progressive Hardware.

Each submission shall include and identify the individual items (including part number) being submitted and be accompanied by schematics, operational and/or service manuals for each component along with the following:

- a) The Progressive Controller. The documentation accompanying the controller shall include the following:
 - i. The type of Progressive it controls (Stand-Alone, Linked, Multi-Site) and how to configure for each type;
 - ii. A description of how the controller board communicates with the game and provide the communications protocol;
 - iii. A description of the location of the controller and the housing unit;
 - iv. A description of how the jackpot value is displayed;
 - v. A listing of error conditions and tilts the controller supports;
 - vi. The number of displays which the controller can support; and
 - vii. A description of the events which occur when a jackpot is won.
- b) The Progressive Display and all accompanying schematics, operational, and/or service manuals. The documentation accompanying the display shall explain how the display drivers are interfaced to the controller and how the controller is interfaced to a gambling device. If the controller is provided for multi-tier jackpots, indicate the operation in this respect.

4.1.3 Progressive Software

Each submission shall include all software that controls each component of the Progressive system. In addition, all accompanying schematics, operational, and/or service manuals shall be submitted. The documentation accompanying the software shall include and describe the programming procedures for:

- a) Two copies of all software needed to run the system and the source code, a link map, and symbol table for each program;
- b) A general overview of the system, describing how the software and hardware are integrated, if requested;
- c) Program block diagrams and flow charts for the progressive system, if requested;
- d) All progressive jackpot features;
- e) The number of levels of progressive jackpots;
- f) The types of systems it is capable of handling (Stand-Alone, Linked, Mystery, Multi-site, Random, Mystery, etc.);
- g) The rules for winning each progressive jackpot;
- h) Each progressive parameter and description (max values, increment rates, etc.); and
- i) The NV Memory clear method.

NOTE: In some cases, the ATF may have the wording on the progressive display translated to the English language or have the manufacturer supply an independent translation.

NOTE: The source code may be reviewed, compiled and studied, either at the laboratory or at the

supplier's place of business, as determined by the laboratory.

5 TGS3 – Technical Gambling Standards for On-Line Monitoring and Control Systems (MCSs) and Validation Systems in Gambling Venues

5.1 Hardware/Software Submission Requirements – Prototype (Full Submission)

5.1.1 General Statement

In addition to the general submission requirements that are detailed in **Section 2, Submission Requirements** and applicable to all technical standards, the following submission requirements apply uniquely to TGS3 – Technical Gambling Standards for On-Line Monitoring and Control Systems (MCSs) and Validation Systems in Gambling Venues

5.1.2 MCS and Validation Systems Hardware

Each submission of hardware shall contain the following:

- a) Server, Database, Front End Controller, Data Collector and Ancillary Stations to include but not limited to: Jackpot/Fill functionality; Surveillance/Security monitor functionality; Gambling Device Management functionality; and Accounting/Reporting Functionality;
- b) Monitors, keyboards, mouse, printers, etc., to support the items listed above;
- c) Minimum of seven interface element devices with corresponding power connectors (if separate from harness), keypads, and displays;
- d) Minimum of one wiring harness for each Gambling Device type desired for operational approval with system where specific harnessing is required;
- e) Minimum of two of each type magnetic cards (or equivalent if an alternative media is used) used in the system, if applicable;
- f) Network cabling, hubs, switches and any wireless components that may be installed at a property; and
- g) Un-interruptible Power Supply (UPS) for critical components.

NOTE: In an effort to reduce system submission size, monitor and data switches may be used. Additionally, separate software may be housed in the same unit, as long as the functionality is not impaired and the software is identical to the field version.

5.1.3 MCS and Validation Systems Software

Each submission of software shall contain the following:

- a) If not included in the user manuals, a connectivity manual for all unique electronic gambling devices capable of being interfaced with the system, to include device model numbers and compatibility list, if applicable; wiring diagrams depicting connection points to devices, power, etc.; and identification by part number or some other scheme, any unique wiring harnesses, ancillary boards required for communication of a particular device;
- b) If not included in the user manuals, provide example reports for each standard report capable of being generated on the system with a formula summary detailing all reporting calculations including data types involved, mathematical operations performed, and field limit;
- c) If not included in the user manuals, a list of all supported communication protocols specifying version, if applicable;
- d) If utilizing a software verification algorithm, provide a description of the algorithm, theoretical basis of the algorithm, results of any analyses or tests to demonstrate that the algorithm is suitable for the intended application, rules for selection of algorithm coefficients or "seeds", and means of setting the algorithm coefficients or "seeds;" and
- e) If completed by the manufacturer provide a system test plan and results to detail electronic gambling devices and software versions tested with.

6 TGS4 – Technical Gambling Standards for Electronic Bingo Systems in Gambling Venues

6.1 Hardware/Software Submission Requirements – Prototype (Full Submission)

6.1.1 General Statement

In addition to the general submission requirements that are detailed in **Section 2, Submission Requirements** and applicable to all technical standards, the following submission requirements apply uniquely to TGS4 - Technical Gambling Standards for Electronic Bingo Systems in Gambling Venues.

6.1.2 Electronic Bingo Hardware

Each submission of hardware shall contain the following:

- a) Server, Database, Front End Controller, and Ancillary Stations to include but not limited to: Cashier Station functionality; Callers Desk/Ball Draw functionality; System Configuration Parameters functionality; and Accounting/Reporting Functionality;
- b) Monitors, keyboards, mouse, printers, etc., to support the items listed above;
- c) A supply of card faces to facilitate testing; and
- d) Un-interruptible Power Supply (UPS) for critical components.

6.1.3 Electronic Bingo Software

- a) If not included in the user manuals, a connectivity manual for all unique electronic gambling devices capable of being interfaced with the system to include device model numbers and compatibility list, if applicable; wiring diagrams depicting connection points to devices, power, etc.; and identification by part number or some other scheme, any unique wiring harnesses, ancillary boards required for communication of a particular device;
- b) If not included in the user manuals, provide example reports for each standard report capable of being generated on the system with a formula summary detailing all reporting calculations including data types involved, mathematical operations performed, and field limit;
- c) If not included in the user manuals, a list of all supported communication protocols specifying version, if applicable;
- d) If utilizing a software verification algorithm provide a description of the algorithm, theoretical basis of the algorithm, results of any analyses or tests to demonstrate that the algorithm is suitable or the intended application, rules for selection of algorithm coefficients or "seeds", and means of setting the algorithm coefficients or "seeds;"

7 TGS5 – Technical Gambling Standards for Internet Gambling Systems (IGSs)

7.1 Hardware/Software Submission Requirements – Prototype (Full Submission)

7.1.1 General Statement

In addition to the general submission requirements that are detailed in **Section 2, Submission Requirements** and applicable to all technical standards, the following submission requirements apply uniquely to TGS5 – Technical Gambling Standards for Internet Gambling Systems (IGSs)

7.1.2 Test Environment – Supervised Build and Install

Before commencing testing, the ATF will supervise the build / compilation of the source code into software. In this context, “supervise” means that a consultant from the ATF must be present, in person, or via a remote connection while the source code is being built / compiled.

- a) The control-version(s) of the software, created as a result of the supervised build / compilation, must then be installed onto a suitable test environment. The ATF and the software supplier must ensure that the software which is installed is the same version as was built / compiled under the ATF’s supervision. Particular attention will be given to any configuration performed to the test environment to accommodate the software that has been installed. The ATF must obtain a copy of any necessary configuration files.
- b) Where an IGS requires the use of accounts with associated passwords or PIN numbers to remotely access the games, a sufficient number of user accounts and passwords or PIN numbers must be submitted including a method to access the test environment.

7.1.3 IGS Platform Submission Requirements

The IGS Platform includes the IGS components which provide features common to all of the games, including game configuration, logging, communications, and reporting functions. The IGS provides the operator with the means to review player accounts, enable / disable games, generate various gambling / financial transaction and account reports, input game outcomes for sports betting events, enable / disable player accounts, and set any configurable parameter. In addition, the following documentation must be submitted for the IGS evaluation:

- a) Details of the physical location of each component of the IGS Platform;
- b) A list of all games hosted / offered on the IGS;
- c) An all-inclusive functional description of the IGS (including the gambling website home page and all gambling website peripheral pages), to include a general overview of the IGS from a component level, software and hardware setup and integration, and IGS block diagrams and flow charts for the communication program;
- d) Detailed functional descriptions of the following technical functionality available on the IGS:
 - i. Logging Capability,
 - ii. Communications Capability, including supported communication protocols,
 - iii. Operator Interface to Player Accounting,
 - iv. IGS Accounting and Financial Reporting Capabilities,
 - v. IGS Payment Systems & Financial Institution Interfacing, and
 - vi. Geolocation & Player Identity Verification Software.
- e) Details of each class of account required to operate the IGS in a production environment (e.g. System Administrator, Operator, Hotline, Network support), including the privileges required to perform the duties associated with that account;
- f) Copies of all standard reports produced by the IGS and a description of how these are generated, including details of any reconciliation reports; and
- g) If not included in the user manuals, concise instructions for the configuration of all applicable parameters of bonus activity.

7.1.4 Player Registration and Account Management Submission Requirements

Player Registration and Account Management includes the components of the IGS which form

the primary interface for the player. The Player Registration and Account Management interface provides the player with the means to register an account, log in / out of their account, modify their account information, deposit and withdraw funds to / from their account, request account activity statements / reports, and close their account. In addition, any web pages displayed to the player which relate to gambling, but which are not an actual game screen, are considered to be part of the Player Registration and Account Management components. In addition, the following documentation must be submitted:

- a) Detailed functional description of the Player Registration and Account Management components (including the gambling website home page and all gambling website peripheral pages);
- b) Detailed descriptions of the following technical functionality available on the IGS:
 - i. Player Account Registration,
 - ii. Player Account Login (Username & Password),
 - iii. Player Interface to Player Account,
 - iv. Responsible Gambling Features,
 - v. Privacy Policy, and
 - vi. Player Account Deactivation.
- c) Detailed description of how player verification information is protected from unauthorized access;
- d) Detailed description of player authentication (i.e. how registered player identify themselves to the IGS each time they connect);
- e) Description of how player registration and account information (including credit card information) is to be protected from unauthorized access;
- f) Description of the register of unclaimed prize monies and how it is maintained; and
- g) Description of the treatment of revenue from expired, unclaimed wins.

7.1.5 Game Requirements Submission

Game refers to IGS software which is specific to each individual game that is hosted / offered on the IGS. Each game is to be treated as a separate and distinct entity. Any information and materials required to be submitted with respect to the games must be submitted for each individual game hosted / offered on the IGS. In addition, the following additional documentation must be submitted for each individual game hosted / offered on the IGS:

- a) Details of the game information recorded on the IGS backend;
- b) Details of how end player devices are polled to implement timeouts and player protection features, if applicable; and
- c) Where the evaluation involves event-based wagering, the following submission materials will be required:
 - i. Details of all event-based wagering types to be provided including descriptions of the events and bet types.
 - ii. Copies of all proposed rules, including all prize tables or other such parameters, for each event wagering type.
 - iii. A description of the commission structure.
 - iv. A description of how the operator obtains and publishes reliable official results for wagering events.
 - v. A description of links to any external computer systems participating in the event wagering.
 - vi. A description of how wagers are settled.
 - vii. A description of the in-running betting process, if applicable, including selection of events, information offered to players in advance, dedicated technology, etc.

7.1.6 Information Systems Security (ISS) Requirements Submission

"ISS" refers to the physical, environmental, administrative and technical features implemented to maintain the security and integrity of the gambling environment. The following documentation must be submitted for an ISS evaluation:

- a) A copy of the Information Security Policy, including:
 - i. Details of the physical security processes implemented to protect the production gambling environment;

-
- ii. Details of where and how each category of information (e.g. critical, important, not important) is stored in the IGS, and the risk assessment and protection measures implemented for each category of information;
 - iii. Details of the password protection systems and associated algorithms utilized by the IGS;
 - iv. Details of the method of transaction logging used;
 - v. Details of how self-monitoring is implemented;
 - vi. Details of the encryption methods used for the secure storage of critical information;
 - vii. Controls to prevent unauthorized use of operator consoles or accounts, and for the prevention of unauthorized access to information which may aid unauthorized access to the operator consoles or accounts (such as usernames, IP addresses or passwords);
 - viii. Details of the incident management system implemented by the operator;
 - ix. Details of the disaster recovery plan implemented by the operator;
 - x. Details of audit reports available from the IGS; and
 - xi. Reports showing how often the Information Security Policy is reviewed.
- b) A general overview of the IGS design;
- c) Details and functional specifications of all IGS components in the production environment including, but not limited to:
- i. Platform Hardware, such as:
 - Servers,
 - Firewalls and Intrusion Detection Systems,
 - Operator Consoles (local and remote),
 - Gateways and Access Points,
 - Remote Controllers,
 - Remote Access Servers,
 - Multiplexing Equipment,
 - Switching Equipment,
 - Monitoring Equipment,
 - Hubs, Switches and Routers, and
 - Repeaters.
 - ii. Operating Systems,
 - iii. Applications,
 - iv. Audit Subsystems, including any built-in functionality of the operating systems and applications used for audit purposes,
 - v. Duplication Strategy,
 - vi. Disk Subsystem, and
 - vii. Back-up facilities.
- d) A network architecture diagram, including the following:
- i. Network topology,
 - ii. Devices used to create the network,
 - iii. Internal and external IP addresses for all devices,
 - iv. Controls to prevent unauthorized modification to device configurations,
 - v. Local Area Network (LAN) and Virtual Local Area Network (VLAN) design, including all functional subnets and firewalls,
 - vi. Details of the IGS connections to the Internet, and
 - vii. Details of any remote connections (e.g. Internet, wide area network, dial-up) used to support IGS operations.
- e) A list of all non-production systems (e.g. MIS) and third party systems that will connect to the IGS. For each external system provide:
- i. The connection method (e.g. dial-up, X.25, leased line, Internet).
 - ii. Details of the information to be transferred in each direction.
 - iii. The entity that initiates the information transfer.
 - iv. The protocol used to perform the transfer.
 - v. Controls to prevent access to other information on the IGS.
 - vi. Controls to prevent unauthorized use of the connection.
 - vii. Controls to prevent eavesdropping on communications between non-production

- systems and the IGS.
- f) Details of any Network Management system associated with the internal production network, including:
- i. Physical location of the Network Management system.
 - ii. Class of personnel authorized to use Network Management system.
 - iii. Locations from where network management functions can be executed.
 - iv. Network management protocol.
 - v. The devices to be managed on a read only basis.
 - vi. The devices to be managed on a read/write basis.
 - vii. Controls to prevent unauthorized access to network management functions.
 - viii. Controls to audit the use of network management functions.
 - ix. Controls to detect unauthorized connections to the network.
 - x. Controls to detect connection of unauthorized equipment to the network.
 - xi. Describe the locations and physical and logical security arrangements associated with secondary DNS servers.
- g) For the data encryption and communications between the IGS and the end player device, the following information must be supplied:
- i. Details of the message authentication algorithm used:
 - Description of the algorithm,
 - Theoretical basis of the algorithm,
 - Results of any analyses or tests to demonstrate that the algorithm is suitable for the intended application,
 - Rules for the selection of keys,
 - Rules for changing keys,
 - Means of generating and protecting keys.
 - ii. Details of the encryption to be used during game play, including:
 - Encryption algorithm,
 - Size of encryption keys,
 - Key generation process,
 - Key storage process,
 - Key exchange procedure at session start-up,
 - Subsequent key exchanges,
 - Key revocation process in the event keys are compromised, and
 - Details of any information that is not encrypted for transmission.

8 TGS6 – Technical Gambling Standards for Electronic Raffle Systems

8.1 Hardware/Software Submission Requirements – Prototype (Full Submission)

8.1.1 General Statement

In addition to the general submission requirements that are detailed in **Section 2, Submission Requirements** and applicable to all technical standards, the following submission requirements apply uniquely to TGS6 – Technical Gambling Standards for Electronic Raffle Systems

8.1.2 Electronic Raffle Hardware

Each submission of hardware shall contain the following:

- a) Server, Associated Database(s), Front End Controller, Data Collector and Ancillary Stations to include but not limited to: System Configuration Parameters functionality; Surveillance/Security monitor functionality; Raffle Sales Unit Management functionality; and Accounting/Reporting Functionality; Raffle Configuration Management functionality;
- b) Monitors, keyboards, mouse, printers, etc., to support the items listed above;
- c) A supply of preprinted tickets or blank raffle ticket stock to facilitate testing; and
- d) Minimum of seven interface element devices with corresponding power connectors (if separate from harness), keypads, and displays;
- e) Minimum of one wiring harness for each component type desired for operational approval with system where specific harnessing is required;
- f) Minimum of two of each type magnetic cards (or equivalent if an alternative media is used) used in the system, if applicable;
- g) Network cabling, hubs, switches and any wireless components that may be installed at a casino property; and
- h) Un-interruptible Power Supply (UPS) for critical components.
- i) If not included in the user manuals, a connectivity manual for all unique electronic components capable of being interfaced with system to include device model numbers and compatibility list, if applicable; wiring diagrams depicting connection points to devices, power, etc.; and identification by part number or some other scheme, any unique wiring harnesses, ancillary boards required for communication of a particular device.

8.1.3 RNG Submission Requirements

For Submissions related to electronic Raffle Systems that utilize a Random Number Generator (RNG), please refer to Section 2.10 of this document.

9 TGSNE1 – Technical Gambling Standards for Non-Electronic Pull Tab (Break Open) Tickets

9.1 Product Submission Requirements – Prototype (Full Submission)

9.1.1 General Statement

This section shall govern the type of information that is, or may be required to be submitted by the submitting party in order to have Pull Tab (Break Open) Tickets tested to TGSNE1 – Technical Gambling Standards for Non-Electronic Pull Tab (Break Open) Tickets. Where the information has not been submitted or is not otherwise in the possession of BCLC, GPEB and/or the ATF, the submitting party shall be asked to supply additional information. Failure to supply the information may result in denial in whole or in part of the submission and/or lead to testing delays.

9.1.2 Submission Letter

Each request for certification shall include a submission letter/email on company letterhead forwarded to GPEB or BCLC. The letter/email should include the following:

- a) A formal request for certification specifying British Columbia as the jurisdiction for which the Pull Tab (Break Open) Ticket will be approved;
- b) The Pull Tab (Break Open) Ticket requested for certification including the game name, game serial number, and any other information that uniquely identifies the game; and
- c) A contact person who will serve as the main point of contact for questions raised during evaluation of the submission. This may be either the person who signed the letter or another specified contact.

9.1.3 Submission of Other Materials and/or Documentation

Each submission shall also include the following additional materials and/or documentation:

- a) Detailed Game Specifications including (but not limited to);
 - i. Colour Print (Front/Insides/Back);
 - ii. Front/Inside Colour Key;
 - iii. Rules of play, game format and restrictions;
 - iv. Payout Structure.

On completion of the production print run the following will be supplied and will form part of the submission:

- a) Manufacturers Lab Report;
- b) Manufacturers Security Test Report;
- c) Sample Units of the production run. The quantity to be determined and specified by BCLC in consultation with GPEB.

9.2 Previous Submission

Where BCLC, GPEB and/or the ATF have been previously supplied with the information on a previous submission, duplicate documentation is NOT required, provided that the previous information is referred to by the submitting party, and those documents are easily located at BCLC's facilities, GPEB's facilities and/or the ATF's facilities. Every effort shall be made to reduce the redundancy of submission information

9.2.1 Print Re-Orders

Where a Pull Tab (Break Open) game has previously been certified for use in the Province of British Columbia, a print re-order will be exempted from the requirement of a full submission if the conditions set out in Section 2.1.2 of this document have been met and:

- a) There have been no changes or alterations to the ticket design, construction or production, and
- b) All numbering and codes retain the design specifications as noted in their respective Detailed Game Specification Document with the exception of control validation numbering, win codes, and game serial numbering.

10TGSNE2 - Technical Gambling Standards for Non-Electronic Scratch and Win Tickets

10.1 Product Submission Requirements – Prototype (Full Submission)

10.1.1 General Statement

This section shall govern the type of information that is, or may be required to be submitted by the submitting party in order to have Pull Tab (Break Open) Tickets tested to TGSNE1 – Technical Gambling Standards for Non-Electronic Pull Tab (Break Open) Tickets. Where the information has not been submitted or is not otherwise in the possession of BCLC, GPEB and/or the ATF, the submitting party shall be asked to supply additional information. Failure to supply the information may result in denial in whole or in part of the submission and/or lead to testing delays.

10.1.2 Submission Letter

Each request for certification shall include a submission letter/email on company letterhead forwarded to GPEB or BCLC. The letter/email should include the following:

- a) A formal request for certification specifying British Columbia as the jurisdiction for which the Pull Tab (Break Open) Ticket will be approved;
- b) The Pull Tab (Break Open) Ticket requested for certification including the game name, game serial number, and any other information that uniquely identifies the game; and
- c) A contact person who will serve as the main point of contact for questions raised during evaluation of the submission. This may be either the person who signed the letter or another specified contact.

10.1.3 Submission of Other Materials and/or Documentation

Each submission shall also include the following additional materials and/or documentation:

- a) Detailed Game Specifications including (but not limited to);
 - i. Colour Print (Front/Insides/Back);
 - ii. Front/Inside Colour Key;
 - iii. Rules of play, game format and restrictions.
 - iv. Security Features used
 - v. Payout Structure.

On completion of the production print run the following will be supplied and will form part of the submission:

- a) Manufacturers Lab Report;
- b) Where available, any Security Test Report compiled by an independent ATF;
- c) BCLC Security Test Report;
- d) BCLC Quality Assurance data integrity signoff document;
- e) Sample Units of the production run. The quantity to be determined and specified by BCLC in consultation with GPEB.

10.2 Previous Submission

Where BCLC, GPEB and/or the ATF have been previously supplied with the information on a previous submission, duplicate documentation is NOT required, provided that the previous information is referred to by the submitting party, and those documents are easily located at BCLC's facilities, GPEB's facilities and/or the ATF's facilities. Every effort shall be made to reduce the redundancy of submission information.

10.2.1 Print Re-Orders

Where a Scratch and Win game has previously been certified for use in the Province of British Columbia, a print re-order will be exempted from the requirement of a full submission if the conditions set out in Section 2.1.2 of this document have been met and:

- a) There have been no changes or alterations to the ticket design, construction or production,
and

- b) All numbering and codes retain the design specifications as noted in their respective Detailed Game Specification Document with the exception of the game number, ticket numbering, and control validation numbering.

Glossary of Terms

Please refer to the following table for a list of acronyms relevant to the Master Document, and all Technical Standard documents.

Acronym	Meaning
ATF	Accredited Testing Facility
AS3100	Australian Standard - General requirements for electrical equipment
BCLC	British Columbia Lottery Corporation
CD-ROM	Compact Disk Read Only Memory
CE	European Conformity Mark
CRC	Cyclic Redundancy Check
CSA	Canadian Standards Association
DVD	Digital Versatile Disk
EBM	Electronic Bingo Card Marking Device
EGD	Electronic Gambling Device
EMC	Electrical Mechanical Component
EPROM	Erasable Programmable Read Only Memory
FEP	Front End Processor
GLI	Gaming Laboratories International LLC
GPEB	Gaming Policy and Enforcement Branch
ID	Identification
IGS	Internet Gambling System
ISS	Information Systems Security
LAN	Local Area Network
LCTR	Large Cash Transaction Reporting
MCS	Monitoring and Control System
MD5	Checksum hashing Algorithm used to verify data integrity (128-bit)
MIS	Management Information System
NV	Non-Volatile
PAR	Paytable and Reel Strip (Also Probability Accounting Reports)
PC	Personal Computer
PCB	Printed Circuit Board
PSD	Program Storage Device
RAM	Random Access Memory
RFI	Radio Frequency Interference
RNG	Random Number Generator
ROM	Read Only Memory
%RTP	Percentage Return to Player
SHA1	Secure Hash Algorithm 1 used to verify data integrity (160-bit)
SHA256	Secure Hash Algorithm used to verify data integrity (256-bit)
TSD	Technical Standard Document
UPS	Uninterruptible Power Supply
UL	Underwriters Laboratory
VLAN	Virtual Local Area Network
WORM	Write Once Read Many