



**GLI®**

**World Headquarters**

600 Airport Road  
Lakewood, NJ 08701  
Phone (732) 942-3999  
Fax (732) 942-0043  
www.gaminglabs.com

**Worldwide Locations**

**World Headquarters**  
Lakewood, New Jersey

**U.S. Regional Offices**  
Colorado  
Nevada

**International Offices**  
GLI Africa  
GLI Asia  
GLI Australia Pty Ltd  
GLI Austria GmbH  
GLI Europe BV  
GLI Italy  
GLI South America

September 24, 2015

Mr. Matthew Parks, Managing Member  
PLP Casino Game Development, LLC  
301 Douglas Road  
Oldsmar, Florida 34677

Scope of Evaluation: Mathematical Analysis of *Extra Bet Blackjack*  
**(Gaming Laboratories International, LLC**  
Proposal #LO-20150807-01 dated August 7,  
2015)

REF: LO-394-PCD-15-01

**Evaluating Locations:**

Evaluating Location
GLI-1/GLI-2

Nevada Registration Number: 31668-01

Dear Mr. Parks,

As per PLP Casino Game Development, LLC's request, please find **Gaming Laboratories International, LLC's (GLI)** analysis of the table game side bet, *Extra Bet Blackjack* to be submitted to and reviewed by the Nevada Gaming Control Board for determination as to its suitability.

---

**Game Description**

---

*Extra Bet Blackjack* is a Blackjack side bet configured for use with one, two, six, or eight standard 52-card decks. To begin, players place a main Blackjack wager.

After the main wagers have been placed, each player receives one card dealt face-up. If the player's initial card is a ten valued card, the player may place the Extra Bet wager at this time. If the player makes the Extra Bet wager, they must additionally pay the casino an amount equal to 20% of the Extra Bet wager. Any Extra Bet wagers made are added to the main game wager and will be paid according to the final Blackjack hand outcome.

Once all eligible players have made their Extra Bet wagering decisions, the dealer receives one card face-up and each player receives an additional card. The main Blackjack game then continues following the procedures listed below:

- Blackjack pays 3 to 2;
- Double on any initial two-card hand;
- Double after split allowed;
- Re-split aces allowed;
- Hit after split aces allowed;
- Hands may be split three times for four hands;
- Dealer hits or stands on soft 17;
- Late surrender;
- Insurance.

If the Extra Bet wager has been added to the main Blackjack wager, the sum of the Blackjack and Extra Bet wagers is treated as the normal wager for all double downs, splits, and blackjacks.

---

## Mathematical Analysis

---

*Extra Bet Blackjack* was analyzed via simulation. For each deck and hit/stand on soft 17 configurations, a Blackjack program following the base Blackjack rules was used to find the associated Blackjack strategy. This program then calculated the expected value and average wagers for all initially dealt player cards.

Next, the expected value of all ten valued cards was analyzed to find the overall Extra Bet return to player (RTP) and house edge (HE), after deducting the 20% fee paid to the casino. These results can be found in [Table 1](#) and [Table 2](#).

**Table 1. *Extra Bet Blackjack* Hit on Soft 17**

	<b>1-Deck</b>	<b>2-Deck</b>	<b>6-Deck</b>	<b>8-Deck</b>
RTP	94.05%	94.08%	94.15%	94.16%
HE	5.95%	5.92%	5.85%	5.84%

**Table 2. *Extra Bet Blackjack* Stand on Soft 17**

	<b>1-Deck</b>	<b>2-Deck</b>	<b>6-Deck</b>	<b>8-Deck</b>
RTP	94.37%	94.39%	94.44%	94.45%
HE	5.63%	5.61%	5.56%	5.55%

Additionally, *Extra Bet Blackjack* was tested to determine potential card-counting susceptibility. First, an effect of removal analysis was performed. To perform the analysis, one card of each of the available ranks was removed one at a time to determine the overall impact to the player's expected value. Then, a card counting method based on the effect of removal analysis was determined and incorporated into the aforementioned Blackjack program, assuming that the shoe would be reshuffled after 75% of the cards in the shoe were dealt. For each available blackjack configuration, the program simulated 100,000,000 games. If the Extra Bet wager could be made by the player, the program recorded the current count as well as the associated Extra Bet pays and game wagers placed during that round. Using these results, the overall RTP that a card counting player could observe for each possible count was calculated. For each available configuration, the results showed that either a RTP greater than 100% was never observed, or occurred with frequencies exceeding 1 in 375,000 games, resulting in a non-detectable impact to the overall RTP or HE.

---

## Summary

---

Players playing Extra Bet Blackjack will observe the greatest return to player of 94.45% corresponding to a house edge of 5.55%, when playing with eight decks and the dealer stands on soft 17. The house will observe the best house edge of 5.95%, equating to a return to player of 94.05%, when configuring the game to use one deck and the dealer hits on soft 17.

### **Concerns Identified:**

The following concerns were raised during the evaluation of the aforementioned game. The details are as follows:

- NONE

Mr. Parks  
*Extra Bet Blackjack*  
LO-394-PCD-15-01-394  
September 24, 2014  
GLI-1/GLI-2  
Page 4 of 7

---

## Conclusion

---

**Gaming Laboratories International, LLC** attests that it has reviewed the mathematics of the game as submitted by PLP Casino Game Development, LLC and has performed an independent review of the game play to confirm that the submission documents are accurate.

Please refer to the attached Terms and Conditions which apply to the information being provided herein.

Should you have any questions or need any additional information, please feel free to contact our office.

Sincerely,  
**GAMING LABORATORIES INTERNATIONAL, LLC**



Christine M. Gallo  
Vice President of Technical Compliance and Quality Assurance

Enclosure

skr

---

## Terms and Conditions

---

This Report is issued solely for the benefit of the Recipient for the specific jurisdiction referenced in this Report, and may not be relied upon for any reason by any person or entity other than the Recipient including, but not necessarily limited to, the manufacturer and/or developer of the items (a “Third Party”) which are the subject of this Report, notwithstanding the fact that a copy of the Report may be delivered or otherwise made available to a Third Party. In this regard, the Recipient and any Third Party will be deemed to have acknowledged that nothing in this Report is intended to create, nor shall it be deemed or construed to create, any relationship between (a) **Gaming Laboratories International, LLC** (GLI) and the Recipient other than that of independent entities contracting with each other solely for the purpose of the preparation and submission of the Report; and (b) GLI and a Third Party. Neither GLI nor the Recipient, nor any of their respective employees or representatives, shall be construed to be an agent, employer or representative of the other.

Any report produced by GLI is proprietary to GLI and the Client, because it contains confidential information of commercial value, the exposure of which to third parties could adversely affect both GLI and the Client. Accordingly, such confidential information is supplied in confidence, on the strict condition that no part of it will be reprinted or reproduced or transmitted to any parties external to the original contract without the prior written approval of the Parties. In particular, it will not be exposed to any person or organization which may be in competition with any of the Parties without the prior written approval of that Party. The testing performed by GLI is proprietary to GLI and/or various regulators. No third party may use, rely or refer to a GLI evaluation report, test report, certification document or test results without written permission of GLI and the respective regulator. Notwithstanding the above, the Parties may disclose confidential information if required to do so by regulatory agencies, pursuant to the laws and regulations of an applicable jurisdiction or by an order of a properly designated Court of Law in a relevant jurisdiction. However, in either case the Parties agree to immediately notify the other party of such a request.

Notwithstanding the above, any regulator may reprint, reproduce and transmit any document or information to any party that the regulator, in their sole discretion, deems appropriate.

The certification established by this Report applies exclusively to tests conducted using current and retrospective methods developed by **Gaming Laboratories International, LLC** (GLI) on the specific items submitted by the Manufacturer identified by the words “**Scope of Evaluation:**” on the first page of this Report. It is the responsibility of the manufacturer and/or developer of the items submitted to apply for, obtain and maintain all necessary gaming licensure in each jurisdiction in which they do business, including state and tribal jurisdictions, where applicable. The Electrostatic Discharge Testing performed by GLI is intended only to simulate techniques observed in the field being used to attempt to disrupt the integrity of Electronic Gaming Devices. During the course of testing, GLI checks for marks, symbols or documents indicating that a device has undergone product safety or RoHS compliance testing, if required. GLI also performs a cursory review of information accompanying the items submitted, where possible and when provided, for evidence that the items have undergone compliance testing for Electromagnetic Interference (EMI), Radio Frequency Interference (RFI), Magnetic Interference, Liquid Spills, Power Fluctuations, Electrostatic Immunity, Electro Magnetic Compatibility and Environmental conditions. Compliance with any such regulations related to the aforementioned testing is the sole responsibility of the manufacturer and/or developer of the items submitted; GLI accepts no responsibility, makes no representations and disclaims any liability with respect to all such non-gaming testing. The test methods used, excluded tests, and actual data showing the test results are available to the Recipient upon written request.

All items identified in the “**Scope of Evaluation:**” section on the first page of the report are considered certified as of the date shown in the “Date of Report:” section on the first page of the original GLI issued Report. All of the items are certified for use until such time notification is sent indicating that an item is no longer permitted to be used within the jurisdiction specified. Additional information regarding the validity of this certification can also be obtained via GLIAccess and/or the Evaluation and Certification Guide, which is available on the [gaminglabs.com](http://gaminglabs.com) website. Use of the Certified Mark represents the users agreement to permit, allow and accommodate authorized representatives of GLI to perform a surveillance audit of the use of the Mark and to permit an authorized representative of the American Association of Laboratory Accreditation (A2LA) to perform a surveillance audit, at their discretion and at their expense, to confirm that the use of the Mark in no way implies that A2LA endorses or certifies any of the Marks, services or processes of the company, group or organization requesting the use of the GLI Certified Mark.

GLI WARRANTS TO THE RECIPIENT THAT ALL SERVICES PROVIDED BY GLI HEREUNDER HAVE BEEN PERFORMED IN ACCORDANCE WITH ESTABLISHED AND RECOGNIZED TESTING PROCEDURES AND WITH REASONABLE CARE IN ACCORDANCE WITH APPLICABLE LAWS. GLI DOES NOT MAKE, AND EXPRESSLY DISCLAIMS, ALL OTHER WARRANTIES OF ANY KIND, EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY, SUITABILITY OR FITNESS FOR A PARTICULAR PURPOSE. GLI DOES NOT WARRANT ANY TESTING OR RESULTS FROM A NON-GLI LABORATORY. WITHOUT LIMITING ANY OF THE FOREGOING, UNDER NO CIRCUMSTANCES SHOULD THE CERTIFICATION ESTABLISHED BY THIS REPORT BE CONSTRUED TO IMPLY ANY ENDORSEMENT OR WARRANTY REGARDING THE FUNCTIONALITY, QUALITY OR PERFORMANCE OF THE SUBJECT HARDWARE OR SOFTWARE, AND NO PERSON OR PARTY SHALL STATE OR IMPLY ANYTHING TO THE CONTRARY. THE LIABILITY AND OBLIGATIONS OF GLI HEREUNDER, AND THE REMEDY OF THE RECIPIENT, UNDER OR IN CONNECTION WITH THIS AGREEMENT SHALL BE LIMITED TO, AT GLI'S OPTION, REPLACEMENT OF THE SERVICES PROVIDED OR THE REFUND BY GLI OF ANY MONIES RECEIVED BY IT FOR THE SERVICES PROVIDED. IN NO EVENT SHALL GLI BE RESPONSIBLE TO THE RECIPIENT OR ANY THIRD PARTY FOR ANY CONSEQUENTIAL, INCIDENTAL, DIRECT, INDIRECT OR SPECIAL DAMAGES, INCLUDING WITHOUT LIMITATION DAMAGES FOR LOST PROFITS OR REVENUE, BUSINESS INTERRUPTION, OR PUNITIVE DAMAGES, EVEN IF GLI HAD BEEN ADVISED OF THE POTENTIAL FOR SUCH DAMAGES AND WHETHER SUCH DAMAGES ARISE IN CONTRACT, NEGLIGENCE, TORT, UNDER STATUTE, IN EQUITY, AT LAW OR OTHERWISE. ALL RIGHTS AND REMEDIES OF THIRD PARTIES RELATING TO PRODUCTS AND SERVICES THAT ARE THE SUBJECT OF THE CERTIFICATION ESTABLISHED BY THIS REPORT SHALL BE THE EXCLUSIVE RESPONSIBILITY OF THE RECIPIENT AND GLI EXPRESSLY DISCLAIMS ANY LIABILITY WHATSOEVER IN CONNECTION WITH SUCH THIRD PARTY RIGHTS AND REMEDIES. GLI AND THE RECIPIENT ACKNOWLEDGE AND AGREE THAT THE SERVICES PROVIDED BY GLI HEREUNDER COULD NOT BE RENDERED BY GLI UNDER THE TERMS PROVIDED HEREIN WITHOUT AN INCREASE IN COST IF GLI WAS REQUIRED TO PROVIDE ANY WARRANTIES IN ADDITION TO, OR IN LIEU OF, OR WAS REQUIRED TO ASSUME ANY LIABILITY IN EXCESS OF, THE FOREGOING.

It is declared and affirmed under penalty of perjury that to the best of GLI's knowledge and belief the GLI certification process was conducted in accordance with Nevada Gaming Control Board's (NGCB) requirements and that the product being certified in this Report meets the requirements of the Nevada Gaming Control Act and all regulations, technical standards, control standards and procedures, policies, and industry notices implemented or issued by the NGCB.

Mr. Parks  
*Extra Bet Blackjack*  
LO-394-PCD-15-01-394  
September 24, 2014  
GLI-1/GLI-2  
Appendix I, Page 1 of 2

# **APPENDIX I**



Mr. Parks  
*Extra Bet Blackjack*  
LO-394-PCD-15-01-394  
September 24, 2014  
GLI-1/GLI-2  
Appendix I, Page 2 of 2

**Nevada Test Cases Evaluated and Test Results:**

Test Cases Relating to Return Percentage:

Test Case	Version	Test Results
14.040.1	1.0	Pass ①

① Please note that the test case listed above is related to Gaming Devices and may factor into determination of suitability for Nevada.