



**GLI**<sup>®</sup>

**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

16 December 2021

Mr. Matthew Weiss, Owner  
Sandcastle Gaming LLC

Re: Mathematical Analysis of *Antigo!* (Proposal # LO-20210823-7171 dated August 23, 2021)

File Nr: LO-00-SG6-21-01, Update

Dear Mr. Weiss,

As per Sandcastle Gaming LLC's request, please find **Gaming Laboratories International, LLC's (GLI)** math analysis for the table game, *Antigo!*.

**This report only verifies the mathematical aspects of this game and DOES NOT offer an opinion as to whether or not this game is currently authorized for use in any jurisdiction.**

---

**Game Description**

---

---

DEALING AND GAMEPLAY

---

*Antigo!* is a table game for up to 5 players using 8 standard 52-card decks. The player begins by placing a fixed-value Antigo wager. All Antigo wagers at the table must be of equal value. Optionally, the player may also place a Dealer 9 wager.

Each player is then dealt three cards face-up. The dealer receives two cards face-down. The player then chooses one of their cards to discard. All discarded cards will be collected together to form a community hand. The dealer then reveals their cards. If the total dealer score is 6 or less, using Baccarat-style scoring, the dealer will receive a third card. All wagers are then resolved.



---

INDIVIDUAL CONFIGURATION

---

*Antigo!* may also be offered in an alternative configuration where the player's discarded card goes not to a community hand, but to an individual discard hand. In the report, this will be referred to as the individual configuration.

---

ANTIGO WAGER

---

To resolve the Antigo wager, the player hand is compared against the dealer hand using Baccarat hand scoring. The community hand (alternatively, the individual discard hand) is also compared to the dealer hand. If the player hand and/or community hand beat or tie the dealer, the wager may win, paying according to scenario and according to number of players at the table, as given in [Table 1](#). Otherwise, the wager loses.

**Table 1. Pays — Antigo Wager**

Scenario	Number of Players				
	1	2	3	4	5
Player Win + Community Win	1.5 to 1	1 to 1	1 to 1	1 to 1	1 to 1
Player Win + Community Tie	0.5 to 1	1 to 1	Push	0.5 to 1	Push
Player Win + Community Loss	Push	Push	Push	Push	Push
Player Tie + Community Win	0.5 to 1	1 to 1	Push	Loss	Loss
Player Tie + Community Tie	Push	Push	Loss	Loss	Loss
Player Tie + Community Loss	Loss	Loss	Loss	Loss	Loss
Player Loss + Community Win	Push	Loss	Loss	Loss	Loss
Player Loss + Community Tie	Loss	Loss	Loss	Loss	Loss
Player Loss + Community Loss	Loss	Loss	Loss	Loss	Loss

---

DEALER 9 WAGER

---

If the dealer has a total of 9, either with the initial two cards or after receiving a third card, the Dealer 9 wager wins and pays 5 to 1.



---

**Mathematical Analysis**

---

The analysis for the main wager was conducted by iterative program for 1 player up to 4 players and by simulation for 5 players.

For up to 4 players, the program iterated through all possible combinations of player hands, calculated the distribution of dealer total based on the player cards, and determined the best discard strategy for all the players working together, to maximize the overall player win. The wins and pushes were tallied to produce overall returns for the game.

For 5 players, the possible player combinations are too numerous to exhaustively iterate. Therefore, a simulation sampled random player combinations, but otherwise followed the same procedure, calculating the dealer distribution and determining the best overall strategy.

The results of these programs, giving the Return to Player (RTP) and House Edge (HE) are summarized in [Table 2](#). Note that the returns for the Individual Configuration — regardless of number of players — are identical to the returns for 1 player in the normal configuration, as given below.

**Table 2. Return Summary — Antigo Wager**

	Number of Players				
	1	2	3	4	5
RTP	98.20%	99.48%	97.38%	97.67%	99.29%
HE	1.80%	0.52%	2.62%	2.33%	0.71%

For the Dealer 9 wager, the probability of each dealer hand was calculated exactly, and the total of 9 events, either 2- or 3-card, were tallied and combined with the pay information to produce returns for the wager. These can be found in [Table 3](#).

**Table 3. Return Summary — Dealer 9 Wager**

RTP	90.01%
HE	9.99%

All analysis was performed assuming a freshly shuffled shoe.



LO-00-SG6-21-01-000

GLI-1

Page 4 of 4

---

## Summary

---

Overall, the highest RTP that can be obtained is 99.48%, when there are 2 players at the table, and they work together to maximize overall player winnings. The lowest wager RTP is 90.01%, from the Dealer 9 wager.

Updates to the previously issued report dated November 2, 2021 were made which include adding information regarding 'Individual Configuration'.

Please visit [Gaminglabs.com](https://Gaminglabs.com) to view the applicable Terms and Conditions and GLI Product Certification Scheme.

Should you have any questions, please feel free to contact our office.

Sincerely,

**GAMING LABORATORIES INTERNATIONAL, LLC**



Christine M. Gallo

Senior Vice President, Quality and Technical Compliance

nbm/lb

