STATE OF WASHINGTON

GAMBLING COMMISSION

"Protect the Public by Ensuring that Gambling is Legal and Honest"

December 7, 2021

Sent via email to mariana.serrato@scientificgames.com

Mariana Serrato
Scientific Games Inc.
6601 S. Bermuda Road
Las Vegas, NV 89119

RE: Dual Jackpots (multiple games) - Submission #3054

Dear Ms. Serrato:

Scientific Games Inc. amended multiple previously approved card games as follows:

- Bahama Bonus Blackjack
- Bet the Set 21
- Blazing 7's- Dealers Up Card
- Blazing 7's Player Cards Only
- Face Up Pai Gow Poker
- Fortune Pai Gow Poker
- Free Bet Blackjack
- House Money
- I Luv Suits Poker
- Kings Bounty
- Royal Match 21
- TriLux Bonus
- Ultimate Texas Hold 'Em
- Zappit Blackjack

We have reviewed the changes to the games noted above. The main changes to each of the games were: 1) allow operators to offer a progressive jackpot or house jackpot; 2) allow operators to choose up to two jackpots (i.e. dual jackpots). Based on our review of the documentation we received from Scientific Games Inc. the Washington State Gambling Commission will approve the games under the conditions listed below:

- The games shall be played and operated under the terms and conditions set forth under the game rules you provided on December 2, 2021 and are enclosed.

Commercial Card Rooms

- Commercial card room operators seeking to operate any of these games must first submit their internal controls and receive approval from the Commission prior to implementing.

- Manufacturers and distributors of graphic layouts and/or any other equipment associated with these games must be licensed by the state prior to the sale of the equipment.

Tribal Casinos

- Each Tribal Gaming Operation must request and obtain approval from their respective Tribal Gaming Agencies (TGA).

- Before TGA allows your games to operate, they will seek concurrence from our agency as well.

- In addition to your approved rules, the Tribal submission to us must include all supplemental information required by Tribal-State Compact Appendix A, Section 18.

- Manufacturers and distributors of graphic layouts and/or any other equipment associated with the game must be certified by the state and licensed by the Tribe prior to the sale of the equipment.

Any modifications to these games may affect this approval. If you have any questions on commercial implementation, please contact Jess Lohse at (206) 786-3530. If you have any questions on Tribal implementation, please contact Kelly Main at (206) 423-4260.

Thank you for your cooperation and willingness to comply with the gambling laws of Washington State.

Sincerely,

Gary Drumheller
Interim Assistant Director
Licensing, Regulation, and Enforcement Division

cc: Jim Nicks, Special Agent in Charge, Regulation Unit
        Dan Wegenast, Special Agent in Charge, Tribal Gaming Unit

Scientific Games – Table Game Operations
Impact of Dealing Games Face Up

The purpose of this report is to analyze the approximate impact of dealing several Scientific Games proprietary table games 'face up'. It is assumed that no more than THREE Players will be playing at the same time and that all cards normally dealt to the Player will be dealt face up.

Introduction:

It is a given that providing the Player with any additional information about the cards that have already been dealt can only allow the Player to enhance his strategy and reduce the house edge and potentially turn it into a Player edge. In this particular case, the additional information is knowledge about the other Players' cards which would normally be kept hidden from the other Players. Knowledge about these cards can inform the Player both about his potential draws (if any exist) and about the Dealer's potential hand.

This is a little like Blackjack card counting with one very important distinction. In Blackjack, knowledge about the cards remaining in the shoe can be used to determine how much the Player should wager on the next hand. This is what provides the biggest advantage to the Player. In Blackjack, the Player may get an advantage in only 10% of the hands and by just 0.25%. If a Player could not alter his wager size with this knowledge, the Player would not have an overall advantage. But, if he can increase his wager 50x on these hands, the overall payback over time would show a Player advantage.

In single deck games, this is not possible. The Player has no opportunity to change his initial wager size. Instead, he is only able to alter his strategy in-game and in some cases, his in-game wager size. This greatly reduces the Player's ability to take advantage of 'player advantage' situations.

The goal of this analysis is to get a rough idea of the impact of the Player being able to see the hands of two additional Players. This is not intended as a comprehensive analysis as that would likely take weeks per game to do properly. Instead, the main purpose is to ascertain if playing the game face up poses a significant risk to the casino. Because of this, parts of the analysis relied on work done and published by another analyst – Stephen Howe. In each case where I leverage his work, I have included the URL of the column that I utilized.

Three Card Poker

Three Card Poker has a single strategy point – when to Play vs. Fold. Thus, knowing what the additional six cards are, can guide the Player by changing the distribution of potential Dealer hands. Mostly, it can tell the Player how often the Dealer will not qualify which can changed the strategy for Jack or less hands. If 4 out of the 6 cards are Q/K/A, the hand becomes a marginal Play. With 5 or 6, much more strongly, but it is rather rare for 5 of the 6 to be Q/K/A. In similar fashion, if all 6 cards are low cards, there are some Q-6, Q-7 hands that should be Folded because there is a greater likelihood that the Dealer will qualify and doing so means he will likely beat the Player. While it is much more common for all 6 cards to be low, the impact is to a limited number of Player hands and the impact is not great as these hands are only marginal plays. If the Player has above a Q-8 or Q-9, the strategy is still to always Play.

Based on simulations using the strategy changes, the impact to payback would appear to be only about 0.1% – 0.2% at most with 6 additional cards displayed.

Let It Ride

As Let It Ride is a paytable game, the impact is only on the Player's hand. The Player may see cards that he needs to complete his hand that have been burnt, which can reduce the potential value of his hand. Or, conversely, he may see that his needed cards are still available out of the remaining deck, with a slightly increased probability of being dealt to him.

That said, however, Let It Ride's relatively high house edge is unlikely to be able to be overcome as a result of seeing 6 additional face up cards. Given the mandatory '$' wager with a payback of only 62.7%, the '1' and '2' wagers would need to get a significant advantage out of those 6 cards. But, the vast majority of hands wagered are guaranteed winners. That said, there are a few strategy changes that would occur as a result of seeing the extra 6 cards.

'1' Wager

- Do not wager any 3-Card SFL or Royal if any of the out cards for the SFL/Roy have been burned
- Wager all 3-Card Inside SFLs if none of the 6 other cards are of the same suit.
- Wager a Low Pair, IF none of the 6 cards are of the same rank as either of the Player's rank

'2' Wager

- If you have a 4-Card Flush and all 6 of the other cards are of same suit, don't make wager
- If you have a 4-Card Flush with 0 High Cards and 5 of the other cards are of same suit, don't make wager
- If you have a 4-Card Straight with 0 High Cards, and 2 of your (Straight) outs are burned, don't make the wager
- If you have a 4-Card Straight with 1 High Card and 3 of your (Straight) outs are burned, don't make the wager
- If you have a 4-Card Straight with 2 High Cards and 4 of your (Straight) outs are burned, don't make the wager
- If you have a 4-Card Straight with 3 High Cards and 5 of your (Straight) out are burned, don't make the Wager

The biggest strategy impact is the wagering of a Low Pair in the '1' wager. This increase the payback by roughly 0.2%. The other changes occur infrequently and likely do not add more than another 0.1%. The overall impact should be at most 0.3% to the house advantage.

<u>Ultimate Texas Hold'em</u>

UTH is one of the more likely games to be impacted by the Player's cards being dealt face up. With a small theoretical house advantage, it does not take much movement of the payback to potentially give the Player an advantage over the house.

That said, there are several features of UTH that work against this from happening. The first is that there are only TWO cards per Player dealt. So, the Player only gets to see four additional cards. For the Player to take advantage of the situation, the information must be actionable. If a Player has an AK and one of the 4 face up cards is also an Ace, this will reduce the Player's expected value of the hand, but not by enough to change how he should wager – he should still Wager 4x.

The impact of any strategy change to the overall payback is controlled by 2 factors. How often the situation occurs and how much it increases the expected value of that situation. From running a variety of scenarios, the number of situations in which the Player changes his strategy is rather small. Thus, the overall impact to the payback is also very small. The fact that the remaining cards are community cards shared between Player and Dealer also means that cards that are burnt that might hurt the Player can also likely hurt the Dealer as well.

Lastly, the strategy of UTH is already extremely complex. The theoretical payback can only be achieved by a tiny fraction of Players. The ability to go further and take into account the face up cards would reduce this population even further.

For my conclusion, regarding UTH, I am also relying on a more exhaustive analysis performed by Stephen Howe that can be found here: https://discountgambling.net/2010/01/15/practical-collusion-for-ultimate-texas-holdem/

In the end, I don't believe any human could possibly achieve a Player advantage with only two additional Player's cards turned Face up on a live game.

Caribbean Stud Poker

For Caribbean Stud Poker, I mostly relied on work already done by Stephen Howe. His column can be found here:

https://discountgambling.net/category/caribbean-stud/

There are actually 2 columns at the site. They both use a method that might be considered 'cheating' when the cards are dealt face down but would become unnecessary with cards dealt Face Up. The method mostly deals with counting cards that match the Dealer's Face up card and counting the number of Aces and Kings.

Per Mr. Howe's column the house edge of 5.32% (as a percent of the Ante) can be turned into a 1.1% Player advantage using his methods when there are 7 Players at the table. Per his second column, with only 6 Players, it can be turned into a 0.4% House edge using a computer and a more realistic 1.32% house edge using a simplified strategy.

Because Caribbean Stud has 5 cards per Player, dealing potentially 25-30 additional cards face up, can be very advantageous to the Player. With only an additional 10 cards being show on a 3 Player table, the number of times the Player will alter from basic strategy will be greatly reduced.

There is nothing in his column that talks about the impact of less Players at the table. However, if going from 7 Players to 6 Players reduced the impact by as much as 1.5% (of the Ante), I feel it is safe to assume that no Player will be able to come close to a Player advantage playing at a 3-Player table. Undoubtedly, a few Players will be able to shave a little off the house edge, but it is doubtful that it would be more than 0.25% of total wager.

Mississippi Stud Poker

For Mississippi Stud Poker, I again relied on work already done by Stephen Howe. His columne can be found here:

https://discountgambling.net/mississippi-stud-ev-barona/

I don't know if Barona still does, but apparently it did offer MS Stud face up with up to 6 players. Per Mr. Howe's analysis, when the Player can see all 12 cards belonging to the Players, he can turn the 4.91% house edge into a roughly 1.5% Player edge. It should be noted that the numbers that he references are a % of the initial Ante and not total wager. When the average wager size is taken into account, this correlates to a house edge of 1.37% of the total wager. The 1.5% Player edge is really a Player edge of about 0.42% of total wager.

Thus, the total swing is about 1.8%. If the impact of seeing each additional Player's cards were linear, this would mean each Player's cards that could be seen would be worth about 0.36% of total wager. My experience in doing these analyses would indicate that the impact is not linear but more exponential. Thus seeing 2 Player's cards is worth far LESS than 40% of the total. The true impact is likely to be less than a payback of 99.4% and probably closer to about 99%.

It should also be noted that the strategy for Mississippi Stud is moderately complex and utilizing the face up cards to modify the strategy will require a Player to calculate outs on the fly. There will not be many Players who will be able to do this. Some very skilled Players might be able to lower the house edge, but it is unlikely that any will be able to gain a Player advantage.

Four Card Poker

Four Card Poker follows a structure similar to Three Card Poker with a couple of key differences. The majority of the impact of face up cards in Three Card Poker is the impact they have on the Dealer qualifying. There is no Dealer qualifying in Four Card Poker, so this is no longer an impact. In Four Card Poker, the Dealer has one card turned face up. Thus, the Player can look for at the other face up cards for rank matches to the Dealer's upcard. This will impact the Dealer's ability to draw Pairs+. The Player may also be able to take into account cards of higher rank this his own Pair and/or Aces when he is playing a non-Pair hand.

Like Three Card Poker, there will be a handful of changes, but they will not add up to much. In Stephen Howe's column on collusion for Four Card Poker, found here: (https://discountgambling.net/category/four-card-poker/), he states that with 6 Players at the table the house edge can be cut in half. As we are talking about a situation of only 3 Players, the impact will be far less and again is likely to be no more than 0.25% of total wager.

Crazy 4 Poker

Crazy 4 Poker is more similar to Three Card Poker than is Four Card Poker. There is no Dealer card dealt Face up, but there is qualifying. So, like Three Card Poker, most of the impact surrounds the frequency that the Dealer qualifies. While the ability to wager 3x might be a factor as well, it can only be done with a Pair of Aces or better, mostly removing it from the equation. Like Three Card Poker, the impact to being able to see additional cards will be minimal and most Players will not be able to take advantage.

Conclusion

None of my own research nor anything I could find elsewhere would indicate that any of the games mentioned in this report can be 'beaten' by dealing a total of 3 hands face up. The extent by which a Player can reduce the house edge will depend on the specifics of each game. In all cases, it would take a very well-trained Player to do so.

Some likely indications that a Player might be attempting to fully use the information available would be one that is playing relatively slowly. As many of the strategy changes require counting 'outs', a Player utilizing these strategies will have to study far more cards than normal.

Generally speaking, any Player who considers himself to be an 'Advantage' Player, believing himself to have an advantage over the house will unlikely play any of the side-bets, which generally have lower paybacks and do not have any opportunities to reduce the house edge as a result of the additional information.

Game	Maximum Spots Recommended
Caribbean Stud Poker	5
DJ Wild Stud Poker	4
I Luv Suits	5
Mississippi Stud	4
Crazy 4 Poker	Not Beatable
Face Up Pai Gow Poker	Not Beatable
Fortune Pai Gow Poker	Not Beatable
Four Card Poker	Not Beatable
Let it Ride	Not Beatable
Three Card Poker	Not Beatable
Ultimat Texas Hold'em	Not Beatable

- I Luv Suits is a variation of the standard game of Poker. I Luv Suits offers the player an optional Flush Rush, Super Flush Rush and jackpot wagers. Side bets among players are prohibited.

- Operators cannot allow wagering limits to exceed the authorized limits set out in WAC 230 15-040 and WAC 230 15-140.

- If the below game is to be hand dealt with or without a dealing shoe, dealers will shuffle according to house procedures. The dealer then follows the house dealing procedures. The dealer must comply with WAC 230-15-465. If any automatic shuffle machine is used in conjunction with this game, it must be a WSGC approved model, manufactured by a WSGC licensed manufacturer.

- Additional Scientific Games equipment can be used on this game. This equipment will be the i-Deal shuffler with software Mico32 v3.8.024or higher, CardRec v4.0.033 or higher and RNG v1.002.004 or higher.

I Luv Suits Poker Rules of Play

I Luv Suits Poker features head-to-head play against the dealer and the optional Flush Rush and Super Flush Rush bonus bets. Players are dealt packets of 7 cards, and the dealer is dealt a packet of 7 cards.

Players play against Dealer's hand, object is to get more suited cards than the Dealer. There are multiple ways to win at this game: head-to-head play against the Dealer and/or the optional Flush Rush and Super Flush Rush bonus wagers.

If the player and dealer have flushes of identical length, the rank of the highest kicker card in the flush determines the winner. For example, Ac-7c-3c loses to Ah-10h-7h.

Copied hands push. Ace will be the highest card in the flush.

Rules and Dealing Procedures

1. Set the i-Deal shuffler to I Luv Suits Poker or if using a shuffler that does not have the game definition already programmed, set the shuffler to a game definition that delivers packets of 7 cards for each player and the dealer.

2. To begin the game, players make an Ante wager. Players may also make the Flush Rush and Super Flush Rush bonus bets. See paytable for odds.

3. Next, the dealer pushes the green button on the i-Deal shuffler and working clockwise from their left to their right, gives each player a packet of 7 cards and themselves a packet of 7 cards.

4. If less than seven packets of cards are dealt, the dealer then presses the green button on the i-Deal to dispense all the remaining cards and begin shuffling the next deck.

5. Players look at their hands and have a choice:
    a. Fold or stay in the game by making a Play bet of;
        *   1x their Ante if they have a 4 card flush or less
        *   Up to 2x their Ante if they have a 5 card flush
        *   Up to 3x their Ante if they have a 6 card flush or more

    b. The Flush Rush and Super Flush Rush bonus wagers (if played) are always in action. If the player folds, the dealer will pick up the players Ante wager and tuck the cards face down under the player's bonus wager that's closest to the dealer. All folded hand bonus wagers will be resolved at the end of each hand along with the remaining active hands.

6. The dealer then reveals their cards and sets their longest flush hand. The dealer's 7-card hand must contain at least a three-card 9-high flush or better to qualify.

7. If the dealer does not qualify, Play bets are immediately refunded and Ante bet is paid 1-to-1.

8. If the dealer does qualify, working counter-clockwise from right to left, compares their hand with the hand of each player that stayed in the game.
    a. If the player's hand beats the dealer's hand, the Ante and Play bet will be paid even money.
    b. If the player's hand ranks less than the dealer's hand, the Ante and Play will lose.
    c. If the player's and dealer's hand result in a tie, then both the Ante and Play will result in a push.

9. Players win the Flush Rush bonus bet if they can make a four-card flush or better, even if they lose to the dealer. Paytables submitted separately:

10. Players win the Super Flush Rush bonus bet if they can make a three-card straight flush or better, even if they lose to the dealer. Paytables submitted separately.

I Luv Suits Poker

HAND	Flush Rush Side Bet				
	1 PAYS	2 PAYS	3 PAYS	4 PAYS	5 PAYS
7-Card Flush	300 to 1	100 to 1	250 to 1	200 to 1	300 to 1
6-Card Flush	100 to 1	20 to 1	25 to 1	60 to 1	75 to 1
5-Card Flush	10 to 1	10 to 1	7 to 1	12 to 1	5 to 1
4-Card Flush	1 to 1	2 to 1	2 to 1	1 to 1	2 to 1

HAND	Super Flush Rush Side Bet				
	1 PAYS	2 PAYS	3 PAYS	4 PAYS	5 PAYS
7-Card Straight Flush	8000 to 1	500 to 1	500 to 1	300 to 1	250 to 1
6-Card Straight Flush	1000 to 1	200 to 1	200 to 1	150 to 1	100 to 1
5-Card Straight Flush	100 to 1	100 to 1	100 to 1	100 to 1	75 to 1
4-Card Straight Flush	60 to 1	50 to 1	75 to 1	50 to 1	50 to 1
3-Card Straight Flush	7 to 1	9 to 1	7 to 1	8 to 1	8 to 1

NEXUS COMMAND

I Luv Suits Poker Jackpot Rules of Play Rules of Play:

1. I Luv Suits Poker offers an optional jackpot wager.

2. The bet considers the best 5-card hand possible from the player's 7-cards.

3. Paytables are listed separately

4. The meter will be reseeded when the 100% award hits. The cost of the reseed has been factored into the casino's mathematical advantage.

5. To begin each round, players must make their regular game's wager. They may also place any bonus wagers and the jackpot wager. Players must place the jackpot wagers on the sensor in front of their betting position. The sensor will light up.

6. Once all players place their bets, the dealer will press "START GAME" on the keypad. The sensors will then light up, indicating a jackpot wager. The dealer will then remove all jackpot bets from the table.

7. The dealer then follows house procedures for dealing the regular game.

8. The dealer reconciles the standard wager, bonus wager, and jackpot wagers at the same time. It's at the sole discretion of the casino to allow, or not to allow for folded hands to qualify for jackpot payouts. Follow the procedure in the next section for reconciling percentage pays from the jackpot meter.

9. Jackpot winners:
    a. The percentage pays are paid from the jackpot shown on the jackpot meter.
    b. Other hands are paid from the tray; they do not come off the meter.
    c. In the event more than one jackpot meter pay hits during the same round, the dealer will first pay the player farthest on the right and then move counter- clockwise to pay other players. As regulatory procedures permit, this policy can be replaced by casino internal controls.
    d. When a player has a jackpot winner, the dealer will select the player spot corresponding to the player with the winning jackpot hand. The dealer will then press the appropriate hand button on the display. (If the hand button is pressed by accident, pressing it again will turn it off.)
    e. The dealer shall then contact a supervisor.
    f. Once the casino verifies the jackpot win, the supervisor will press the confirm button. To complete the action, a Supervisor or Executive card (depending on jackpot level) swipe is required. This records the win onto the Game Manager computer and adjusts the meter appropriately for the prize won. House procedures are then followed for paying the prize. (Reviewing the monitor connected to the Game Manager will show the prize amount to be paid, and pressing the "money bag" icon will print a win page, which can be used to help record the payout for accounting.)
    g. Once the dealer has reconciled all action, they press "END GAME." This resets the system to begin the next hand.
    h. Once the Supervisor or Executive card (depending on jackpot level) is swiped the prize is logged into Game Manager. If the jackpot pay needs to be backed out at this point, the award will need to be manually backed out using the Game Manager manual adjustment feature.

I Luv Suits Poker Jackpot

- This game will use the approved Scientific Games owned jackpot system Nexus Command Game Manager 2 v2.5.4 or higher and a jackpot display. The jackpot display can either be provided by Scientific Games or the operator.

- The jackpot display should be a table mounted monitor with no additional intelligence or functionality, including but not limited to network capability (wired or wireless). This non-intelligent monitor can either be provided by Scientific Games or the operator so long as it does not introduce any additional functionality.

House Jackpot and Progressive Jackpots

- Operators may choose to offer up to two jackpot game options on a layout using two independent wagering sensors and displaying two independent jackpot amounts.

- Each jackpot sensor is considered a separate game.

- Progressive Jackpots cannot be linked with House Jackpots.

- All jackpots on a table must be of a single jackpot type (House Jackpot or Jackpot).

- Operators can only offer one jackpot game option per sensor.

- When operated as a house jackpot, the jackpot amount is at the discretion of the casino. Prizes are set by the casino and are required to be displayed at each gaming table. Prizes displayed are considered property of the casino until won by one or more players. The casino must post all required notices and disclosures ateach table and follow all rules for house jackpots in WAC 230-15-671.

- When operated as a progressive jackpot, rules for progressive jackpot prizes are contained within WAC 230-15-680 through WAC 230-15- 720.

I Luv Suits Poker Jackpot

Hand	1 Pays
Royal Flush - Hearts	100%
Royal Flush - Other	10%
Straight Flush	250 for 1
Four-of-a-Kind	75 for 1
Full House	5 for 1
Flush	4 for 1
Straight	2 for 1

Hand	2 Pays	3 Pays
7-Card Straight Flush	100%	100%
6-Card Straight Flush (Ace High)		
6-Card Straight Flush (King High or Lower)	10%	10%
5-Card Straight Flush	300 for 1	200 for 1
4-Card Straight Flush	50 for 1	50 for 1
3-Card Straight Flush	3 for 1	3 for 1

Hand	ML 1 Pays
Royal Flush - Hearts	100% Major
Royal Flush - Other	100% Minor
Straight Flush	250 for 1
Four-of-a-Kind	75 for 1
Full House	5 for 1
Flush	4 for 1
Straight	2 for 1

All settings and pays, listed in the above pay tables, are based off a fixed $1 wager. Card room operators may select a different fixed wager amount. If the Jackpot is configured with a different fixed wager amount, pays are multiplied accordingly and displayed on the meter.

PROGRESSIVE SYSTEMS FLEXIBILITY and RECOMMENDATIONS:

- Progressive meter contribution
  - When using a pay table in which all payouts are deducted from the meter, we recommend utilizing the system to configure meter contribution rates anywhere between 0-100%.
    - Most pay tables with this style of math are designed to grow over time when a contribution rate of 70% or more is used. If less is contributed, the risk of the meter "running dry" increases.
  - When using a pay table in which only the progressive (percentage) pays are deducted from the meter, we recommend only reducing the pre-configured meter contribution rate if any changes are made. Adjusting the contribution rate above the pre-configured value would reduce the mathematical house advantage of the wager.

- Reserve contribution
  - We recommend contributing a small portion of each progressive wager to the reserve. This amount will be added on to any configured seed amount after a 100% award is given, and will help reduce the drop in play expected after a jackpot hits.
  - We do not recommend eliminating a seed amount entirely and using the reserve as the only seed mechanism. All games present a certain likelihood of back-to-back awards, and this method runs the risk of restarting the meter at a very low amount in that case.

- Seed amount
  - We recommend using the pre-configured seed amount in the system. This amount is specific to the pay table selected for use, and is designed to offer a reasonable starting point that works with the pay table's math.
  - If any changes are made, we recommend the seed amount to be at least as large as the largest "fixed" award on the pay table.
  - We do not recommend configuring a $0 seed amount.