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COAM SAS Compliance Report

Report Issued to	Georgia Lottery Corporation
Date of Issue	October 19, 2018
Product Manufacturer Contact Details	Primero Games, LLC 2150 Northmont Parkway, Suite H Duluth, Georgia 30096
Product Details	<i>Golden Nudge v1.02</i>
eclipse Compliance Testing Report Reference Information	Review and analysis of <i>Golden Nudge v1.02</i> submitted by Primero Games.
Report Number	NA_PGLLC_4518-01_MO

1. INTRODUCTION

eclipse Compliance Testing has conducted a review and examination of Primero Games *Golden Nudge v1.02* for compliance with the following technical standard(s):

- The document titled Georgia COAM SAS Requirements Version 1.7 issued on October 20, 2016 by the Georgia Lottery Corporation.

This assessment is focused on the SAS communication, via SAS simulation, and the interoperability of the SAS communications with the Intralot, Inc. Central Monitoring System v3.0, implemented by the Georgia Lottery Corporation, to the aforementioned technical standards.

2. OVERVIEW OF TEST SCOPE

The following components comprise Primero Games *Golden Nudge v1.02*, which has been reviewed against the aforementioned technical standards:

Software Name	Version	Build	Component
PRGM 1.02 M2-PGGA-GOLDEN_NUDGE-MG-SAS	1.02	0001	Platform

Primero Games *Golden Nudge v1.02* consists of five (5) *3x3 Reel Nudge* style games and one (1) *5x3 Match 2* game intended for use in the Georgia Lottery Corporation COAM implementation.

eclipse Compliance Testing has composed a detailed compliance analysis of Primero Games *Golden Nudge* with regard to the aforementioned technical standards. A detailed compliance analysis is attached hereto as an Appendix.

3. SOURCE CODE REVIEW

Primero Games has provided **eclipse Compliance Testing** with the software source code associated with Primero Games *Golden Nudge v1.02*. The review and evaluation of software source code is essential in establishing system operation and game outcome determination.

Our review of the source code indicates that Primero Games *Golden Nudge v1.02* implements the SAS communication protocol as required under the Georgia COAM SAS Requirements issued by the Georgia Lottery Corporation.

4. SOFTWARE INFORMATION

The software/firmware used to operate the Primero Games *Golden Nudge* software is housed on the microcontroller installed on the circuit board of the *Golden Nudge* Terminal. The system memory for the *Golden Nudge* software is stored in NVRAM, which uses an onboard Non-Volatile chip to store the information until a RAM Clear is performed. The CRC16 signature obtained and verified during testing was displayed through the SAS simulator as **3750** when polled with a seed of 0000.

In addition to the aforementioned CRC16 signature, a copy of the *Golden Nudge v1.02* software was provided to **eclipse Compliance Testing**, for review. Below, are **MD5** and **SHA-1** signatures, which have been included for the software for verification purposes:

Software Signatures

File Name	Signatures	
M2-PGGA-GOLDEN_NUDGE-MG-v1.02.1	MD5	8F6A45EE7B9C84261BB351ABAA2DE31C
	SHA-1	D334847D0E52DBC441903084C456128BFE26C226

The **EaGLe Check 2.3 HF1** program was used to calculate the **MD5** and **SHA-1** signatures listed above. These signatures are unique for the file(s) examined. The aforementioned **MD5** and **SHA-1** signatures of this game software will be obtained using the **EaGLe Check 2.3 HF1** software, provided the file(s) remains the same as tested. Should this file be altered in any way, the **MD5** and **SHA-1** values will change.

5. GAME PLAY AND DEVICE OPERATION

Primero Games *Golden Nudge v1.02* offers six (6) different game themes. The available game themes consisted of five (5) *3x3 Reel Nudge* style games and one (1) *5x3 Match 2* game.

The *3x3 Reel Nudge* style games provide the player with an entertaining game, the outcome of which is based upon the player's decision to select a reel or reels (when awarded with a random 2nd nudge) to nudge in the proper direction(s) to align a winning symbol combination and win a potential prize for the nudge style games. The *3x3 Reel Nudge* style games that are available on the Primero Games *Golden Nudge v1.02* include the following:

- *Gold Bar*
- *Golden Delicious*
- *Lamps of Gold*
- *Mayan Legend*
- *Victorious Vikings*

The *5x3 Match 2* game provides the player with an entertaining game, the outcome of which is based upon the player's ability to select two (2) matching symbols located at the top of the screen. Upon choosing the correct symbols the player will obtain the prize(s), if any, associated with any winning symbol combinations displayed on the reels. The Match 2 feature is presented to the player after game play is initiated and the reels stop spinning. The *5x3 Match 2* game that is available on the Primero Games *Golden Nudge v1.02* is listed below:

- *Gold Safe Bandits*

6. EXCEPTIONS AND NOTEWORTHY ITEMS FOR CONSIDERATION

The following item of note has been listed below for consideration by the Georgia Lottery Corporation. This item of note was discovered during the review and analysis undertaken by **eclipse Compliance Testing** to determine compliance with the previously listed requirements.

1. The document titled **Georgia COAM SAS Requirements Version 1.7** issued on October 20, 2016, at section *2.1 SAS Minimum Requirements*, under the **Events – Mandatory** section, requires “*COAM Low RAM Battery – 3B low backup battery detected*”.

The Primero Games *Golden Nudge v1.02* financial data is stored within the onboard NVRAM, which is non-volatile memory. Thus, the Primero Games *Golden Nudge v1.02* software does not provide support for the COAM SAS Requirement “3B Low Backup Battery Detected”. Such implementation is permitted by the Georgia Lottery Corporation as documented in its **Requirements Clarification** document dated December 31, 2014.

7. MODIFICATIONS

eclipse Compliance Testing has reviewed the following modifications made to the previously reviewed *Golden Nudge* software to render the current *Golden Nudge v1.02* software:

- Modified the software to correct an issue that prevented the hand count from increasing when selecting the “Menu” button during the “Match 2” feature within the *Gold Safe Bandits* game theme.

8. FINDINGS AND CONCLUSIONS

Based upon our review of Primero Games *Golden Nudge v1.02*, we have determined that this device facilitates SAS 6.02 communication, via SAS simulation and with the Intralot, Inc. Central Monitoring System in accordance with the following technical standards:

- The document titled Georgia COAM SAS Requirements issued by the Georgia Lottery Corporation.

As previously mentioned, this assessment is focused on the SAS communication via SAS simulation, and on the interoperability of the SAS communications with the Intralot, Inc. Central Monitoring System v3.0, implemented by the Georgia Lottery Corporation of the aforementioned technical standards.

9. TERMS AND CONDITIONS

It should be noted that all findings and conclusions of fact have been derived from actual product interaction, visual observations, and the review of the submitted source code. **eclipse Compliance Testing** has performed extensive research and analysis to determine the findings previously mentioned. However, we realize that not all information may have been disclosed or provided for our review. If any parties dispute our findings, or may present evidence or information contrary to our findings, we would welcome the addition of this information for our consideration. In such an instance, we reserve the right to amend or revise this document.

This document is NOT an approval letter or expression of any opinion as to whether this system should be approved. Approval of this system should be granted by the Georgia Lottery Corporation, who may rely upon our findings for the determination of compliance.

This document has been prepared by **eclipse Compliance Testing** for Gaming Regulatory Authorities addressed hereto, for the benefit of Primero Games, LLC. Distribution of this document is limited exclusively to **eclipse Compliance Testing**, Primero Games, LLC, and those granted use of the report by the aforementioned parties. This report shall not be reproduced, except in full, without the written approval of **eclipse Compliance Testing**. Authorized parties may download an authentic electronic copy of this report from the *Reports* section of the **eclipse Compliance Testing** website (www.eclipsetesting.com).

If you should have any questions or require additional information, please feel free to contact our office at (440) 914-TEST (8378).

Sincerely,



Nick Farley
President

AP
NF/sc/bj
Attachments

APPENDIX

Primero Games, LLC
Golden Nudge v1.02

Detailed Compliance Analysis

SAS COMPLIANCE SUMMARY

(Performed with the SAS Simulator and with Intralot, Inc. Central Monitoring System)

SAS Requirement/ Event	Supported Functionality	Pass / Fail / N/A
Must not disable COAM when disconnected	✓	Pass
Must stop responding when COAM loses power after sending SAS Event 18	✓	Pass
Must respond when COAM power is restored and send SAS Event 17	✓	Pass
Must allow for configurable machine address with a range of 1-127	✓	Pass
COAM must support the ability to allow cash out when the COAM is disabled by the CMS, receives 0x01 Shutdown (lock out play).	✓	Pass
COAM must send event 70 as required by the SAS protocol	✓	Pass
Must support base accounting denomination of \$0.01 (pennies)	✓	Pass
<i>Must support the following SAS Long Polls:</i>		
0x01 Shutdown (lock out play) (persistent message must be displayed)	✓	Pass
0x02 Startup (enable play)	✓	Pass
0x0E Disable real time event reporting	✓	Pass
0x0F Send meters \$10 through \$15	✓	Pass
0x19 Send meters \$11 through \$15	✓	Pass
0x0F Send Gaming Machine ID and Information	✓	Pass
0x21 ROM signature verification using seed	✓	Pass
0x2F Send selected meters for game n (machine only)	✓	Pass
0x51 Send game n configuration	✓	Pass
0x53 Send total number of games implemented	✓	Pass
0x54 Send SAS version ID and gaming machine serial number	✓	Pass
0x55 Send Enabled Features	✓	Pass
0x56 Send enabled game numbers	✓	Pass
0xA0 Send selected game number	✓	Pass
<i>Must support transmission of the following meters:</i>		
0000 (\$11) Total Coin In	✓	Pass
0001 (\$12) Total Coin Out	✓	Pass
0002 (\$14) Total Jackpot Credits	✓	Pass
0003 (\$13) Total hand paid cancelled credits	✓	Pass
0004 (\$10) Total cancelled credits	✓	Pass
0005 (\$15) Game Played	✓	Pass
0006 Games Won	✓	Pass
0007 Games Lost	✓	Pass
000B Total credits from bill accepted	✓	Pass
000C Current credits	✓	Pass
0016 Total ticket out	✓	Pass
001C Total machine paid payable win, not including progressive or external bonus	✓	Pass
001D Total machine paid progressive win	✓	Pass
001E Total machine paid external bonus win	✓	Pass
001F Total attendant paid payable win, not including progressive or external bonus	✓	Pass

SAS Requirement/ Event	Supported Functionality	Pass / Fail / N/A
0020 Total attendant paid progressive win	✓	Pass
0021 Total Attendant Paid External Bonus	✓	Pass
0022 Total won credits	✓	Pass
0023 Total Hand paid credits	✓	Pass
0024 Total drop	✓	Pass
0040-0057 Total number of X bills accepted	✓	Pass
<i>Must support the following SAS Events:</i>		
17 AC power applied	✓	Pass
18 AC power lost	✓	Pass
51 Hand pay is pending	✓	Pass
52 Hand pay was reset	✓	Pass
15 Logic door open	✓	Pass
16 Logic door closed	✓	Pass
98 Power off card cage (must be monitored for at least 7 days with power lost)	✓	Pass
3C Operator menu accessed/changed	✓	Pass
3B Low backup battery detected		N/A
70 Exception buffer overflow	✓	Pass
7A Gaming machine soft meter reset	✓	Pass

✓ = This functionality is supported.