



TEXAS LOTTERY COMMISSION

Internal Audit Services

AN INTERNAL AUDIT OF

Jackpot Estimation System Updates

Report No. 23-005

August 1, 2023

This report provides management with information about the condition of risks and internal controls as a specific point in time. Future changes in environmental factors and actions by personnel may impact these risks and internal controls in ways that this report cannot anticipate.

Report Highlights

Why Was This Review Conducted?

McConnell & Jones LLP (MJ) serving as the outsourced internal audit function (Internal Audit) for the Texas Lottery Commission (TLC) performed this internal audit as part of the approved FY 2023 Annual Internal Audit Plan.

Audit Objectives and Scope

To assess the agency's Jackpot Estimation System (JES) to determine if the system updates were authorized, the JES server has updated security, and workflow approvals are updated.

The audit scope period was FY2023 to date.

Audit Focus

1. System change authorizations.
2. System security updates.
3. Jackpot estimate validation workflow and authorization.

We wish to thank all employees for their openness and cooperation. Without this, we would not have been able to complete our review.



Audit Conclusions

Overall, the design of the Agency's management controls in place to ensure JES system updates were authorized, that JES server has updated security, and workflow approvals are updated, is generally effective. We noted best practices process in the following processes:

- System change authorizations.
- Estimate validation workflow and authorization.

Internal Control Rating

Generally Effective internal controls with best practice processes.

What Did We Recommend?

We identified one opportunity to improve existing controls which management may want to consider if they continue to build software applications in-house. This is to consider implementing change notifications/file integrity checks on JES, to alert designated staff when changes are made within the production environment.

This is something TLC would need to incorporate into future decisions and is not something that needs to be acted upon now.

Number of Findings by Residual Risk Rating

Category	High	Medium	Low	Total
Findings	0	0	0	0

Introduction

We performed this audit as part of the approved FY 2023 Annual Internal Audit Plan. This audit was conducted in accordance with Generally Accepted Government Auditing Standards (GAGAS). Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained accomplishes that requirement.

This report summarizes the audit objective and scope, our assessment based on our audit objectives and the audit approach.

Objective, Conclusion, and Internal Control Rating

This audit resulted in an overall internal control rating of: **Generally Effective with Best Practice processes.**

Exhibit 1 describes the internal control rating.

The purpose of this audit was to assess the agency's Jackpot Estimation System (JES) to determine if the system updates were authorized, the JES server has updated security, and workflow approvals are updated.

As such we focused on the following processes:

1. System change authorizations.,
2. System security updates.
3. Jackpot estimate validation workflow and authorization.

The scope period was: FY2023 to date.

CONTROL RATING

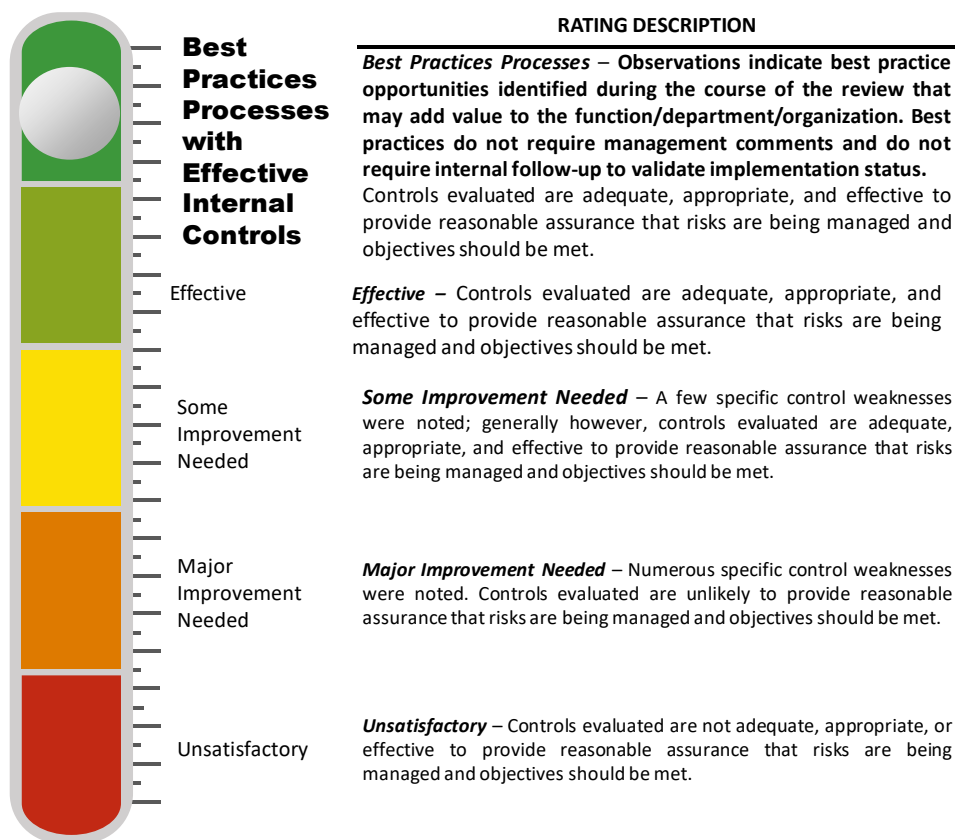


Exhibit 1: Internal control rating description.

Finding vs Improvement Opportunity

We define a finding as an internal control weakness or non-compliance with required policy, law, or regulation. We define an improvement opportunity as an area where the internal control or process is effective as designed but can be enhanced.

Findings and Risk Rating Summary

Inherent risk is the business risk associated with the respective function or process if internal controls were not in place or were not effective. Residual risk is Internal Audit's ranking of the remaining risk or likelihood of a negative event occurring with the internal controls and processes in place. **Exhibit 2** provides a summary of our audit observations. See the findings and management response section of this report for a discussion the respective business objective and the internal controls in place.

Business Objective / Focus Area	Business Risk Ranking	Control Effectiveness	Recommendations
1. To have processes and management controls in place that ensure all TLC Jackpot	Inherent Risk: High Residual Risk: Low	Generally Effective with Best Practice Processes No findings noted.	No recommendation made as internal controls are generally effective.

Business Objective / Focus Area	Business Risk Ranking	Control Effectiveness	Recommendations
Estimation System updates are authorized prior to placing into production.			
2. To have processes and management controls in place that ensure the Jackpot Estimation System security is up to date to address known vulnerabilities.	Inherent Risk: High Residual Risk: Low	Generally Effective with Improvement Opportunities No findings noted.	<u>Finding</u> No recommendation made as internal controls are generally effective. <u>Opportunity for Improvement</u> O-1. If TLC continues to develop software applications in-house, they should consider implementing change notifications/file integrity checks on JES, to alert when changes are made within the production environment.
3. To ensure that JES workflow is updated and working to ensure the verification and authorization of TLC jackpot estimations.	Inherent Risk: High Residual Risk: Low	Generally Effective with Best Practice Processes No findings noted.	No recommendation made as internal controls are generally effective.

Exhibit 2: Summary of Internal Audit Findings and Recommendations.

Background

The Office of the Controller (OC) and the Lottery Operations Products Department use the Jackpot Estimation System to disseminate estimated jackpot information and the associated approximate cash value amount to the TLC staff, website, and retailers.

The JES was developed by TLC to allow divisions to meet the following success factors:

- Jackpot estimations, and the resulting advertised amounts, are derived in accordance with agency policies and procedures.
- Ability to notify internal committee members that jackpot estimations are ready for review/approval.
- Create a secure electronic infrastructure to support jackpot estimation development and approval.

Detailed Findings and Management Response



This section of the report provides a detailed discussion of opportunities we noted during the audit along with recommendations to improve internal controls or the business process.

Business Objective #1: Authorizations of Changes

Business Risk Rating (Inherent): High

Business Risk Rating (Residual): Low

Business Objective: To have processes and management controls in place that ensure all TLC Jackpot Estimation System (JES) updates are authorized prior to placing into production.

Control Rating: Generally Effective with Best Practice Processes.

Narrative:

Audit procedures applied on the supporting documentation for changes to the TLC Jackpot Estimation System (JES), determined that the agency has processes and management controls in place to ensure all JES updates are fully tested and authorized prior to implementation into production. Additionally, access to the JES source code in the Subversion code repository is limited to authorized TLC personnel.

Criteria	<ul style="list-style-type: none"> ➤ Software Lifecycle Process documented in the TLC Program Cycle (IT-PS-001) Procedure. ➤ TLC Information Technology Security Manual. ➤ NIST Special Publication 800-53 Revision 5 - CONFIGURATION MANAGEMENT (CM-1; CM-2; CM-3)
Effect/Risk/Impact	<ul style="list-style-type: none"> ➤ Updates to the system configuration may not have been approved. ➤ Updates to the system configuration may not have been fully tested (Unit/Regression/ User Acceptance Testing (UAT)).
Control Tests	<ul style="list-style-type: none"> ➤ Inquired of Application Development & Maintenance Manager, Systems Analyst, and Developer. ➤ Inspected the TLC Program Cycle (IT-PS-001), which details the software lifecycle process. ➤ Inspected the TLC Information Technology Security Manual. ➤ Conducted walkthrough to observe a supporting documentation associated with a change to the JES.
Management Controls in Place	<ul style="list-style-type: none"> ➤ The TLC Program Cycle (IT-PS-001) procedure details the formal software lifecycle process for defining, developing, or modifying, and deploying custom internal applications. ➤ Access to the JES source code in the Subversion code repository is limited to authorized TLC personnel. ➤ Requests for changes to JES are initiated through an Information Service Request (ISR). ➤ TLC's Application Team performs the Unit and QA testing. ➤ UAT testing is performed by the requesting department's designated team. ➤ Migration of JES changes to the Unit/QA/UAT/Prod environments is performed by TLC's database administrators (DBAs). ➤ Artifacts such as development sprints, acceptance criteria, testing results, and approvals are maintained within the agency's JIRA system.
Findings / Opportunities	<ul style="list-style-type: none"> ➤ Controls are working effectively. No control findings noted.

Root Cause	➡ Not applicable.
-------------------	-------------------

Recommended Actions

No recommendations are made.

Management Response

Not required as no findings were noted.

Business Objective #2: System Security Updates

Business Risk Rating (Inherent): High

Business Risk Rating (Residual): Low

Business Objective: To have processes and management controls in place that ensure the Jackpot Estimation System security is up to date to address known vulnerabilities.

Control Rating: Generally Effective.

Narrative:

Audit procedures applied to the supporting documentation the TLC Jackpot Estimation System server determined that TLC has processes and management controls in place to ensure the Jackpot Estimation System server is updated with current security updates on a regular basis.

Additionally, TLC leverages a well-known software for continuous vulnerability scanning.

Criteria	<ul style="list-style-type: none"> ➡ TLC Server Updates (AD-IR-NS-005) Procedure. ➡ TLC Information Technology Security Manual. ➡ NIST Special Publication 800-53 Revision 5 - SYSTEM AND INFORMATION INTEGRITY (SI-2; SI-3; SI-4)
Effect/Risk/Impact	<ul style="list-style-type: none"> ➡ Server may not be updated with current security updates on a regular basis. ➡ Roles and privileges to update the system configuration may not be limited to only authorized personnel. ➡ TLC may not be alerted to changes made to the JES within the production environment.
Control Tests	<ul style="list-style-type: none"> ➡ Inquired of Information Security Officer. ➡ Inspected the TLC Server Updates (AD-IR-NS-005) Procedure. ➡ Inspected the TLC Information Technology Security Manual. ➡ Conducted walkthrough to observe security settings/Logs/etc. on the JES Server. ➡ Examined the listing of Active Employees and Contractors with the individuals granted access to the Subversion code repository.
Management Controls in Place	<ul style="list-style-type: none"> ➡ The TLC Server Updates (AD-IR-NS-005) details the requirements for performing security updates for TLC network connected resources. ➡ Access to the JES source code in the Subversion code repository is limited to authorized TLC personnel. ➡ Access to the JES Application Server is restricted though Active Directory (AD) groups. ➡ TLC leverages a well-known software for endpoint security. ➡ TLC leverages a well-known software for continuous vulnerability scanning. ➡ TLC leverages a well-known software to track changes to Active Directory.

Findings / Opportunities	➡ We identified a weakness that management immediately addressed during this audit once we brought it to their attention.
Root Cause	➡ Not applicable.

Recommended Actions

Findings:

No recommendations are made.

Opportunities for Improvement:

If TLC continues to develop software applications in-house, they should consider implementing change notifications/file integrity checks on JES, to alert when changes are made within the production environment.

Management Response

Not required as no findings were noted.

Business Objective #3: Estimate Validation Workflow and Authorization

Business Risk Rating (Inherent): High

Business Risk Rating (Residual): Low

Business Objective: To have process and controls in place that ensure JES' workflow is updated and working for the verification and authorization of TLC jackpot estimations.

Control Rating: Generally Effective with Best Practice Processes.

Narrative:

The agency leverages the checklist built into the Jackpot Estimation System and performs independent estimate reviews. Additionally, the agency has established threshold criteria for jackpot estimate approvals. Specifically.

- For jackpot estimations < \$20,000,000, the review and approval are 1) Controller, 2) Lottery Operations Director, and 3) Deputy Executive Director.
- For jackpot estimations > or = \$20,000,000, the review and approval are 1) Controller, 2) Lottery Operations Director, 3) Deputy Executive Director, and Executive Director.

Criteria	➡ TLC Lotto Texas® Jackpot Estimation (Desk) (OC-JE-007) Procedure. ➡ TLC Terminal and Draw Game Ticket Messages (LO-PD-012) Procedure.
Effect/Risk/Impact	➡ R3.1 - Jackpot estimates may not be reviewed and authorized at appropriate levels within the Agency.
Control Tests	➡ Inquired of Controller & Financial Operations Manager. ➡ Inquired of Lottery Operations Director, Products Manager, Draw Game Coordinator, and Draw Game Specialists. ➡ Inspected the TLC Lotto Texas® Jackpot Estimation (Desk) (OC-JE-007) procedure. ➡ Inspected the TLC Terminal and Draw Game Ticket Messages (LO-PD-012) procedure.

	➤ Conducted walkthrough to observe TLC Jackpot Estimation System (JES), review and authorization process.
Management Controls in Place	<ul style="list-style-type: none">➤ Lottery operations staff follow the review and authorization workflow detailed in the Office of Controller Estimation Procedures.➤ The Jackpot Estimation System contains checklists detailing requirements for estimate review and approvals.➤ The Lottery Operations Products Department verifies the estimates in JES, which are entered into the checklist in JES by the Office of the Controller (OC).
Findings / Opportunities	➤ Controls are working effectively. No control findings noted.
Root Cause	➤ Not applicable.

Recommended Actions

No recommendations are made.

Management Response

Not required as no findings were noted.