

Internal Audit Department

O R A N G E C O U N T Y
6th Largest County in the USA

AUDIT OF ACCESS REQUEST APPLICATION (ARA) USING COMPUTER-ASSISTED AUDIT TECHNIQUES (CAATs): AUDITOR-CONTROLLER

(Cited as a Best Practice by the Institute of Internal Auditors)

As of May 31, 2014

The Auditor-Controller is implementing an automated workflow process to replace the existing paper based process for authorizing access to the CAPS+ system resources and assigning user security roles. We reviewed design documentation for the automated Access Request Application (ARA) to identify controls that if implemented properly would facilitate appropriate segregation of duties, reviews and approvals, audit trails, and reconciliations. We also analyzed 2,571 CAPS+ user accounts as of November 1, 2013, to identify potential segregation of duties conflicts, inappropriate user access, and CAPS+ security table issues.

Our CAAT routines identified several exceptions that require further research by the Auditor-Controller to determine whether an exception existed. We identified **three (3) Control Findings** for the Auditor-Controller to perform further research on the reported findings to determine if they are valid exceptions.

AUDIT NO: 1357
REPORT DATE: AUGUST 20, 2014

Director: Dr. Peter Hughes, MBA, CPA, CIA
Senior Audit Manager: Michael Goodwin, CPA, CIA
IT Audit Manager: Wilson Crider, CPA, CISA*

(*Certified Information System Auditor)

RISK BASED AUDITING

GAO & IIA Peer Review Compliant – 2001, 2004, 2007, 2010, 2013
 American Institute of Certified Public Accountants Award to Dr. Peter Hughes as 2010 Outstanding CPA of the Year for Local Government

GRC (Government, Risk & Compliance) Group 2010 Award to IAD as MVP in Risk Management

 2009 Association of Certified Fraud Examiners' Hubbard Award to Dr. Peter Hughes for the Most Outstanding Article of the Year – Ethics Pays

 2008 Association of Local Government Auditors' Bronze Website Award

 2005 Institute of Internal Auditors' Award to IAD for Recognition of Commitment to Professional Excellence, Quality, and Outreach

OC ORANGE COUNTY BOARD OF SUPERVISORS' Internal Audit Department

GAO & IIA Peer Review Compliant - 2001, 2004, 2007, 2010, 2013

Providing Facts and Perspectives Countywide

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To access and view audit reports or obtain additional information about the OC Internal Audit Department, visit our website: www.ocgov.com/audit



OC Fraud Hotline (714) 834-3608



Transmittal Letter



Audit No. 1357 August 20, 2014

TO: Jan E. Grimes, CPA
Auditor-Controller

FROM: Dr. Peter Hughes, CPA, Director
Internal Audit Department

SUBJECT: Audit of Access Request Application (ARA)
Using Computer-Assisted Audit Techniques
(CAATs): Auditor-Controller

We have completed an Audit of Access Request Application (ARA) Using Computer-Assisted Audit Techniques (CAATs) as of May 31, 2014. We performed this audit in accordance with our *FY 2013-14 Audit Plan and Risk Assessment* approved by the Audit Oversight Committee and the Board of Supervisors. The final report is attached for your information.

Please note we have a structured and rigorous **Follow-Up Audit** process in response to recommendations and suggestions made by the Audit Oversight Committee (AOC) and the Board of Supervisors (BOS). Our **First Follow-Up Audit** will begin at six months from the official release of the report. A copy of all our Follow-Up Audit reports is provided to the BOS as well as to all those individuals indicated on our standard routing distribution list.

The AOC and BOS expect that audit recommendations will typically be implemented within six months and often sooner for significant and higher risk issues. Our **Second Follow-Up Audit** will begin at six months from the release of the first Follow-Up Audit report, by which time **all** audit recommendations are expected to be addressed and implemented. At the request of the AOC, we are to bring to their attention any audit recommendations we find still not implemented or mitigated after the second Follow-Up Audit. The AOC requests that such open issues appear on the agenda at their next scheduled meeting for discussion.

Each month I submit an **Audit Status Report** to the BOS where I detail any material and significant audit issues released in reports during the prior month and the implementation status of audit recommendations as disclosed by our Follow-Up Audits. Accordingly, the results of this audit will be included in a future status report to the BOS.

As always, the Internal Audit Department is available to partner with your staff so that they can successfully implement or mitigate difficult audit recommendations. Please feel free to call me should you wish to discuss any aspect of our audit report or recommendations. Additionally, we will request your department complete a **Customer Survey** of Audit Services. You will receive the survey shortly after the distribution of our final report.

ATTACHMENTS

Other recipients of this report are listed on the **OC Internal Auditor's Report** on page 4.

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Computer-Assisted Audit Techniques (CAATs):
Auditor-Controller
Audit No. 1357***

As of May 31, 2014

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Audit No. 1357

August 20, 2014

TO: Jan E. Grimes, CPA
Auditor-Controller

FROM: Dr. Peter Hughes, CPA, Director
Internal Audit Department

SUBJECT: Audit of Access Request Application (ARA) Using Computer-Assisted Audit Techniques (CAATs): Auditor-Controller

Audit Highlight

We reviewed ARA design documentation to identify application controls if implemented properly would facilitate appropriate segregation of duties, reviews and approvals, audit trails, and reconciliations.

We also analyzed 2,571 CAPS+ user accounts as of November 1, 2013, to identify potential segregation of duties conflicts, inappropriate CAPS+ user access, and CAPS+ security table issues.

We identified three **(3) Controls Findings** that require action by the A-C to resolve CAPS+ policy conflicts, unnecessary CAPS+ access, and unnecessary security table entries.

OBJECTIVES

In accordance with our *FY 2013-2014 Audit Plan and Risk Assessment* approved by the Audit Oversight Committee and Board of Supervisors, the Internal Audit Department conducted an audit of Access Request Application (ARA). We reviewed design documentation for ARA as well as performed a variety of audit tests of CAPS+ user access records utilizing Computer-Assisted Audit Techniques (known by the acronym CAATs). This audit was conducted in conformance with the Professional Practice of Internal Auditing prescribed by the Institute of Internal Auditors.

Our objective was to review design documentation to identify controls that if implemented properly would facilitate appropriate segregation of duties, reviews and approvals, audit trails, and reconciliations. In addition, we analyzed CAPS+ user access tables to determine whether the CAPS+ user accounts as established provided an adequate segregation of duties. To accomplish this, we performed the following objectives:

- 1. Reviewed ARA design documents to identify application controls:** Reviewed documentation to identify application controls that if implemented properly would facilitate:
 - Appropriate segregation of duties,
 - Reviews and approvals,
 - Audit trails, and
 - Reconciliations.
- 2. Analyzed CAPS+ User Access to identify policy conflicts:** Reviewed CAPS+ user accounts for potential security and workflow role conflicts as defined by Auditor-Controller.
- 3. Compared CAPS+ User Accounts with HR employee files to identify inappropriate access:** Compared CAPS+ user accounts with HR employee file to identify:
 - Inactive employees,
 - Non county employees, and
 - Account names not conforming to standard.
- 4. Analyzed CAPS+ Security Tables to identify inefficiencies:** Reviewed CAPS+ security tables to identify issues in the following areas:
 - Security roles,
 - Workflow roles, and
 - CAPS+ resources.



RESULTS

■ Objective #1 – ARA Application Controls:

We reviewed ARA design documentation to identify application controls in the areas of: segregation of duties, reviews and approvals, audit trails, and reconciliations and found adequate controls in the written documents. Based on our review of design documentation, we determined that the application controls identified, **if implemented properly**, would facilitate appropriate segregation of duties, reviews and approvals, audit trails, and reconciliations.

We have no findings or recommendations under this objective.

■ Objective #2 – Security and Workflow Policy Conflicts:

We used a CAAT routine to identify potential segregation of duties issues based on the Auditor-Controller's defined security role conflicts for both the Financial/Purchasing and HR/Payroll systems. The Auditor-Controller had identified 270 Financial/Purchasing role conflicts and 12 HR/Payroll role conflicts.

Our CAAT analysis performed on 2,571 CAPS+ user accounts identified the following:

- 106 Financial/Purchasing conflicts relating to 61 user accounts, and
- 870 HR/Payroll conflicts relating to 122 user accounts.

We identified **one (1) Control Finding** to implement ARA and resolve the CAPS+ user conflicts. (See the *Detailed Results, Findings, Recommendations and Management Responses* section of this report.)

■ Objective #3 – Comparison to HR Employee Records:

We compared the CAPS+ user accounts with the HR employee data file as of November 1, 2013, to identify non-County user access and separated employees. Our CAAT analysis performed on 2,571 CAPS+ user accounts identified the following:

- 185 (47 belong to special districts, courts) CAPS+ user accounts not matched to an active employee;
- 109 CAPS+ user accounts matched to an employee record with a status other than active; and
- 15 CAPS+ user accounts (12 related to system processes) that did not conform to the standard naming convention.

We identified **one (1) Control Finding** to resolve the CAPS+ user access issues.

■ Objective #4 – CAPS+ Security Tables:

We analyzed the CAPS+ security tables including security role tables, workflow role tables, and resource definition tables to identify potential issues and identified the following:

- 31 CAPS+ resources not associated with a security role,
- 172 Security roles that do not grant access to CAPS+ resources,
- 76 Security roles not associated with a user,
- 73 Workflow roles not associated with a user,
- 58 Workflow roles that do not grant access to CAPS+ documents, and
- 6 Workflow roles granting access to CAPS+ documents not defined in the workflow table.

We identified **one (1) Control Finding** to perform further research and resolve these issues.



BACKGROUND

The current process for requesting access to CAPS+ Financial/Purchasing, HR/Payroll and related systems (e.g., ERMI, VTI, and Personnel Data Warehouse) is a paper-based process. All of these systems contain sensitive and/or critical data related to the County's financial, human resources and payroll information. Currently, a paper **Access Request Form (ARF)** is used that must be signed and routed to various approvers for a wet signature. The ARF is designed to ensure the creation and approval of transactions (financial, budget, purchasing, payroll, human resources) is performed only by authorized users. An important internal control component is the proper assignment and segregation of employee duties. **Segregation of duties** reduces the risk of both erroneous and improper actions. Roles and responsibilities are set up to **require at least two different people to view each transaction**.

The **ARA (Access Request Application)** automates the paper-based process and will streamline the current ARF process. Benefits of ARA include an automated "workflow" to help users find their ARA in the approval process; up-front segregation of duties (role conflict) validation, and an ability to copy existing user profiles. Security and workflow will be established that will require user ID and passwords; security roles, workflow rules and various levels of approval. The ARA system was intended to go-live in June 2014, but was postponed to September 2014.

Our audit reviewed selected aspects of **pre-implementation** of ARA. We utilized CAATs to identify existing security and workflow conflicts (indicating that duties are not segregated). CAATs differ from our traditional audits in that CAATs can query **100%** of a data universe whereas the traditional audits typically test but a **sample** of transactions from the population. CAATs are automated queries applied to large amounts of electronic data searching for specified characteristics. We use a proprietary, best practice and industry recognized software product (ACL) to help us in this process.

Often there is additional research needed to validate exceptions that is only known at the department level. Internal Audit attempts to validate and resolve exceptions; however, most of the resulting exceptions are forwarded to the appropriate department for validation and/or resolution. Depending on the department's review, **the exceptions may or may not be a finding**. For the exceptions and findings noted in this report, we forwarded the preliminary exceptions to the **Auditor-Controller (A-C)** on December 18, 2013, for further research and/or clarifying existing CAPS+ access policies and procedures. In this report, we are keeping the details of our exceptions to a general discussion and do not identify specific user access. The A-C has been provided with the specific details of user access so they can conduct their research on the exceptions.

SCOPE

Our scope was conducting a CAAT analysis on 2,571 CAPS+ user accounts as of November 1, 2013, and included the following documents: *ARA Scope of Work*, *ARA Testing Instructions*, *Instructional Aide*, & *Test Scripts/Cases*, *ARF Automation Design*, *Security & Workflow Design*, and *CAPS+ Security Tables*. Our analysis included a review in the following areas:

1. **ARA Design Documentation:** We reviewed the ARA design documentation for controls in the following areas: segregation of duties, reviews and approvals, audit trails, and reconciliations.
2. **Security and Workflow Policy Conflicts:** We analyzed 2,571 CAPS+ user accounts for segregation of duties conflicts as defined by the A-C CAPS+ Conflicting Roles Tables.
3. **Comparison to HR Employee Records:** We compared all 2,571 CAPS+ user accounts with the Human Resources employee data file to identify user account issues.
4. **CAPS+ Security Tables:** We analyzed the CAPS+ security tables including security roles, workflow roles, and resources tables to identify potential issues.

OC Internal Auditor's Report



To accomplish the above, we worked with **Auditor-Controller/Information Technology** and **Auditor-Controller/Internal Audit**. The Auditor-Controller/Information Technology managers over CAPS+ Financial/Purchasing and HR/Payroll assisted us in researching our exceptions and helping refine our CAAT routines used in the audit.

Acknowledgment

We appreciate the courtesy extended to us by the Auditor-Controller personnel during our audit. If we can be of further assistance, please contact me directly at 834-5475 or Michael Goodwin, Senior Audit Manager, at 834-6066.

Attachments

Distribution Pursuant to Audit Oversight Committee Procedure No. 1:

- Members, Board of Supervisors
- Members, Audit Oversight Committee
- Michael Giancola, County Executive Officer
- Frank Kim, Chief Financial Officer
- Mark Denny, Chief Operating Officer
- Denise Steckler, Chief Deputy Auditor-Controller
- Victoria Ross, Director, Central Accounting Operations, Auditor-Controller
- Phil Daigneau, Director, Information Technology, Auditor-Controller
- Bill Malohn, Manager, CAPS+ Financial/Purchasing, Auditor-Controller
- Teresa White, Manager, CAPS+ HR/Payroll, Auditor-Controller
- Foreperson, Grand Jury
- Susan Novak, Clerk of the Board of Supervisors
- Macias Gini & O'Connell LLP, County External Auditor

Detailed Results, Findings, Recommendations and Management Responses



1. ARA Design Documentation (Objective #1)

We reviewed design documentation for the ARA application including: *ARA Scope of Work, ARF Automation Design, Security and Workflow Design, and ARA Testing Instructions, Instructional Aide & Test Scripts/Cases* and identified the following application controls:

- **Segregation of Duties**

- ARA will automate the processing of CAPS+ access requests including a workflow feature (email notifications and documented approvals) that will allow users to monitor progress of their access request from initial request through final approval.
- ARA will prevent segregation of duties conflicts as defined in the policy.
- ARA security roles will limit user's capabilities similar to ERMI where access to confidential documents (such as access request form) is restricted.
- An ARA administrator account will be established to configure/edit ARA including: procedures for assignment/use/deactivation of the ARA administrator account; audit logs of account activity; and email notifications to a pre-determined distribution list.

- **Review and Approval**

- ARA will automate the processing of CAPS+ access requests including a workflow feature (email notifications and documented approvals) that will allow users to monitor progress of their access request from initial request through final approval.

- **Audit Trails**

- ARA will have an audit trail of all activity within system.

- **Reconciliation**

- ARA will allow provide reconciliation reports between ARA and CAPS+.

- **Other Security Features**

- ARA password criteria is configurable. For the ARA testing phase, password settings were simplified: 4 characters including numeric, upper case, and lower case with the last 3 passwords in history. For production, the password settings will be strengthened: 8 characters including numeric, upper case, and lower case with the last 3 passwords in history.
- ARA will enable control of user email accounts, which is a key field in the administration of user accounts.
- ARA has automatic locking accounts for users that have been separated or transferred when processed by CAPS+ HR.

Conclusion:

Based on our limited review of design documentation, we determined that the application controls identified, **if implemented properly**, would facilitate appropriate segregation of duties, reviews and approvals, audit trails, and reconciliations. **No findings were noted under this objective.**

2. Security and Workflow Policy Conflicts (Objective #2)

We used a CAAT routine to identify potential segregation of duties issues based on Auditor-Controller defined security role conflicts for both the Financial and HR/Payroll systems. The Auditor-Controller had identified 270 Financial/Purchasing conflicts and 12 HR/Payroll conflicts.

Detailed Results, Findings, Recommendations and Management Responses



Conclusion:

This analysis was intended to identify exceptions that require further research to determine if they are indicative of a CAPS+ segregation of duties issue. We forwarded these exceptions to the Auditor-Controller for research and resolution, and were informed that these items would be resolved with the implementation of ARA. As such, we identified **one (1) Control Finding** to implement ARA and resolve the CAPS+ user conflicts:

Finding 1 – Security and Workflow Policy Conflicts (Control Finding)

- a. Financial/Purchasing Conflicts: Our CAAT analysis identified 106 conflicts (assigned to 61 user accounts) as defined by CAPS+ Financial/Purchasing Conflicting Roles Table.
- b. HR/Payroll Conflicts: 870 conflicts (assigned to 122 user accounts) as defined by CAPS+ Human Resources/Payroll Conflicting Roles Table.

Recommendation No. 1:

The Auditor-Controller should research and validate the reported exceptions. For any policy conflicts, the identified accounts' access should be modified to eliminate the conflict.

Auditor-Controller Management Response:

Concur. Auditor-Controller plans to implement the Access Request Application (ARA) in September 2014. The use of this new system will limit future conflicts from occurring within CAPS+. Each time a County User requests access to the various CAPS+ systems, ARA will systematically compare requested Security Roles against established Conflicting Roles Matrices. This function can be configured to require an additional workflow step to review the specific conflicts or to prevent the conflicts all together.

In fiscal year 2014-2015, the Auditor-Controller Internal Control Advisory Workgroup will review and revise the existing CAPS+ Conflicting Roles Matrices. After the matrices have been revised, they will be loaded in ARA. Once the Conflicting Roles Matrices are revised, the CAPS+ Security Team will contact users to resolve any remaining conflicts. This will involve the users submitting revised access requests through the ARA system to eliminate conflicts.

3. Comparison to HR Employee Records (Objective #3)

We compared the 2,571 CAPS+ User Accounts with the Human Resources employee records to identify CAPS+ user access issues. This analysis was intended to identify exceptions that require further research to determine if they are indicative of a CAPS+ user access concern.

Conclusion:

Based on our analysis of the CAPS+ user accounts and the Auditor-Controller's preliminary research of the exceptions, we were informed that these issues will be addressed with the implementation of ARA. As such, we identified **one (1) Control Finding** to implement ARA and resolve the CAPS+ user access issues.

Finding 2 - CAPS+ User Account Exceptions to HR Employee Records (Control Finding)

- a. Non-County Employee Access: 185 (47 belong to special districts, courts) CAPS+ user accounts not matched to an active employee.
- b. Non-Active Employee Access: 109 CAPS+ user accounts matched to an employee record with a status other than "active."
- c. Non-Standard Account: 15 CAPS+ user accounts (12 belong to system processes) that did not conform to the standard naming convention.

Detailed Results, Findings, Recommendations and Management Responses



Recommendation No. 2:

The Auditor-Controller should research and validate the reported exceptions. For any valid exceptions, the accounts should be reviewed to ensure they are necessary.

Auditor-Controller Management Response:

Concur. Auditor-Controller plans to implement ARA in September 2014. This application includes a "Separations and Transfers" feature which will reduce the number of CAPS+ User Account Exceptions to HR Employee Records. On a nightly basis, ARA will examine each user's HR status to determine whether they are in a "separated" or "transferred" state. If a user has separated from the County, their accounts will be locked and department representatives will be notified to delete the user's access. If the user has transferred, their situation will be reviewed by the CAPS+ Security Team to determine the proper disposition. ARA will also have aging feature that will generate notifications to each department should they have users who no longer require access.

4. CAPS+ Security Tables (Objective #4)

We reviewed CAPS+ security tables for issues. This analysis was intended to identify exceptions that require further research to determine if they are indicative of a CAPS+ user access concern.

Conclusion:

Based on our analysis and the Auditor-Controller's preliminary research of the exceptions, we were informed that the majority of these items relate to either notifications (emails) or documentation (document who is performing manual processes) items and the other items are maintenance issues that will be resolved when ARA is implemented. As such, we identified **one (1) Control Finding** to perform further research and resolve these issues.

Finding 3 - CAPS+ Security Table Configuration (Control Finding)

- a. 172 Security roles that do not grant access to CAPS+ resources.
- b. 76 Security roles not associated with a user.
- c. 73 Workflow roles not associated with a user.
- d. 58 Workflow roles that do not grant access to CAPS+ documents.
- e. 6 Workflow roles granting access to CAPS+ documents not defined in the workflow table.
- f. 31 CAPS+ resources not associated with a security role.

Recommendation No. 3:

The Auditor-Controller should research the reported exceptions and remove any unnecessary items.

Auditor-Controller Management Response:

Concur. Auditor-Controller will create and maintain a list of valid exceptions, which will contain the names of roles/resources and an explanation of why they are valid. The majority of the exceptions noted in the audit finding are valid (i.e. ERMI roles, non-approval workflow notifications, etc.).

Auditor-Controller will review the roles/resources and remove any that are unnecessary by December 2014.



ATTACHMENT A: Report Item Classifications

For purposes of reporting our audit observations and recommendations, we will classify audit report items into three distinct categories:

▶ **Critical Control Weaknesses:**

Audit findings or a combination of Significant Control Weaknesses that represent serious exceptions to the audit objective(s), policy and/or business goals. Management is expected to address Critical Control Weaknesses brought to their attention immediately.

▶ **Significant Control Weaknesses:**

Audit findings or a combination of Control Findings that represent a significant deficiency in the design or operation of internal controls. Significant Control Weaknesses require prompt corrective actions.

▶ **Control Findings:**

Audit findings concerning internal controls, compliance issues, or efficiency/effectiveness issues that require management's corrective action to implement or enhance processes and internal controls. Control Findings are expected to be addressed within our follow-up process of six months, but no later than twelve months.



ATTACHMENT B: Auditor-Controller Management Responses



JAN E. GRIMES, CPA
AUDITOR-CONTROLLER

ORANGE COUNTY AUDITOR-CONTROLLER

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CHIEF DEPUTY AUDITOR-CONTROLLER
CENTRAL ACCOUNTING OPERATIONS

August 15, 2014

TO: Peter Hughes, Director
Internal Audit Department

ATTN: Alan Marcum, Senior Audit Manager

SUBJECT: Audit Report No. 1357 – Audit of Access Request Application (ARA)
Using Computer-Assisted Audit Techniques (CAATs)

Following is our response to the recommendations contained in the report on 1357 – Audit of Access Request Application (ARA), Using Computer-Assisted Audit Techniques (CAATs) – Audit Report No. 1357.

Recommendation No. 1

The Auditor-Controller should research and validate the reported exceptions. For any policy conflicts, the identified accounts' access should be modified to eliminate the conflict.

Auditor-Controller Response

Concur: Auditor-Controller plans to implement the Access Request Application (ARA) in September 2014. The use of this new system will limit future conflicts from occurring within CAPS+. Each time a County User requests access to the various CAPS+ systems, ARA will systematically compare requested Security Roles against established Conflicting Roles Matrices. This function can be configured to require an additional workflow step to review the specific conflicts or to prevent the conflicts all together.

In fiscal year 2014-2015, the Auditor-Controller Internal Control Advisory Workgroup will review and revise the existing CAPS+ Conflicting Roles Matrices. After the matrices have been revised, they will be loaded into ARA. Once the Conflicting Roles Matrices are revised, the CAPS+ Security Team will contact users to resolve any remaining conflicts. This will involve the users submitting revised access requests through the ARA system to eliminate conflicts.



ATTACHMENT B: Auditor-Controller Management Responses

Peter Hughes, Director, Internal Audit
August 15, 2014
Page 2

Recommendation No. 2

The Auditor-Controller should research and validate the reported exceptions. For any valid exceptions, the accounts should be reviewed to ensure they are necessary.

Auditor-Controller Response

Concur: Auditor-Controller plans to implement ARA in September 2014. This application includes a "Separations and Transfers" feature which will reduce the number of CAPS+ User Account Exceptions to HR Employee Records. On a nightly basis, ARA will examine each user's HR status to determine whether they are in a "separated" or "transferred" state. If a user has separated from the County, their accounts will be locked and department representatives will be notified to delete the user's access. If a user has transferred, their situation will be reviewed by the CAPS+ Security Team to determine the proper disposition. ARA will also have an aging feature that will generate notifications to each department should they have users who no longer require access.

Recommendation No. 3

The Auditor-Controller should research the reported exceptions and remove any unnecessary items

Auditor-Controller Response

Concur: Auditor-Controller will create and maintain a list of valid exceptions, which will contain the names of roles/resources and an explanation of why they are valid. The majority of the exceptions noted in the audit finding are valid (i.e. ERMI roles, non-approval workflow notifications, etc.).

Auditor-Controller will review the roles/resources and remove any that are unnecessary by December 2014.


for Jan E. Grimes
Auditor-Controller

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