

Office of Inspector General

Robert E. Clift, Inspector General



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Advisory Report No. 14P-5001
SSRC – Service Level Agreements

EXECUTIVE SUMMARY

In June 2012, the Auditor General (AG) released Report No. 2012-189 regarding an information technology operational audit of Southwood Shared Resource Center (SSRC). The purpose of this engagement was to determine the status of the corrective actions taken by the SSRC for AG findings directly related to the Department of Transportation (department) service level agreement (SLA). If the corrective actions were not completed, we also determined the impact to the department.

In addition, we determined whether the SSRC had responded to the incidents reported by the department and processed the department's past service requests within the time frames specified in the SLA.

This engagement was selected based on the Office of Inspector General's (OIG's) annual audit plan.

To achieve our first objective, we reviewed the ten findings from AG Report 2012-189 and determined eight of the findings directly related to the department's SLA. We determined the following regarding the eight findings:

- the SSRC completed the corrective actions for four of the findings; and
- SSRC did not fully complete the corrective actions for four of the findings.

Our review of the four incomplete findings and corrective actions revealed:

- the SSRC could measure seven of the 72 Standard Mainframe Performance Measures and none of the 62 Specialized Mainframe Performance Measures provided in the current SLA;
- the SSRC updated and implemented Backup and Recovery Procedures but reconciliation software, Tape Tracker, implemented in October 2012, does not accurately track the backup tapes stored at SSRC;
- five of the 11 department critical applications and data residing on SSRC servers are protected under the SSRC's Mainframe Disaster Recovery Plan (DRP). The six critical applications and data related to TRNS*PORT residing on SSRC's Platform servers are not protected under the SSRC DRP; and
- the SSRC has implemented new software to track software changes but has not approved a new Change Control Procedure.

**Office of Inspector General
Florida Department of Transportation**

We recommend the Chief Information Officer (CIO) task staff to:

- reevaluate current performance measures within the SLA and determine appropriate measures to adequately ensure services are provided and communicate this expectation to the SSRC and the Agency for State Technology (AST);
- monitor corrective actions to Tape Tracker to ensure it is operating correctly so backup information can be located when stored at the SSRC;
- convey to the AST the expectation that all department critical systems and data stored at the SSRC are recoverable in the event of a disaster; and
- request the AST notify the department upon approval and implementation of the SSRC's Change Control Procedure.

For the second objective, we were unable to evaluate both the SSRC's response to reported incidents and requests for additional resources. The SSRC's service desk software, used during the time frame of the sample reviewed, did not capture the response date and time¹ for the incidents² reported by the department, which is required to evaluate compliance with the SLA. However, the SSRC implemented new service desk software on March 3, 2014, which tracks the 'response date and time.'

Neither the department or SSRC was capturing department requests for additional resources or services prior to fiscal year 2013-2014 nor did the SLA contain any requirements addressing this area.

We recommend the CIO task staff with developing a quality assurance plan with AST to ensure the SSRC's service desk software is tracking response times needed and determine compliance with the department SLAs. Additionally, the Office of Information Systems (OIS) should consider requesting a revision to the SLAs incorporating standard response timeframes for addition of resources or services. OIS concurred with the findings and initiated corrective actions.

¹ Response time is the duration from creating a service desk ticket at SSRC and making the first phone call to the Technician.

² SLA defines an incident as an individual occurrence or event that impacts technology services to a customer.

Office of Inspector General
Florida Department of Transportation

TABLE OF CONTENTS

<u>BACKGROUND AND INTRODUCTION</u>	4
<u>RESULTS OF REVIEW</u>	5
<u>APPENDIX</u>	
A. Purpose, Scope and Methodology	12
B. Management Response	13
C. AG Report Findings: Corrective Actions Adequate to Address Findings	14
D. AG Report Findings: Not in the Scope	15
<u>DISTRIBUTION, PROJECT TEAM AND STATEMENT OF ACCORDANCE</u>	16

BACKGROUND AND INTRODUCTION

The SSRC was established as a primary data center to serve customer entities as an information systems utility pursuant to Subsections 282.203(1)(a) and 282.205(1), Florida Statutes (F.S.). Subsection 282.203(1)(i), F.S., requires each primary data center to enter into a SLA with each customer entity to provide services as defined and approved by the board.³ The department has executed two SLAs with the SSRC for different services: the Mainframe Services SLA for the term July 1, 2012 – June 30, 2015 and the Platform Services SLA for the term July 1, 2011 – June 30, 2014.

In June 2012, the AG released Report No. 2012-189 titled Southwood Shared Resource Center Operations, an information technology operational audit. The AG Report findings were related to compliance by the SSRC to various provisions of executed SLA's with state agencies. For our engagement, we determined which AG Report findings directly related to the department SLAs and reviewed the corrective actions taken by the SSRC.

Additionally, management requested a review of the response time for the department's reported incidents and requests for additional resources to determine the SSRC's compliance to the SLAs standards.

³SSRC Board of Trustees

RESULTS OF REVIEW

Objective 1

Determine the status of the corrective actions taken for the findings in AG Report 2012-189 that directly relate to the department's SLA. If the corrective actions are not completed, also determine the impact to the department.

To achieve our first objective, we first reviewed the ten findings from AG Report 2012-189 and determined eight of the findings directly related to the department's SLA. We determined the following regarding the eight findings:

- the SSRC completed the corrective actions for four of the findings; and
- SSRC did not fully complete the corrective actions for four of the findings.

The four findings that did not have corrective actions completed fully are detailed in the following sections. The findings and recommendations are directly from the AG report. Our office determined the status of the corrective actions from follow-up AG reports and information provided by SSRC staff. The four findings that had corrective actions completed are detailed within Appendix C.

AG Report 2012-89 Finding 1

SSRC had not met some agreed-upon performance requirements or metrics within some of its service-level agreements (SLAs) and did not measure other performance metrics. A similar issue was noted in the previous AG Report No. 2010-173.

AG recommendation

SSRC should improve its measurement and monitoring of the appropriateness of and compliance with SLA provisions. In part, SSRC should acquire the necessary tools to measure the agreed-upon performance metrics included in customer entity SLAs or modify the SLAs to provide for, where appropriate, other performance metrics that can be measured and monitored for compliance.

Status of the corrective actions: We determined the SSRC cannot measure all performance measures agreed upon in the most recent SLA. The SSRC uses the System Management Facility (SMF) software to capture performance measures for the z/OS operating system and major software components CICS⁴ and DB2.⁵ The SSRC can measure:

- seven of the 72 Standard Mainframe Performance Measures (list available upon request); and

⁴ Customer Information Control Systems (CICS) are transaction servers run primarily on IBM mainframe systems.

⁵ IBM's DB2 is a relational database server.

**Office of Inspector General
Florida Department of Transportation**

- none of the 62 Specialized Mainframe Performance Measures (list available upon request).

The SSRC does not currently have a toolset that can capture the information needed for the performance measures and does not have the funds to purchase a new toolset with the capability. Previously, the department OIS liaison and SSRC staff started a process to determine if the current performance measures should be modified to reflect metrics necessary for the department to conclude whether appropriate services are being received. However, this process was never completed.

Impact to the department: The SSRC's inability to measure and/or monitor the performance measure items increases the risk that the department is unable to justify the cost of the services provided by the SSRC and react to issues in a timely manner.

Our Recommendation: The CIO task staff to reevaluate current performance measures and determine appropriate measures to adequately ensure services and communicate this expectation to the SSRC and AST. If SSRC is unable to measure a necessary performance metric then compensating controls should be in place for the department to verify the adequacy of the services provided by the SSRC related to the measure.

AG Report 2012-189 Finding 3

SSRC procedures for the mainframe backup process were outdated. Additionally, as similarly noted in previous AG report No. 2010-173, some backup tapes were not properly accounted for.

AG Recommendation

SSRC should update its written procedures as appropriate to describe management's current expectations for the mainframe backup process and ensure the accuracy of its tape location records.

Status of the corrective actions: We determined the SSRC has completed corrective actions that partially address this finding and recommendation. The SSRC updated, documented and implemented the Backup and Recovery Procedures. However, the reconciliation software, Tape Tracker, implemented in October 2012 does not accurately track the backup tapes stored at SSRC. The SSRC is currently working to rectify the software implementation glitches. Once completely functional, Tape Tracker would account for all the backup tapes.

Impact to the department: Inaccurate tape backup records or backup tape location records increase the time needed to recover the department's information if production files are lost. The SSRC performs incremental backup

nightly and full volume backup weekly. Since the backup tapes are copied and stored offsite to enable disaster recovery, the impact to the department lies in the time needed to restore production files.

Our Recommendation: The CIO task staff to monitor corrective actions to Tape Tracker to ensure it is operating correctly so backup information can be located when stored at the SSRC.

AG Report 2012-189 Finding 4

The SSRC Continuity of Operations Plan Operational Procedures (COOP)⁶ and the Recovery Plan⁷ had not been recently updated and SSRC staff had not received periodic training on implementing the plans.

AG Recommendation

SSRC should review and update its COOP and Recovery Plan to accurately describe the current SSRC environment. SSRC should also ensure that periodic business continuity and disaster recovery training is scheduled and completed.

Status of the corrective actions: We determined the SSRC has partially completed the corrective actions related to this finding. The SSRC has started performing periodic Disaster Recovery (DR) training and testing. The most recent DR testing involving the department's production systems and data residing on the SSRC IBM Mainframe server was conducted February 11, 2014 – February 13, 2014.

However, their DRP protects only department applications and data residing on the SSRC's Mainframe servers. The department has critical applications and data housed on both the SSRC's Mainframe and Platform servers. OIS staff provided our office with a list of all applications and data⁸ stored at the SSRC and defined which are critical to the department. We determined where the applications and data are stored at the SSRC.

The department's critical applications and data residing on the SSRC's Mainframe servers and protected by the DRP are:

- Federal Authorization Management (FAMS)
- Federal Programs Management (FPM-BILL)
- Financial Management (FM)
- Project Cost Management (PCM)

⁶ Per the department SLA, review of the SSRC COOP was not within the scope of this engagement.

⁷ Per the department SLA, SSRC is responsible for the security of the department's data and information, so the review of the SSRC DRP was within the scope of the engagement.

⁸ List of Florida Department of Transportation Applications and Data Housing Information is available upon request.

**Office of Inspector General
Florida Department of Transportation**

- Work Program Administration (WPA)

The department's critical applications and data residing on the SSRC's Platform servers and not protected under the DRP are:

- Trns*Port Expedite Electronic Bidding (EXP)
- Trns*Port Letting and Awards System (LAS)
- Trns*Port CES Estimating System (CEST)
- Trns*Port Proposal and Estimates System (PES)
- Trns*Port SiteManager System (SIM)
- Trns*Port Software Management (TSM)

The SSRC submitted disaster recovery assessment results to the Legislature in the past session requesting additional funding for the development of a DRP for Platform Servers. The Legislature did not approve this funding.

Impact to the department: It is important the DRP cover all critical applications and data. An inadequate DRP increases the risk that in the event of an interruption of department operations, the recovery time for critical applications and data will not be in a timely manner.

Our Recommendation: The CIO convey to the AST the expectation that all department critical applications and data stored at the SSRC is recoverable in the event of a disaster.

AG Report 2012-189 Finding 5

SSRC did not have a complete, system-generated record of all systems software changes, and SSRC staffs were unable to provide documentation of testing for some software changes. In addition, as similarly noted in our report No. 2010-173, SSRC change control procedures for testing changes to certain types of systems software were not comprehensive.

AG Recommendation

SSRC should implement system-generated logs to record, track, and report all system software changes that are made to a platform. Additionally, SSRC should ensure that all changes are appropriately approved and documentation of the approval is retained. SSRC should also update its change control procedures to document management's expectations for systems software testing.

Status of the corrective actions: We determined the SSRC partially completed the corrective actions related to this finding. The SSRC implemented a new service desk software, Cherwell IT Services Management (ITSM), on March 3, 2014. Currently, the SSRC tracks every change through Cherwell ITSM. The

SSRC is revising the Change Control Procedure, with an anticipated approval date of early fiscal year 2014-2015.

Impact to the department: Without an up-to-date Change Control Procedure, the risk increases for improper testing of changes, testing not consistent with management expectations, erroneous and/or unauthorized changes moving to production and service interruption.

Additionally, our review of the Responses to After Action Reports indicates the SSRC could have avoided service interruptions of the department's servers by following an up-to-date Change Control Procedure.

Our Recommendation: The CIO request the AST notify the department upon approval and implementation of the SSRC's Change Control Procedure.

OBJECTIVE 2

Determine if the SSRC had responded to the incidents reported by the department and processed the department's past service requests within the time frames specified in the SLA.

SSRC's Response to Reports of Incidents

The SSRC service desk captures the department's service requests, including report of incidents. Service requests are assigned priority based on the severity of the incident. As defined in the SLA, an incident with severity of '1' is considered 'critical'⁹ and the standard response time¹⁰ for a critical incident is 30 minutes. During our review, the SSRC could not provide incident response time for the time frame of our review since the previous service desk software was unable to capture this information.

To address the AG Report 2012-189, Finding 5, regarding this situation, the SSRC implemented a new service desk toolset, Cherwell ITSM software, in March 2014. Cherwell ITSM software captures response time for the incidents reported by the department, therefore collecting data necessary to determine the compliance to the SLA requirements.

Even though the previous service desk software did not capture the response time, we evaluated the service desk data for critical incident closure time from

⁹ SLA definition – Critical - The majority of customers are experiencing a work stoppage of a mission critical function, application, platform, connection or environment that is interrupting the customers' business.

¹⁰ Response time is the duration from creating a service desk ticket at SSRC and making the first phone call to the technician.

**Office of Inspector General
Florida Department of Transportation**

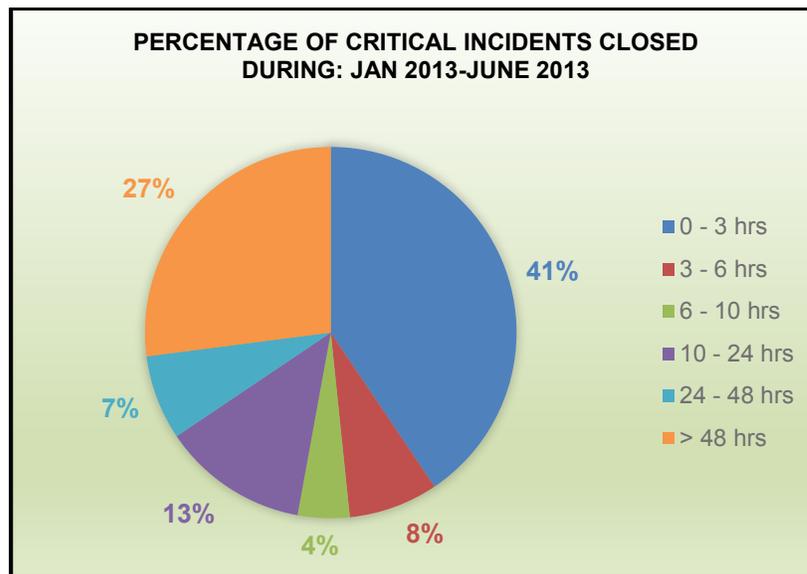
January 2013 – June 2013 since this data was captured in the old tool. We obtained reports with the 'open date and time' and 'close date and time' to calculate the time the SSRC took to resolve each incident.

Our analysis of 244 critical incidents closed (see table and chart below) indicates:

- 99 (40.57%) were closed within three hours of the tickets being created;
- 160¹¹ (65.57%) were closed within twenty four hours; and
- 84 (34.43%) were closed in more than 24 hours.

Evaluation of Service Desk Data: Time to Close Critical Incidents

	0 - 3 hrs	3 - 6 hrs	6 - 10 hrs	10 - 24 hrs	24 - 48 hrs	> 48 hrs	Total Critical Incidents
Jan-13	17	2	1	5	1	12	38
Feb-13	10	3	1	8	5	14	41
Mar-13	17	5	5	2	3	13	45
Apr-13	17	3	3	7	2	14	46
May-13	21	5	1	4	6	6	43
Jun-13	17	1	0	5	1	7	31
Total	99	19	11	31	18	66	244
Percentage	40.57%	7.79%	4.51%	12.70%	7.38%	27.05%	100.00%
Cumulative Total	99	118	129	160	178	244	
Cumulative Percentage	40.57%	48.36%	52.87%	65.57%	72.95%	100.00%	



¹¹ Includes 99 incidents closed within three hours.

Our Recommendation: The CIO task staff with developing a quality assurance plan with AST to ensure the Cherwell ITSM software is tracking the response time as needed to determine compliance with the department SLAs.

SSRC's Response to Additional Resource Request

We determined there was no standard timeframe mentioned in the SLAs for service modification. Moreover, the OIS did not maintain data of additional resource requests prior to fiscal year 2013-2014. Due to the lack of adequate data and SLA standards for service modification, we were unable to perform testing on the timeliness of the SSRC's response to the department's service request.

OIS began capturing service modification information beginning with fiscal year 2013-2014, therefore maintaining information necessary for future reviews on the subject.

Our Recommendation: OIS should consider requesting revision to the SLAs, incorporating standard response timeframes for the addition of resources or services. OIS should also develop a quality assurance plan to verify the SSRC's compliance to the time requirement by the SLAs for additional services or resources.

APPENDIX A – Purpose, Scope and Methodology

The **purpose** of this engagement was to determine the status of the corrective actions taken by the SSRC for the AG Report Findings that are related to the department, and if the corrective actions were not completed, to determine the risks that existed for the department. Also, to determine if the SSRC had processed the department's past service requests and responded to the incidents reported by the department within the time frame specified in the SLA.

The **scope** of the engagement included applicable documents and records related to the corrective measures taken by the SSRC as recommended in the AG Report 2012-189; applicable documents and records for fiscal year 2011-2012 and 2012-2013; the SSRC service desk tickets created January 2013-June 2013; and the department's responses to the after action reports and post implementation report.

To facilitate our engagement, we:

- reviewed:
 - applicable statutes, rules and procedures;
 - prior engagements;
 - the department's SLAs: Mainframe Managed Services SLA and Platform Services SLA;
 - documents and records related to the corrective measures taken by the SSRC as recommended in the AG Report;
 - documents and records related to the incident report and the additional resource requested by the department;
 - the 'responses to the after action reports';
 - the 'post implementation report';
 - the SSRC and OIS responses to the questionnaires; and
 - the housing and criticality information for all the department applications and data housed at the SSRC as well as within the department;
- conducted entrance conferences with the department as well as with the SSRC executive management;
- conducted working conferences with department OIS personnel;
- interviewed department personnel;
- interviewed Department of Management Services (DMS) and SSRC personnel; and
- toured the SSRC facility.

**Office of Inspector General
Florida Department of Transportation**

APPENDIX B – Management Response

The Office of Information Systems provided the following response:

Finding	OIS' Response
SSRC had not met some agreed-upon performance requirements or metrics within some of its service-level agreements (SLAs) and did not measure other performance metrics. A similar issue was noted in the previous AG Report no. 2010-173.	We concur with the finding and recommendation. The Office of Information Systems shall work with the SSRC to identify which of the 134 performance measures are necessary. Upon determining which measures are necessary and which measures have compensating controls, the Office of Information Systems shall incorporate the updated performance measures into the SLA revision. Expected completion time frame is 09/30/2015.
SSRC procedures for the mainframe backup processes were outdated. Additionally, as similarly noted in previous AG Report No. 2010-173, some backup tapes were not properly accounted for.	We concur with the finding and recommendation. The Office of Information Systems shall monitor tape backup on a monthly basis. Expected completion time frame is 01/30/2015.
The SSRC COOP and the Recovery Plan had not been recently updated and SSRC staff had not received periodic training on implementing the plan.	We concur with the finding and the recommendation. The CIO shall communicate to the AST to convey the expectation that all department critical applications and data stored at the SSRC is recoverable in the event of a disaster. Expected completion time frame is 01/30/2015.
SSRC did not complete system-generated record of all systems software and SSRC staff were unable to provide documentation of testing for some software changes. In addition, as similarly noted in our report No. 2010-173, SSRC change control procedures for testing changes to certain types of systems software were not comprehensive.	We concur with the finding and the recommendation. The CIO shall request the AST to notify the department upon approval and implementation of SSRC's Change Control Procedure. Expected completion time frame is 01/30/2015.
The SSRC has not consistently responded to the incidents reported by the Department within the time frame specified in the SLA and the SSRC has not consistently processed the Department's past service requests within the time frame specified within the SLA.	We concur with the finding and the recommendation. The Office of Information Systems has already established a QA Plan to ensure the Cherwel ITSM software is tracking the response time as needed to determine compliance with the Department SLAs. Completed.
No standard timeframe mentioned in the SLAs for server modification.	We concur with the finding and the recommendation. The Office of Information Systems is currently working with the SSRC on updated its SLAs. Expected completion time frame is 03/03/2015

**Office of Inspector General
Florida Department of Transportation**

APPENDIX C – AG Report Findings: Corrective Actions Adequate to Address Findings

AG Report 2012-189 Finding 2: SSRC had not established written procedures for mainframe performance monitoring.
Corrective Measures taken by SSRC
SSRC has developed procedures for the IMB Omegamon monitoring software products used to monitor mainframe network, the mainframe z/OS operating system, the DB2 database system and the CICS online transaction system.
AG Report Finding 8: Certain SSRC personnel costs were not allocated or documented in accordance with Federal requirements.
Corrective Measures taken by SSRC
The SSRC developed new charge object codes in People First to capture employee work activities. These new charge object codes were implemented beginning with the January 31, 2014 – February 13, 2014 pay period.
AG Report 2012-189 Finding 9: Contrary to State law and Federal requirements, SSRC staff were unable to provide supporting documentation of the methodology used in the process that formed the basis of the billing rates actually charged to customer entities.
Corrective Measures taken by SSRC
As of October 2011, the SSRC is collecting documentation for each forecast cycle.
AG Report 2012-189 Finding 10: Contrary to State law, SSRC lacked written policies and procedures for billing customers, managing receivables from customers, and establishing cost-recovery methodologies to be followed.
Corrective Measures taken by SSRC
The SSRC on April 19, 2012, implemented an Accounts Receivable Collections Write-Off and Cash Receipts Directives, which addresses this recommendation.
The DMS OIG is completed conducting an audit of the billing and collection process of the SSRC.

**Office of Inspector General
Florida Department of Transportation**

APPENDIX D – AG Report Findings: Not in the Scope

AG Report 2012-189 Findings	Finding Description
Finding 6	SSRC had not conducted periodic reviews of the appropriateness of access privileges and, as previously noted in our report No. 2010-173, did not have written procedures requiring such reviews for some platforms or comprehensive procedures for granting, modifying, or deactivating access privileges. Additionally, our audit disclosed some inappropriate access privileges at SSRC. A similar finding was noted in our report No. 2010-173.
Finding 7	Certain SSRC security controls related to user authentication, security event logging, and data transmission needed improvement. Some of these issues were also noted in our report No. 2010-173.

**Office of Inspector General
Florida Department of Transportation**

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