



Audit Services

General and Application Review of Office of Behavioral Health / Mental Retardation Services' (OBH/MRS) Mainstay Database System

Prepared for:

The City of Philadelphia

August 14, 2007



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Dear Mr. Butkovitz,

We have reviewed the general and application controls over the Mainstay Database System (Mainstay) used by The City of Philadelphia's Office of Behavioral Health / Mental Retardation Services (OBH/MRS) for its mental health, mental retardation, and drug and alcohol abuse programs. The objective of our general controls review was to evaluate the effectiveness of OBH/MRS information systems control structure. For the purposes of this review, the information systems control structure included organization environment controls, system access and security controls, application development controls, system software controls, processing controls, and disaster planning and contingency controls. The objective of our application controls review was to evaluate controls to ensure data remains complete, accurate, and valid during input, processing, and storage; and output is distributed and made available only to authorized users.

Our fieldwork was performed from May 24, 2007 through June 30, 2007. Our observations, related risks, recommendations, and management's responses to our observations are included in this report. SMART discussed our observations and recommendations with OBH/MRS' Fiscal Unit during an exit conference.

We would like thank the City of Philadelphia's Office of Controller for the opportunity to assist you and your staff in the performance of this Information Technology audit over OBH/MRS Mainstay application.

Kind Regards,

Amast Busners Advisory and Consulting, LLC

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PROJECT TEAM

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SUMMARY OF OBJECTIVES & SCOPE

Background Information

The Mainstay Database System (Mainstay) is used by the City of Philadelphia's Office of Behavioral Health / Mental Retardation Services (OBH/MRS) for its mental health, mental retardation, and drug and alcohol abuse grant programs. The Fiscal Unit of OBH/MRS ("Fiscal Unit") uses Mainstay to manage the setup and approval of grants to agencies and their programs, tracking of agency and program expenditures against the approved budget, manage and track budget amendments, generation of Income & Expenditure Reports (I & E) for the Commonwealth of Pennsylvania, and year-end reconciliation of agency expenditures based on audit reports prepared by independent Certified Public Accountants (CPA), which are submitted to OBH/MRS by the contracted agencies.

The City of Philadelphia's Office of Controller performed a review of OBH/MRS grants during their financial statement audit. This audit identified several potential internal control weaknesses relating to the Information Technology General Controls environment surrounding Mainstay. These preliminary observations included a lack of adequate written technical and user documentation and key person dependency on the LAN Administrator. Based on this audit and the preliminary weaknesses identified, The City of Philadelphia's Office of Controller engaged SMART to perform an Information Technology General Controls and application controls review over Mainstay.

Scope and Approach

SMART identified, documented, and tested information technology general controls over the Mainstay database environment. SMART's approach evaluated control activities to determine if identified controls are sufficient to achieve audit objectives related to the following information technology general control areas:

- Organization environment,
- System access and security,
- Application development,
- System software maintenance,
- Computer operations, and
- Disaster planning and contingency controls.

SMART also identified, documented, and tested automated application controls designed within Mainstay to ensure the data is complete, accurate, and valid. SMART's approach evaluated Mainstay automated controls over these assertions during the input, update, storage, and output of information.

SMART's test procedures included meetings with appropriate operational and IT personnel within OBH/MRS' Fiscal Unit, inspection of documentation, and the observation or re-performance of identified control activities. SMART documented the results of our procedures in the Executive Summary and Detailed Findings sections of this report. In addition, SMART reviewed the results of our audit procedures during an exit meeting with key OBH/MRS management and other individuals who assisted us during the execution of our audit procedures.

EXECUTIVE SUMMARY

Process Summary

During the course of our review, we obtained a detailed understanding of the procedures performed by the OBH/MRS Fiscal Unit and how Mainstay is used to support the operations of the Fiscal Unit. Mainstay is used to support the initial allocation of funds to the various agencies and related programs. The Fiscal Unit establishes the initial funding for each program based on prior year grants including the initial budget, subsequent amendments to the budget, and any changes to current year grant levels. The Fiscal Unit generates a Planning Allocation Notice from Mainstay. The Planning Allocation Memorandum is prepared by the OBH/MRS Fiscal Unit, and is then given to the Deputy Behavioral Health / MRS Commissioner for review and sign-off. After this occurs, the Planning Allocation Memorandum and Notice are sent to the contracted agencies. In addition to the Planning Allocation Memorandum and Notice, the prior year's approved Contract Work Statement (CWS), as well as the current fiscal year Budget Instructions and forms are sent to the contracted agencies. The agencies use the information received from the OBH/MRS to complete and submit current year budget requests and related expense allocation details that will establish their budget for the upcoming fiscal year.

Upon receipt of the budget forms from each of the agencies, the Fiscal Unit will input the expense allocations for each program activity code into Mainstay. Mainstay has several automated controls built into the application to ensure expense allocations entered for each program equals the total approved program funding established by OBH/MRS. The expense allocations input into Mainstay automatically update the Budget History for tracking all subsequent funding changes. The Budget History has automated workflow functionality to ensure budget amendment approvals are logged and tracked. Once budget amendments are approved by the Fiscal Unit and respective program managers, the Budget History updates the Mainstay allocations. After all of the budget changes are input, reviewed, and approved by the OBH/MRS Program Managers, the Fiscal Unit Budget Supervisor approves the allocations creating the approved budget for the current fiscal year within Mainstay. After all amendments are processed and appropriate approvals are obtained, the Fiscal Unit generates a Contract Work Statement that is reviewed and approved by the Deputy Commissioner. If the Deputy Commissioner does not have any further changes, the Deputy Commissioner sends the approved Contract Work Statement and letter to the agency. Contracts are used as the basis for the release of funds to agencies and programs on a quarterly basis.

Throughout the quarter, agencies and programs submit invoices for their expenditures to the OBH/MRS Fiscal Unit. The Fiscal Unit enters the invoices into Mainstay and generates quarterly variance reports for review by management. At the end of the year, the Fiscal Unit requests a detailed report from each agency. The Fiscal Unit analyzes the information maintained throughout the year with the detailed report received from each agency to confirm the completeness and accuracy of the information maintained within

Mainstay. Once any error or omissions are resolved with the respective agency, the Fiscal Analyst generates a variance report for review by the Fiscal Supervisor. The Fiscal Supervisor performs a final review of the invoices submitted by the agencies and the variance reports to verify the completeness and accuracy of the information maintained in Mainstay. Once the completeness and accuracy of Mainstay is confirmed by the Fiscal Supervisor, the Fiscal Supervisor generates the supporting documentation from Mainstay for the Income & Expenditure (I & E) report for the Commonwealth of Pennsylvania (referred to as the Annual Expenditure Report or AER by the City of Philadelphia). This document is entered into the State's I & E reporting software which generates the I & E report. This I & E report is reviewed by the Fiscal Administrator who verifies that the report reconciles to the supporting documentation from Mainstay. Upon completion of his review, the Fiscal Administrator electronically submits the I & E Report to the Commonwealth of Pennsylvania.

At the end of each fiscal year, the Fiscal Unit receives a comprehensive audit of financial statements and expenses by an independent CPA from each agency and enters the results into Mainstay. The Fiscal Unit reconciles the Audit to the invoiced expenditure information maintained within Mainstay and signs off on the survey sheet. Based on the reconciliation, the Fiscal Supervisor forwards all reconciliation information to the Payment Supervisor who prepares the final reconciliation letter of all cash advances, expenses submitted, and any audit adjustments to determine the final adjustment amount to be sent to the agency. The Payment Supervisor prepares a cover letter with the reconciled expenses for the agency. The Fiscal Administrator reviews and signs the cover letter and reconciliation.

Key Observations

Based on our review and understanding, Mainstay is primarily a record keeping and reporting system. Mainstay is not responsible for the release of City funds to the various agencies and programs. The Contract Work Statements that are reviewed and approved by the Deputy Commissioner are the primary source documents used to establish subsequent year budgets, and current year contracts are the source for the distribution of funds to the various agencies. As such, if the Mainstay database was compromised or deleted, the Fiscal Unit would be able to reestablish the approved budgets based on the contracts, and funds would still be distributed to the agencies. In addition, the I & E report for the Commonwealth of Pennsylvania could be prepared from the fourth quarter detailed invoice received from each of the agencies.

The key automated controls identified within Mainstay that help to ensure the completeness and accuracy of the information input, stored, and processed include:

Input

- Mainstay ensures the budget and expense allocations submitted by the various agencies and entered into Mainstay must equal the approved initial budget allocation; and
- All allocation information entered into Mainstay automatically feeds Budget History to ensure all subsequent changes are tracked, reviewed, and approved by the appropriate program personnel within OBH/MRS.

Storage / Processing

- All changes to budget allocations are tracked by Budget History; and
- Budget History tracks each approval and requires amendments to be approved by a Program Supervisor, Program Manager, and Fiscal Supervisor.

The key output controls for Mainstay are manual in nature and ensure that:

- Budget to actual Variance Reports by expenditure and revenue classification are printed and reviewed by the Fiscal Unit and Program Managers;
- Mainstay reports and the State I & E report are completed by the Fiscal Supervisor and reviewed by the Fiscal Administrator; and
- A Reconciliation of Mainstay fourth quarter expenditures to independent Audit reports provided by each of the agencies is performed by the Fiscal Unit.

Our key observations and recommendations to improve controls are summarized below. Details for these controls along with our observations are included in the "Detailed Findings" section of this report. We did not prepare any cost to benefit analyses related to implementing any of the following recommendations; such analyses and implementation are the responsibility of OBH/MRS. OBH/MRS should perform a cost to benefit analysis before implementing controls to remediate the observations included within this report. The analysis should consider the likelihood of the risk occurring and the impact to the operations of OBH/MRS.

During our review, our primary observations relating to the organization environment was the lack of written evidence maintained by control owners to demonstrate that controls are performed in a consistent manner. Although control procedures are documented and, through interviews with key personnel, it appeared that the controls were being performed by the appropriate individuals, sufficient written evidence was not maintained to demonstrate that the controls are in fact being executed in a consistent manner.

SMART's observations related to access to programs and data include the following:

- Mainstay user IDs and passwords are shared;
- Mainstay passwords are not subject to appropriate password conventions including acceptable minimum length, periodic changes, or the disabling of Mainstay user ids after several unsuccessful logon attempts;
- Access to system resources are not secured after a defined period of system inactivity;
- The Mainstay database is not properly secured to prevent unauthorized changes to the records or entire database; and
- Written evidence is not consistently maintained to demonstrate that:
 - User Provisioning requests are completed and properly approved for all new hires and changes in personnel responsibilities;
 - Terminated employee access to system resources is removed in a timely manner; and
 - Granted access privileges to system resources are periodically reviewed.

SMART's observations related to program change included:

- Sufficient written documentation of changes to the Mainstay database is not maintained to demonstrate that the changes are properly tested and approved by the appropriate OBH/MRS personnel before changes are implemented into the production environment; and
- Written technical and user documentation is not maintained for Mainstay.

SMART's observations related to computer operations included:

- Backup and recovery procedures and schedules are not formally documented; and
- Written evidence of off-site rotation and storage is not adequately maintained.

Summary

Based on the likelihood of the risks occurring and the impact to the Fiscal Unit operations if the integrity or availability of Mainstay is compromised, it appears that OBH/MRS has implemented sufficient information technology general controls, both manual and automated. Application level controls over Mainstay further supplement the overall control environment and include controls over the input, storage, processing, and output of budget, income, and expenditure information.

The combination of the information technology general controls and application level controls provide reasonable assurance that the completeness, accuracy, and integrity of information input, stored, processed, and output is maintained or can be restored in a timely manner if the information stored in Mainstay is compromised.

DETAILED FINDINGS

General Computer Controls

1. Organization Environment

No	Observation/Condition	Risk / Implication	Recommendation	Management's Response
1.1	OBH/MRS Fiscal Unit did not have appropriate procedures or controls in place to demonstrate that designed controls are operating effectively. Controls where OBH/MRS was unable to provide appropriate written documentation included:	Management may not be able to demonstrate that controls are operating effectively.	OBH/MRS Fiscal Unit should improve the creation, maintenance, and retention of written evidence to demonstrate that designed controls are operating effectively.	New hires are added to the system and given rights based upon requests from their manager. Requests were once done directly by telephone, e-mail, or through the Help Desk system. During the past year, MSD IT staff instituted a form to be completed by any manager requesting access for a new employee. The form is sent to our
	User Provisioning requests are completed for new hires			Management Services Division (MSD) who maintains copies of each form in a binder. However, access to these forms was not provided to the auditors as requested during their review.
	 Terminated users are removed from the system in a timely manner 			the auditors as requested during their review. The network accounts of terminated users are
	 Periodic review of granted system access privileges 			locked but are not deleted until the manager or supervisor of such users gives IT staff instructions
	 Review and approval of changes to the Mainstay application and related test results prior to implementing changes into the production environment 			concerning what to do with their data files. There is no reason to do an ad hoc "periodic revie" of granted system access privileges" purely for the sake of doing such a review. Such rights are based upon a person's job responsibilities and never need to be modified at a later date.
	Off-site rotation and storage of backup tapes			Fiscal staff performs a careful review of all change made by the consultant after delivery of the update program. After verifying that such changes are correct, the LAN Administrator is requested to make the update available to the users. In the past, this approval and request were done verbally. In the future, it will be documented in writing by an

No	Observation/Condition	Risk / Implication	Recommendation	Management's Response
				detailing and approving the changes, and requesting that the update be sent to the users. MSD IT staff performs weekly off-site rotation and storage of backup tapes. However, access to the logs verifying this process was not provided to the auditors by IT staff as requested during the audit.

2. Access to Data and Programs

No	Observation/Condition	Risk / Implication	Recommendation	Management's Response
2.1	Users are assigned a unique user id on the Novell network operating system and the Mainstay database. Users maintain confidential passwords for their assigned Novell network user id. While Mainstay users are assigned unique user id's and passwords, all user ids and passwords follow an established convention. As such, user ids and passwords defined to Mainstay are not confidential. Users occasionally access Mainstay using another user's id and password to process information in their absence.	Unauthorized users can gain access to restricted system resources if confidential passwords are not maintained. In addition, the use of shared user ids may compromise the City of Philadelphia's ability to hold individual users accountable for the use of system resources.	The OBH/MRS Fiscal Unit should require Mainstay database passwords to be changed from the initially assigned password and, once changed; users should take appropriate precautions to ensure the confidentiality of their passwords are maintained. In addition, formal procedures should be developed to permit supervisors to continue the processing of transactions in the absence of other users while maintaining individual accountability for Mainstay database activity.	The type of password security being recommended is already done at the network level. There is no reason to duplicate the same level of security at the Mainstay application level. The purpose of Mainstay passwords is intended to insure that users are working on the proper Fiscal Year & Funding system (OAS, MH, and MR). The informality of the passwords is to allow staff the necessary access to data when coverage is needed, due to users being out of the office on sick and vacation leave. OBH/MRS Fiscal management determines current risks to be extremely minimal based upon factors such as availability of original source documents and data backups, long-term work experience with current staff, and 22 years of experience using Mainstay, including 10 years with the current version and consultant.

No	Observation/Condition	Risk / Implication	Recommendation	Management's Response
2.2	Password controls and account lockouts are not employed or configured on the Mainstay database. The password controls on the Novell network will deter unauthorized access to the network; however, authorized users of the network may obtain unauthorized access to the Mainstay database.	Without the use of properly employed passwords and account lockouts on the Mainstay database, an illegitimate or malicious user can easily gain access to the Mainstay database and corrupt the integrity of the database and even delete the database.	OBH/MRS Fiscal Unit should employ appropriate password controls to adequately reduce the risk of unauthorized access to the Mainstay database. Password controls should follow the minimum requirements established for the Novell Network.	OBH/MHR recognizes that user account lockouts after failed logon attempts and strong password conventions are not implemented within Mainstay. OBH/MHR management believes the risk of unauthorized access to Mainstay is reduced to an acceptable level through the account lockout and strong password conventions implemented at the network level. The user ids and passwords controls were implemented within Mainstay to help prevent a Mainstay user from accidentally accessing data outside their assigned area of responsibility while providing the user the flexibility to do so when necessary business situations occur. Management will review network access to the network directories where the Mainstay programs and data files are stored to ensure that only authorized users have access to the network directories where Mainstay programs and data files are stored.
2.3	User computers are not consistently password protected to secure systems resources after a minimum period of system inactivity.	Unauthorized access to the Novell network and other system resources, including the Mainstay database, can be obtained through the use of unattended computers that remain logged on to the network.	Computers should be configured to ensure access to systems resources are properly secured after a period of system inactivity as defined by the documented OBH/MRS Fiscal Data Security Policy. Exceptions to the system setting are also broadly defined within the policy resulting in the disabling of this setting for computers located within the OBH/MRS Fiscal Unit.	OBH/MRS is instituting a policy that the default inactivity timeout for ALL network users will be 20 minutes, and users will not have the rights to change or disable this timeout.

No	Observation/Condition	Risk / Implication	Recommendation	Management's Response
2.4	Direct access to the Mainstay database files is not adequately restricted.	Users with access to the Novell network directories where the Mainstay database is stored can move, rename, or delete the database negatively impacting the operations of the OBH/MRS Fiscal Unit.	Direct access to the Mainstay database should be restricted to authorized LAN administrators or production control personnel. Direct access to the Mainstay database can be adequately restricted through a combination of a password protecting the Microsoft database and configuring appropriate Novell settings that will prevent unauthorized personnel from deleting or renaming the Mainstay database files.	Past efforts to "hide" the Mainstay database files from users of Access, Windows Explorer, etc. prevented users from accessing the same databases in the Mainstay applications. The Fiscal Unit has determined that the actual Mainstay database files (fund.mdb and amend.mdb) can remain visible AND secure from unauthorized user access, deletion, renaming, or changes, if these steps are taken: 1. Use Novell file rights to inhibit users from deleting and renaming the databases. This has already been done;
				2. Modify Mainstay database files to require a highly secure password to open, and then have our consultant "hard code" that same password into the Mainstay applications. Users would not know this password, so could not open the Mainstay database files by using a program such as MS Access. This will be implemented in the near future, after all users are updated to a new version of Mainstay.

3. Program Change

No	Observation/Condition	Risk / Implication	Recommendation	Management's Response
3.1	Written technical and user documentation is not updated or maintained on a consistent basis.	OBH/MRS may not be able to maintain or change the Mainstay database should the agreement between the City of Philadelphia and Coelho Consulting terminate. In addition, users may not be using or properly leveraging the capabilities of the system due to the lack of adequate written user documentation.	OBH/MRS Fiscal Unit should establish and document appropriate procedures and related controls to ensure written technical and user documentation of the Mainstay database is maintained as part of established program change controls.	All Mainstay data is kept in MS Access databases, as such, data stored within Mainstay would be available to OBH/MRS Fiscal Unit if the current Mainstay maintenance contract was terminated. Concerning the Mainstay application itself, which is used to modify and report that data, the source code belongs to the City by contract agreement. OBH/MRS Fiscal staff will receive updated copies of that source code whenever the consultant makes a change to it. The LAN Administrator will keep the source code on the network in a location accessible only to network support staff.

4. Computer Operations

No	Observation/Condition	Risk / Implication	Recommendation	Management's Response
4.1	OBH/MRS Fiscal Unit was not able to provide written policy, procedures, or schedules relating to the backup, recovery, and off-site rotation of the Mainstay database.	Backup procedures and related schedules may not be performed or maintained on a consistent basis when key personnel take vacation or terminate.	OBH/MRS Fiscal Unit should formally document their established backup and recovery policy, procedures, and related schedules.	Backups are scheduled and run at a network level as well as locally in the Fiscal Unit by the LAN Administrator. Network backups in the past have been four daily (M – Th), four weekly (Friday), three monthly, and one annual. For offsite storage purposes, weekly tapes are interchanged each week between 1101 Market Street and 701 Market Street. However, access to backup logs to verify this process was not provided to the auditors as requested during their review. IT staff are strongly encouraged to keep such logs and make them available when requested. The Fiscal Unit maintains four daily (M – Th), four weekly (Friday), and three monthly backups, all scheduled to run unattended and stored on the LAN Administrator's external hard drive.

5. Application

No	Observation/Condition	Risk / Implication	Recommendation	Management's Response
5.1	The Mainstay Database System permits users to forward approved budget amendments to any user defined within Budget History approval process allowing users to bypass the approval process.	Budget amendments may not be approved by the appropriate personnel according to established procedures.	OBH/MRS Fiscal Unit should configure the Budget History workflow to ensure amendments are forwarded to the appropriate individuals with the next level of approval authority.	The Budget History flow normally works just as the recommendation suggests. However, the flexibility in the flow exists to allow the users to direct an amendment to a different person when someone is out on vacation or sick leave, someone in the flow quits and is not replaced immediately, or some other unforeseen event occurs. Such changes in the work flow are not done without the knowledge of other system users, to whom the approval flow of a document is apparent.