



A. JOSEPH DeNUCCI
AUDITOR

The Commonwealth of Massachusetts

AUDITOR OF THE COMMONWEALTH

ONE ASHBURTON PLACE, ROOM 1819
BOSTON, MASSACHUSETTS 02108

TEL. (617) 727-6200

No. 2009-1124-7T

**OFFICE OF THE STATE AUDITOR'S
REPORT ON THE EXAMINATION OF
INFORMATION TECHNOLOGY-RELATED CONTROLS
AT THE LAND COURT DEPARTMENT**

September 1, 2006 to August 7, 2009

**OFFICIAL AUDIT
REPORT
DECEMBER 21, 2009**

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INTRODUCTION

The Land Court Department (Land Court), which was established under Chapter 211B, Section 1, of the Massachusetts General Laws, is one of seven departments that comprise the Trial Court of the Commonwealth. The Massachusetts Trial Court was created by Chapter 478 of the Acts of 1978, which restructured the courts into seven departments: the Boston Municipal Court, the District Court, the Housing Court, the Juvenile Court, the Probate and Family Court, the Superior Court, and the Land Court. Although the Land Court has statewide jurisdiction, the judges of the Land Court normally sit in Boston. However, where the circumstances warrant and counsel request a change in location, it is not unusual for the Land Court to hold trials in other locations throughout the Commonwealth.

The Land Court consists of six associate justices and one Chief Justice. The Chief Justice for the Land Court, in addition to judicial powers and duties, is subject to the superintendence authority of the Supreme Judicial Court and acts as the administrative head of the Land Court. The Chief Justice for the Land Court has the power, authority, and responsibility of a chief justice as set forth in Chapter 211B, Section 10.

The Land Court is located at 226 Causeway Street in Boston and has been there since December 8, 2004. The mission of the Land Court is to provide the citizens of Massachusetts with a forum for the resolution of their property interests. The Land Court's objective is to provide for pertinent hearings and the issuance of timely, legally competent decisions. As of July 1, 2009, the Land Court was composed of 52 employees with an annual budget for fiscal year 2009 of \$2,308,539 and retained revenue of \$683,175. There is also one law clerk who is assigned to the Land Court but whose salary is paid for by the Administrative Office of the Trial Court (AOTC).

The Land Court has exclusive original jurisdiction over the registration of titles to real property and over all matters and disputes concerning such titles subsequent to registration. The registration of a title occurs when the Land Court, after having a court-appointed examiner exhaustively search the title and after due process is afforded to all interested parties, adjudicates and decrees the state of the title. The Land Court also exercises exclusive original jurisdiction over the foreclosure and redemption of real estate tax liens, and on January 1, 2003, received jurisdiction over the specific performance of contracts relating to real estate and petitions for partition of real estate. The Land Court shares jurisdiction over other property matters with certain other court departments. The Land Court shares jurisdiction with the Superior Court over decisions by local zoning and planning boards. Both the Land Court and the Superior Court have jurisdiction over the processing of mortgage foreclosure cases in determining the military status of the mortgagor. Additionally, the Land Court has supervisory authority over the

registered land office in each registry of deeds. Furthermore, under Chapter 205 of the Acts of 2006, the Legislature increased the Land Court's jurisdiction by creating a "permit session" to hear certain environmental zoning and affordable housing cases.

The Land Court has adopted the AOTC's information technology (IT) mission statement to use stable, proven computer technologies in support of its operations, and to maintain a better, more effective communication system. The Land Court's primary administrative IT services are supported by the AOTC's Information Systems Department. The Land Court's network consists of two file servers, a Linux server, and an NT server located within the server room at the Land Court. These servers connect the 101 desktop computers and 30 printers located throughout the Land Court. The desktop computers are located in the administrative offices, the courtrooms, the training room, and in the public area. The Linux network is used to connect all desktop computers in the administrative and legal section of the Land Court and provides connectivity to the AOTC MassCourts application system. The NT server is used to connect all desktop computers in the Land Court's surveying section and also provides connectivity to the AOTC MassCourts application system.

At the time of our audit, the primary application system used by the Land Court was the MassCourts system. The Land Court's version of the MassCourts system is a modified version of the civil segment of this software application, which was installed and became operational at the Land Court on February 6, 2005. The MassCourts system, which includes financial components of case filings, is used to manage and track cases from the initial filings to the final stages. The Land Court's legal section also uses Windows XP Professional as its operating system and the Microsoft Office 2002 software application suite. The Land Court's Court Administrator and Recorder monitor the progress of cases through the MassCourts system. For the fiscal year ended June 30, 2009, the Land Court recorded approximately 26,314 filings and disposed of over 23,100 cases.

AUDIT SCOPE, OBJECTIVES, AND METHODOLOGY

Audit Scope

In accordance with Chapter 11, Section 12, of the Massachusetts General Laws, we performed an information technology (IT) audit at the Land Court Department (Land Court). The audit was conducted from June 25, 2009 through August 7, 2009 covering the period September 1, 2006 through August 7, 2009. The scope of our audit consisted of an examination of the degree of corrective action taken concerning our audit recommendations contained in our prior audit report, No. 2006-1124-4T, issued on December 29, 2006. We examined the Land Court's business continuity and contingency planning strategy to ensure that business operations can be regained in a timely manner should IT systems or operations become inoperable or inaccessible. In addition we determined whether program changes previously identified as being needed to improve the system had been implemented in the MassCourts system and we reviewed the degree of functionality improvements made to the MassCourts application to facilitate navigation through different screens and the processes and management initiatives in place to reduce the case backlog and improve case management timeliness.

Audit Objectives

The primary objective of our audit was to determine whether corrective action had been taken with respect to our prior audit results. Our audit objective regarding business continuity and contingency planning was to determine whether a business continuity plan, including comprehensive user area and contingency plans, was developed and fully documented and that the Land Court's business resumption strategy was made available to appropriate management and staff in the event that the Land Court's IT systems were rendered inoperable or inaccessible.

Our audit objective regarding the MassCourts application system was to determine whether system changes required to improve functionality and facilitate navigation through different screens had been made to the MassCourts system. Our audit objective regarding the Land Court's case management was to determine the current status of caseload activity since our prior audit.

Audit Methodology

To accomplish our audit objectives, we conducted pre-audit work that included reviewing appropriate documentation of the Land Court's organizational structure, relevant operations, and IT-related environment. We interviewed the Land Court's Court Administrator, Recorder, Head Account Clerk, Systems Administrator, and other Land Court staff. As part of our review of business resumption planning, we obtained an understanding of current computer operations at the Land Court and conducted a site visit to the server room in order to determine whether adequate physical and environmental controls were in place to properly protect all computer equipment located there. We checked for the presence of

smoke and fire detectors, fire alarms, fire suppression systems (i.e., sprinklers and fire extinguishers), uninterrupted power supply, and emergency generators and lighting. To determine whether proper temperature and humidity controls were in place, we inspected the server room for the presence of appropriate dedicated air conditioning, heating, and ventilation systems. In addition, we reviewed environmental protection controls related to general housekeeping procedures in the server room.

Regarding our review of business continuity planning, we performed a preliminary review of the adequacy of documentation for business resumption. We interviewed senior management, and requested and reviewed documentation pertaining to user area policies and procedures. We determined whether IT-related roles and responsibilities were clearly defined for staff necessary in developing or executing user area plans and whether related points of accountability were established and clearly delineated within the Administrative Office of the Trial Court's (AOTC) organizational structure. We determined whether appropriate information had been used in developing user area plans for disaster recovery and business resumption planning.

To assess, more specifically, the adequacy of disaster recovery and business continuity planning, we reviewed the level of planning and the procedures required by the Land Court to resume computer operations in the event that the automated systems become inoperable or inaccessible. We interviewed the Land Court's management to determine whether the criticality of application systems had been assessed, whether a risk analysis of computer operations had been performed, and whether a fully documented business continuity plan was in place and, if so, whether it had been adequately tested. Furthermore, we interviewed AOTC management responsible for IT operations of the Trial Court Departments and the Director of Planning and Policy Development of the AOTC responsible for business continuity planning.

To determine whether program changes previously identified as necessary to improve the MassCourts system functionality and screen navigation had been made, we interviewed AOTC and Land Court management and viewed system operations. To determine whether the MassCourts application system continues to support the mission of the Land Court by providing a comprehensive approach to case management information, we interviewed Land Court personnel and reviewed the status of the system to meet the needs of the end user. We also assessed the degree of end user satisfaction with the upgraded application by conducting personnel interviews with user satisfaction surveys. During our follow-up review of the case management system, we identified the number of case filings and the status of pending cases recorded on the MassCourts system, and sought to determine the current status of caseload activity and developments affecting this activity since our prior audit.

Our audit was conducted in accordance with generally accepted government auditing standards issued by the Comptroller General of the United States through the U.S. Government Accountability Office and generally accepted industry practices.

AUDIT CONCLUSION

Our audit of the Land Court Department (Land Court) found that corrective action had been taken to implement system changes to the MassCourts application to improve functionality and screen navigation. However, our audit revealed that business continuity controls needed to be strengthened. We determined that although certain corrective action had been taken to address business continuity planning, controls needed to be fully documented and tested to provide reasonable assurance that IT processing could be regained within an acceptable period of time should IT systems upon which the Land Court relies, or supporting technology, be rendered inoperable or inaccessible for an extended period of time.

Regarding business continuity planning, the Land Court, in conjunction with the Administrative Office of the Trial Court (AOTC), needs to further assess, develop, document, and test a comprehensive disaster recovery and business continuity strategy to provide reasonable assurance that business operations could be regained in a timely manner should automated systems be rendered inoperable or inaccessible. We confirmed that the Land Court, in conjunction with the AOTC, had strengthened procedures for generating and storing backup copies of data files and programs and had selected an alternate processing site to aid in recovery efforts. Although certain procedures were in place, the Land Court had not documented user area and contingency plans to help ensure the resumption of business operations and activities in the event of an extended loss of IT capabilities or a major disaster or emergency. Our audit also indicated that the AOTC needs to provide specific instructions or plans to the Land Court to ensure continuity of information technology (IT) and business operations should the Land Court's systems become inoperable or inaccessible.

Generally accepted industry practices and standards for computer operations support the need for the Land Court to have an ongoing, business continuity planning process that assesses the relative criticality of information systems and develops appropriate recovery and contingency plans. To that end, the Land Court should assess the extent to which it is dependent upon the continued availability of information systems for all required processing or operational needs and should develop its recovery plans based on the critical aspects of its information systems. Where the Land Court is dependent upon other entities to provide IT capabilities, it should obtain adequate assurances that those entities can recover their systems within an acceptable time to support the Land Court's mission-critical business functions. We found that the Land Court did not have comprehensive documented plans, developed in conjunction with the AOTC, to address the assessment of the criticality of systems and business continuity requirements. The Land Court, without a comprehensive plan integrated with the AOTC's business continuity and contingency efforts, is at risk of losing mission-critical functions that could delay the processing of cases.

Our review and assessment of the operations of the current version of the MassCourts application system installed by the AOTC within the Land Court indicated that the MassCourts application supports the mission of the Land Court by providing a comprehensive approach to case management information. We also determined that the data entry and screen maneuverability were operating in an efficient manner and were viewed as more than adequate based on our interviews and user satisfaction surveys. However, batch printing of docket information, as well as reports, had not been incorporated in the functions of the MassCourts application. The Land Court considers the print queuing and reporting functions important in meeting their operational needs.

During our review of case management, we noted that a backlog of 44,943 cases were pending as of June 30, 2009, the end of fiscal year 2009. This was a significant decrease since our prior audit, when a backlog of 66,289 cases was reported as of June 30, 2006. It is our understanding that the Court Administrator is attempting to address the matter to ensure timely processing of these cases.

AUDIT RESULTS

1. Business Continuity and Contingency Planning

In our prior audit report we recommended that the Administrative Office of the Trial Court (AOTC), in conjunction with the Land Court Department (Land Court), assess the relative criticality of its automated processing, and develop and test appropriate user area plans to address business continuity. We also recommended that the Land Court formalize its strategy of conducting business at other court locations should its current location become inaccessible. In addition, we recommended that an assessment of criticality and business impact be performed at least annually, or upon major changes to Land Court operations or the information technology (IT) environment.

Our current audit found that the Land Court, in conjunction with the AOTC, has strengthened its overall business continuity strategy by developing a comprehensive set of procedures for backing up data files for the mission-critical MassCourts application used by the Land Court. In addition, the AOTC has selected an alternate processing site and indicated that the Land Court could use another court facility to aid in their recovery efforts and continue IT processing. Although the Land Court has also adopted emergency notification and management procedures, our follow-up audit revealed that the Land Court, in conjunction with the AOTC, has not documented a sufficiently detailed business continuity plan that would provide reasonable assurance that mission-critical data processing and business operations could be regained effectively and in a timely manner. In addition, the Land Court had not developed comprehensive, documented contingency plans to address the potential loss of automated processing. Without detailed continuity and contingency planning, especially including user area plans, the Land Court is at risk of not being able to regain mission-critical business operations within an acceptable period. A prolonged loss of processing capabilities could adversely affect the Land Court's ability to perform its primary business functions and could result in significant delays in processing caseloads.

The AOTC has also initiated the development of a Continuity of Operations Plan (COOP), but the effort has been delayed due to other priorities. A COOP is a documented set of procedures to enable an entity, in this case the Land Court, to maintain the continuity of mission-critical and essential functions at an acceptable service level during various disaster scenarios. The COOP is also intended to provide a framework for staff to address disruptions or loss of employee work production. With respect to developing a COOP, the AOTC has distributed to the Land Court, as well as the other six Trial Court Departments, a "mission-essential functions" questionnaire to determine and prioritize those court and executive office functions that, if not performed, would result in the failure of the Land Court to carry out its statutorily mandated duties. Although only the first step, the AOTC will be analyzing the information

gained through this questionnaire to help in the development of the COOP, which will be utilized by all seven Trial Court Departments.

Regarding the solicitation of the Trial Court Departments, all but one has responded as of August 7, 2009. The AOTC is currently reviewing these responses, and anticipates a 12-month time frame for the completion of the COOP. Currently, their effort has been diverted because of a current mandate to concentrate on the anticipated flu pandemic in relation to business continuity. The COOP, although helpful in obtaining information and putting together a high-level continuity strategy, does not provide the information necessary to complete the disaster recovery and contingency plans for IT operations. The Land Court is aware that documented, individual user area and contingency plans are also needed and, as result, the Land Court may remain at risk of not being capable of timely restoration of mission-critical business operations.

We found that there was no documentation available that clearly identified responsibilities associated with the development and execution of comprehensive user area and contingency plans to address the loss of automated systems for an extended period of time. Although the Land Court was able to articulate the procedures needed to be performed under various disaster scenarios to regain business functions, none of these strategies has been formally documented or tested. For example, the Court Administrator should be responsible for ensuring the identification and formal documentation of emergency key personnel, alternate staff members, and emergency contact information. The documentation would include describing and documenting roles and responsibilities for a disaster recovery team at the Land Court and formally assessing the impact to the Land Court of various disaster or emergency scenarios. The documentation would also include formally identifying and documenting files and records, including hardcopy documents vital to the Land Court's daily case processing activities, including docketing and scheduling information, and detailing a strategy or process for potential recovery of these records and files. The Land Court needs to identify the nature and extent of court or business activities that could be conducted in the absence of AOTC-supported systems and/or in the event of damage to the Court's facilities.

Based on interviews with Land Court management and IT staff, we were informed that under a disaster scenario in which the Land Court could not conduct business on a short-term basis, the Land Court would be able to use any court location within the Trial Court system throughout the state for scheduled hearings and use the MassCourts application for docketing and data input. These alternate processing sites could be used until another local facility is selected or the original site is restored. It is our understanding that on a long-term basis, the AOTC's centralized Information Technology Department could reconfigure a server at a facility or site to be determined based on the circumstances of a long-term or permanent move. However, since the overall plan and strategies have not been formally documented, approved, and

adopted and the workaround plans have not been documented or tested, the Land Court may be at risk of not regaining mission-critical and essential business functions in a timely manner. Without a comprehensive, documented, and tested disaster recovery and contingency plan, including required user area plans, the Land Court would be hindered from performing essential business functions, including title registration to real property and matters and title disputes concerning registered land.

An effective disaster recovery plan should provide specific instructions for various courses of action to address different types of disaster scenarios. The plan should identify the ways in which essential services would be provided without full use of the data processing facility and, accordingly, the manner and order in which processing resources would be restored or replaced. The plan should identify the policies and procedures to be followed, detailing the logical order for restoring critical data processing functions, either at the original site or at an alternate processing site. In addition, the plan should describe the tasks and responsibilities necessary to transfer and safeguard backup copies of data files, program software, and system documentation from off-site storage to the site being used for restoration efforts.

The viability of the business continuity planning process requires continued management commitment. Senior management and system users should be closely involved in business continuity planning to help ensure that there is a clear understanding of the Land Court's information system environment, that determinations of system criticality and the risks and exposures associated with the systems are correct, that appropriate IT and user area plans are developed based on the relative criticality and importance of systems, and that adequate resources are available. The Land Court, in conjunction with the AOTC, should perform a risk analysis of the systems to gain a better understanding of associated risks and the impact of lost or reduced processing capabilities. The risk analysis should identify the relevant threats that could render the IT infrastructure inoperative, the cost of recovering the systems, and the likelihood of threats and disaster scenarios and the potential frequency of occurrence.

Generally accepted industry practices and standards for computer operations support the need for each entity to have an ongoing business continuity planning process that assesses the relative criticality of information systems and develops appropriate contingency and recovery plans, if required. Therefore, the Land Court should assess the extent to which it is dependent upon the AOTC for all required processing or operational needs and should develop its recovery plans based on the critical aspects of its own environment.

Recommendation

We recommend that the Land Court, in conjunction with the AOTC, develop, fully document, and test disaster recovery and contingency plans that include user area plans specific to the Land Court's operations. We recommend that the Land Court document its strategy of conducting business at other

court locations. We recommend that an assessment of criticality and business impact be performed at least annually, or upon major changes to Land Court operations or the IT environment. Moreover, the Land Court should obtain adequate assurance from entities that provide IT capabilities, or other essential services, that IT or other services can be recovered within an acceptable time to support the Land Court's mission-critical business functions.

The business continuity and contingency plan, including user area plans, should document the Land Court's recovery and contingency strategies with respect to various disaster scenarios. The recovery plan should contain all pertinent information, including clear delineation of key personnel and their roles and responsibilities, needed to effectively and efficiently recover mission-critical and essential operations within the needed time frames. We recommend that business continuity and user area plans be tested and periodically reviewed and updated, as needed, to ensure their viability. The completed plans should be distributed to all appropriate staff members who must be trained in the execution of the plan under emergency conditions.

Auditee's Response

The Court submitted its response to the AOTC's "Mission Essential Functions Questionnaire" on June 13, 2008. The Court will continue to work with the AOTC, in conjunction with all departments and major components of the Trial Court, to finalize the Continuity of Operations Planning (COOP). The Court notes that, although not mentioned in the Draft Report, the Court has a fully operational digital recording system ("Courtsmart") backed up both onto courtroom computers and onto a server that maintains an accurate audio recording of all courtroom events, including trials. This record would represent an integral component of recovering information in the event of a disaster scenario. In addition, the Court continues to maintain a written copy of all electronic entries made in MassCourts. In the event of an IT disaster, we would be able to recover information from the individual case files, to be reentered in MassCourts.

With respect to Land registration documents, the most important of these are also maintained at the Land Registration sections of each of the Registries of Deeds throughout the Commonwealth, where they are also scanned into the registries' data base.

Auditor's Reply

The continuing actions being taken by the Land Court, in conjunction with the AOTC, to back up data is a positive step in developing and documenting the disaster recovery component for a comprehensive business continuity strategy for the Land Court. However, as noted in our prior audit report, we believe that until a comprehensive recovery strategy is documented and implemented, the Land Court is vulnerable to a disruption in IT services. Once viable recovery and continuity plans are in place, the plans should be periodically reviewed and tested to provide an adequate degree of assurance of their continued viability.

2. MassCourts Application System

In our prior audit report we recommended that the Land Court, in conjunction with the AOTC, continue to work on defining and developing changes to the MassCourts application that would provide a more timely method of navigating through the entry screens of the application system. We also recommended that the AOTC explore possible alternatives to allow for the queuing of docket material for printing to alleviate delays in obtaining information from the case files.

We further recommended that the Land Court, in conjunction with the AOTC, analyze and review the case management problems that may result from the increase in case filings, as well as formulate a strategy for clearing up the current backlog of pending cases. In addition, we recommended that the Land Court continue its efforts to determine the actual status of and classify all backlog cases, perform an aging analysis for these cases, and assess its current workforce's level of productivity to process increased current case filings and address the backlog cases.

Our follow-up review found that program changes had been implemented to improve system functionality and screen navigation. Our assessment of the operations of the MassCourts system indicated that the application continues to support the mission of the Land Court by providing a more comprehensive approach to case management information. Based on our interviews and user satisfaction surveys, we determined that the data entry and screen maneuverability was viewed as more than adequate, and that the addition of an anchor screen decreased navigation activity, while increasing data input levels as well. Other noteworthy enhancements were the integration and access of financial data not previously available. Also, offsite web access will be available in late fall of 2009. However, the printing of docket information and report output functions, in general, were viewed as less than adequate, again based on our interviews and user satisfaction surveys (specifically, our interviews and user satisfaction surveys involving eight Land Court employees, including three managerial personnel).

During our review of case management we noted that a backlog of 44,943 cases was pending as of June 30, 2009, the end of fiscal year 2009. This was a significant decrease since our prior audit, when a backlog of 66,289 cases was reported as of June 30, 2006. The Court Administrator is addressing the matter to ensure timely processing of these cases. Personnel from other court departments and the AOTC have been recruited to assist Land Court personnel in keeping current with case processing, as the Land Court remains at an inadequate staffing level due to the current budget crisis and resultant hiring freeze.

Although a case "status code" change from open to closed disposed of a significant number of cases in fiscal year 2007, this was offset somewhat by a continued increase in case filings due to an increase in foreclosure activity in general. The average number of cases filed for fiscal years 2004 and 2005 was

approximately 13,000 cases, whereas the number of cases filed for fiscal year 2009 was approximately 26,000. As a result of the increase of current case filings, the Land Court is continuing to solicit help from other courts and from the AOTC.

Recommendation

We recommend, as stated in our prior recommendations, that the Land Court, in conjunction with the AOTC, evaluate both the print queuing and report output functions to enhance the operational needs of the Land Court. Alternatives should be explored to allow for the queuing of docket material for printing to alleviate delays in obtaining information from the case files.

We further recommend, as also stated in our prior recommendations, that the Land Court continue to review the caseload activity problems that result from the increase in case filings, and continue to formulate a strategy for clearing up the current backlog of pending cases and attempt timely resolution of pending cases.

Auditee's Response

The Court will continue to work with the AOTC to secure changes to MassCourts to accommodate batch printing and report output functions. The timely resolution of pending cases is largely dependent on increased staff. In terms of strategy for "clearing up the current backlog of pending cases," we have developed a regular system of closing cases that are no longer active, but remain pending only because they are not yet officially closed. While we will continue that task, we are concentrating our efforts on processing cases that are actually active, given personnel shortages.

Auditor's Reply

We commend the actions taken by the Land Court and the AOTC in addressing our prior audit recommendations regarding the MassCourts application and the Land Court's continued efforts in working with the AOTC to address the batch printing of docket information and report output functions. We also note the Land Court's continuing efforts in developing a strategy to address the issues of timely and expeditious case processing during a time of a large increase in the Land Court's caseload, by concentrating on processing active cases with available personnel.